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Perceived constraints and feedback of the farmers in using web based millet information delivery system in Bundelkhand region of Uttar Pradesh

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Abstract

Web Based Millet Information Delivery System (milletsgyan.com) is one of the initiatives, taken by the Department of Agricultural Extension, Banda University of Agriculture & Technology, (U.P.) which provides location specific, recommended package of practices information of major millets grown in Bundelkhand region e.g. Pearl millet, Sorghum millet, Barnyard millet, Foxtail millet specific and Agriculture is one of the primary occupations and main source of livelihood for rural population in India. One third of the population lives in poverty which is engaged at nearly 21.92 percent. Information and communication technology have emerged as an important role contemporary Indian society and act as link between farmers and novel knowledge. The present investigation was conducted in Chitrakoot and Jhansi district during 2023-24. The two blocks namely Karwi and Pahari from Chitrakoot, and Bangra and Gursarai from Jhansi were selected through simple random sampling method. From each village, thirty eight millet respondents were selected simple random sampling, resulting in a total sample size of 304 respondents for the present study. The data was collected through semi-structured interview schedule. Henry Garret ranking technique was used to analyze the constraints faced by the millet farmers and weighted mean score was use to collect the feedback of the millet farmers in using Web based millet information delivery system. Poor mobile network connectivity, Lack of exploration of the content, Lots of distraction are the major constraints faced by the millet farmers and Usefulness in enhancing knowledge and relevancy of the content are the feedback of the millet farmers in using web based millet information delivery system.

Keywords: Information delivery system, millets, constraints, feedback, milletsgyan.com

Introduction

Millets are highly nutritious grains that have been a fundamental part of human diets for centuries. They serve as the primary cereal grain for many households (Anitha., *et al*., 2022) [1] In regions like Africa and Asia, millets are the mainstay food for about one third of the population (Arya *et al*., 2022) [2]. Bundelkhand is a hot and semi-humid region of UP state that lies between the Indo-Gangetic Plain toward the north and the Vindhya Range toward the south. It consists of 7 districts in Uttar Pradesh, namely Banda, Chitrakoot, Hamirpur, Jalaun, Jhansi, Lalitpur and Mahoba. Agriculture in Bundelkhand is rainfed, diverse, risky and vulnerable with long history of droughts (Gupta *et al*., 2014) [10]. Millet farming is an important component of small and marginal landholder in farming systems of India. Foxtail millet is ecologically sound, can enrich agro-diversity, check erosion in arid regions, sequester carbon and assure food and nutritional security to smallholders in drylands (Kumar *et al*., 2024) [20]. As human population increases in this part of the country, the access of rural families to land, capital, and labor diminishes while opportunities for income from off-farm activities become scant (Gupta et. al., 2011; Jadhav, 2001) [4]. Millets are drought resistant and these crops can be grown in harsh circumstances. Traditionally these crops are cultivated in hilly and semi-arid regions (Padulosi *et al*., 2009; Mal *et al*., 2010) [6, 10] and are traditional staple food for the rural poor in dry land regions of the country (Rao *et al*., 2021) [6]. India is the largest producer of Millets in the world and shares around 41 per cent of total millet production of the world (Gowri and Shivakumar, 2020) [8] and is food staple in parts of India (Mishra *et al*., 2019) [9]. Millets are seen as important crops for ensuring food security due to their ability to thrive in challenging agricultural conditions. They contribute significantly to enhancing genetic diversity in the food supply, thus improving overall food and nutrition security (Mal *et al*., 2010) [7]. it is crucial to have a clear understanding of their knowledge regarding package of practices in order to involve the farming community in any matter pertaining to them (Maurya *et al*., 2024) [19]. Dissemination of the required and recent agricultural information to the farmers of Chitarkoot and Jhansi district

of Bundelkhand region of Uttar Pradesh. The new transfer of technology to farmers is not a onetime exercise because new farm technology is being constantly evolved (Mehta, 2003) [15]. In recent years, a revolution has been brought about by modern information and communication technologies (ICTs), such as computers and smart phones. In the twenty-first century, effective and affordable communication tools are necessary to lead the evolving agricultural landscape. India's pioneering ICT trials demonstrate how access to information on better agricultural techniques, seed selection, nutrient management, weed control, irrigation management, insect and disease control, harvesting management, etc., significantly improves rural livelihoods. In modern world, information transformation to the rural farmers hinders upon the tools of ICT where Tele-centers and mobile phones application constitute major part. Since 1990s, Tele-centers have been experienced with a model to provide ICT opportunities to rural communities including farmers (Barbra and Foote, 2007) [16]. Web based Millet Information Delivery System (milletsgyan.com) is one such initiatives was taken by the department of Agricultural Extension, Banda University of Agriculture & Technology to provide location specific, recommended package of practices information of major millet grown in Bundelkhand region eg. Pearl millet, Sorghum millet, Barnyard millet, Foxtail millet for the millet farmers in the study area with the purpose to improve farmer's agricultural knowledge and decision making ability so they may enable to increase their production and productivity. Realizing the importance of Web based System information delivery system, some of the researchable relevant in this context is: what are the feedback of Web based system Users regarding the services, what are the constraints faced by the users to avail the information. To answer that question, the present study entitled "Perceived Constraints and Feedback of the Farmers in using Web based Millet Information Delivery System in Bundelkhand region of Uttar Pradesh".

Methodology

The research is carried out in the Bundelkkhand region of Uttar Pradesh, which include seven district of Bundelkhand. The boundaries of the study were from Chitrakoot is lies between Lat. 24° 48′ to 25° 12′ N, Lang. 80° 58′ to 81° 34′ E. and Lat. 25.4 to Longitude 78.5. The Chitrakoot and Jhansi district were selected by simple random sampling for the study as this region has a long history of droughts that made this area risky and vulnerable for agriculture. The millets crops have been traditionally grown in the region (Sah *et al*., 2021) [17]. The two blocks namely Karwi and Pahari from Chitrakoot, and Bangra and Gursarai from Jhansi were selected through simple random sampling method. A list of villages from each selected block was compiled and two villages are chosen from each block by simple random sampling selection, a total no. of eight villages was chosen for the present study. From each village, thirty eight millet respondents were selected simple random sampling, resulting in a total sample size of 304 respondents for the present study. To obtain responses from millet farmers a semi-structured interview schedule was administered. Henry Garret ranking technique was used to analyze the constraints faced by the millet farmers in using Web based Millet Information Delivery System (www.milletsgyan.com) developed by the researcher. Weighted mean score was used to collect the feedback of millet farmers.

Henry garret ranking technique

$$\text{Per cent position} = \frac{100\ (\text{Rij}-0.5)}{Nj}$$

Where,
R_{ij}= Rank given for the i^{th} variable by j respondents
N^{j}= Number of variables ranked by the j^{th} respondents

Weighted average score

$$\bar{x} = \frac{\sum_{i=1}^{n} w_i X_i}{\sum_{i=1}^{n} w_i}$$

Where,
$\bar{x}$ = Weighted average
n= Number of terms to be averaged
W_i=Weights applied to x values
X_i=Data values to be averaged

Results and Discussion

The results presented in Table. No. 1 reveal that respondents ranked 1st to 'poor mobile network connectivity', ranked 2nd to 'more time in data loading', rank 3rd to 'difficult to operate web based system', rank 4th 'difficult in open the hyperlink', rank 5th 'network connection' and 'signal problem' in technical constraints. These findings were in line with research findings of Girdhar *et al*. (2019) [13]. In case of content constraints, the respondents ranked 1st to 'lack of exploration of the content', 2nd to 'language problem', 3rd to 'less clarity of the images', 4th to 'content complexity' and ranked 5th to 'insufficient images in the developed web based system'. These findings were supported by the research findings of Anuranjan *et al*. (2017) [14].

Table 1: Distribution of farmers according to the constraints perceived in using WBMIDS (n=304)

SI. No.	Statements	GMS	Rank
	Technical constraints		
1.	Network connection and signal problem	68.62	V
2.	More time in data loading	96.72	II
3.	Difficult to operate web based system	81.94	III
4.	Poor mobile network connectivity	102.30	I
5.	Difficult open the hyperlink	73.83	IV
	Content constraints		
1.	Insufficient images in the developed web based system	52.30	V
2.	Less clarity of the images	86.13	III
3.	Lack of exploration of the content	117.09	I
4.	Language problem	98.16	II
5.	Content complexity	67.31	IV
	Utilization constraints		
1.	Compatibility issues	96.23	II
2.	Difficult to read the content	52.76	V
3.	Lots of distraction	115.28	I
4.	Operational difficulties	78.31	III
5.	Tedious to connect to the internet	71.12	IV

Respondents also reported the constraints related to the utilization of Web Based Millet Information Delivery System. It shows that the constraint 'lots of distraction' was ranked first, followed with 'compatibility issues' (second), 'operational difficulties' (third), 'tedious to connect to the internet' (fourth) and 'difficult to read the content' (fifth).

Feedback of the millet farmers about the effectiveness of web based millet information delivery system

In order to determine the feedback of farmers in using web based millet information delivery system in Table No. 2, the feedback was divided in three categories i.e., overall perception, content component. The respondents ranked 1st to 'usefulness in enhancing knowledge', ranked 2nd to 'Arousal of curiosity and interest', rank 3rd to 'Improves self confidence', rank 4th to 'suitability to get the information', similar results also found by (Verma *et al*., 2019) [18]rank 5th to 'helps in decision making', rank 6th to 'Suitability of the information to the field situation', rank 7th to 'retention of the message' in content component, ranked 1st to 'relevancy of the content', ranked 2nd to 'accuracy of the information', rank 3rd to 'easy to understand and enhances learning experience', rank 4th to 'appropriateness of the information', rank 5th to 'simplicity in understanding of the information', rank 6th to 'completeness of the information', rank 7th to 'local language', rank 8th to 'logical presentation', rank 9th to 'credibility of the information'. Similar result were also reported by (Shrija *et al*., 2018; Singh and Verma., 2021) [11, 12].

Table 2: Distribution of farmers feedback about the web based millet information delivery system (n=304)

S. No.	Characteristics	HS	S	LS	WMS	Rank
A	**Overall perception**					
1.	Usefulness in enhancing knowledge	92 (30.3)	160 (52.6)	52 (17.1)	2.95	I
2.	Suitability to get the information	142 (46.7)	96 (31.6)	66 (21.7)	2.02	IV
3.	Retention of the message	102 (33.6)	134 (44.1)	68 (22.4)	1.07	VII
4.	Suitability of the information to the field situation	96 (31.6)	200 (65.8)	8 (2.6)	1.12	VI
5.	Improves self confidence	88 (28.9)	196 (64.5)	20 (6.6)	2.26	III
6.	Arousal of curiosity and interest	194 (63.8)	72 (23.7)	38 (12.5)	2.67	II
7.	Helps in decision making	94 (30.9)	148 (48.7)	62 (20.4)	1.91	V
B.	**Content component**					
1.	Relevancy of the content	114 (37.5)	176 (57.9)	14 (4.6)	2.53	I
2.	Completeness of the information	78 (25.7)	184 (60.5)	42 (13.8)	1.87	VI
3.	Credibility of the information	106 (34.9)	154 (50.8)	44 (14.5)	1.59	IX
4.	Simplicity in understanding of the information	168 (55.3)	98 (32.2)	38 (12.5)	2.21	V
5.	Accuracy of the information	122 (40.1)	136 (44.7)	46 (15.1)	2.34	II
6.	Local language	54 (17.8)	156 (51.3)	94 (30.9)	1.83	VII
7.	Logical presentation	110 (36.2)	132 (43.4)	62 (20.4)	1.79	VIII
8.	Appropriateness of the information	102 (33.6)	172 (56.6)	30 (9.9)	2.31	IV
9.	Easy to understand and enhances learning experience	138 (45.4)	104 (34.2)	62 (20.4)	2.30	III

HS= Highly Satisfied, S=Satisfied, LS= Least Satisfied, WMS=Weighted Mean Score

Conclusion

The study on constraints faced by millet farmers in using Web Based Millet Information Delivery System in bundelkhand region of Uttar Pradesh highlighted significant challenges across three dimension: technical constraints, content constraints, utilization constraints. Poor mobile network connectivity emerged as the most severe, followed by more time in data loading, difficult to operate web based system, difficult open the hyperlink, network connection and signal problem. These directly impact on using web based system, content constraints as lack of exploration of the content, language problem, less clarity of the images, content complexity and insufficient images in the developed web based system. In utilization constraints lots of distraction, compatibility issues, operational difficulties, tedious to connect to the internet, difficult to read the content and feedback of farmers and feedback of the farmers towards web based system was divide in two categories: overall perception and content component, in overall perception, usefulness in enhancing knowledge, Arousal of curiosity and interest, improves self confidence, suitability to get the information, helps in decision making, suitability of the information to the field situation, Retention of the message. In content component, relevancy of the content followed by accuracy of the information, easy to understand and enhances learning experience, Appropriateness of the information, simplicity in understanding of the information, completeness of the information, local language, logical presentation and credibility of the information.

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