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Content Organization in Websites of Agricultural Universities in India: A Web Analytic Study

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Abstract

The website of a university is a platform to exhibit the courses offered by the institution and also about the research activities carried out by that university. Beyond providing high quality content, a site also needs to organize that content in a way that makes it accessible to visitors. Prioritizing the content is one of the best ways to make sure the visitors are finding the information the site wants them to find, and that they want to find. Thus, the location of web objects in the University websites is a key for the success of that website. Hence, a web analytic study was carried out to determine the organization of its content in the websites of Agricultural Universities in India. A total of 54 Indian agricultural universities were taken up for the study and the various web objects were identified and also their locations in the home page of the Universities were analysed and discussed. The study also helps the web designers to improve the usability of websites.

Key words: Content Organization, Websites, Web Analytic Study, Indian Agricultural Universities, Web objects.

Introduction

Today websites of any organization/service sector facilitates for the information dissemination and reveals the reputation of the organization since users are becoming net citizens. The websites are primarily used as advertisement media or marketing technique for the products and

services. The content of the websites target the user community and therefore, after ensuring that content is useful, well-written, and in a format that is suitable for the Web, it is important to ensure that the information is clearly organized in the form of different web objects/links in the home page. Therefore content of the home page must be well organized with the necessary information in the home page, grouping related informational elements, etc.

Need for the Study

Users will consider the items that are placed in close spatial proximity to belong together conceptually like Logo, Title, About Us/History…etc. For designing a site, which gives greater satisfaction and faster retrieval of information, the users' mental model or 'schema' for the characteristic location of web objects on a website is considered an essential ingredient.

Web Objects is the elements on a web page which has a hypertext link to another place in the same or to an entirely different document such as text, graphics, URLs and scripts. Therefore, web objects can be thought of as individual entities that represent some functional unit on web page/site.

The different web objects in the Academic websites especially University websites that are used is given.

1. About us / History
2. Academics
3. Administration
4. Admissions
5. Back to Home
6. Careers
7. Contact Us
8. Copyright
9. Current Events / News
10. E-Mail
11. Extension
12. Internal Search Engine
13. Library
14. Links
15. Logo
16. Photo Gallery
17. Publications
18. Research
19. Site Map
20. Title

Most of the studies conducted on location of web objects were done in e-commerce websites. Also, there are studies on identifying the location of web objects in library web sites (Vasantha Raju and Harinarayana,2011). In the Indian scenario, there are research on Indian users' expectations for the location of web objects on informational websites (Shaikh, Chaparro and Joshi, 2006) and location of web objects and links in the websites of universities in Tamil Nadu (Narendra Kumar, et al.,2010). In this paper, an attempt has been made to examine the content organization of websites i.e. location of web objects in the Indian Agricultural Universities' websites since these websites will be used by all walks of life.

State Agricultural Universities in India

Agriculture plays a very important role in the Indian economy, and setting up of adequate number of Agricultural Universities were considered very important in India. While the Royal Commission, set up in 1926, emphasized the importance of a strong research base for agricultural development in India, the second National Education Commission (1964-66) headed by the University Grant Commission Chairman, Dr. D.S. Kothari recommended the establishment of at least one Agricultural University in each of the Indian state. The Indian Council of Agricultural Research (ICAR) is an autonomous organization under the Department of Agricultural Research and Education, Ministry of Agriculture, Government of India. It strives for maintaining and upgrading quality and relevance of higher agricultural education through partnership and efforts of the components of the ICAR-Agricultural Universities (AUs) System comprising State Agricultural Universities (SAUs), Deemed-to-be-Universities (DUs), Central Agricultural University (CAU) and Central Universities (CUs) with Agriculture Faculty. There are 54 agricultural universities spread across the country and ICAR is one of the largest national agricultural systems in the world. The State Agricultural Universities are major partners in growth & development of Agricultural Research and Education under National Agricultural Research System. For this study, all the agricultural universities listed in the ICAR website [ICAR (2010)][4] which offers agriculture, or agriculture and veterinary are examined and are included.

There are 54 Agricultural Universities in India in which 44 are State Agricultural Universities (SAUs), 1 Central University, 5 Deemed Universities, and 4 Central Universities with agriculture faculty, which is given in Table 1.

Table 1. Indian Agricultural Universities' websites and their Uniform Resource Locators (URLs)

Sl.No.	Name of the University	URL
State Agricultural Universities (SAUs)		
	Acharya NG Ranga Agricultural University	http://www.angrau.net
	Anand Agricultural University	http://www.aau.in
	Assam Agricultural University	http://www.aau.ac.in
	Bidhan Chandra Krishi Viswavidyalaya	http://www.bckv.edu.in
	Birsa Agricultural University	http://www.baujharkhand.org
	Central Agricultural University	http://www.cau.org.in
	Chandra Shekhar Azad University of Agriculture and Technology	http://www.csauk.ac.in
	Chaudhary Charan Singh Haryana Agricultural University	http://hau.ernet.in
	CSK Himachal Pradesh Agricultural University	http://www.hillagric.ernet.in
	Dr. Panjabrao Deshmukh Krishi Vidyapeeth	http://www.pdkv.ac.in
	Dr. Yashwant Singh Parmar University of Horticulture & Forestry	http://www.yspuniversity.ac.in
	Dr.Balasaheb Sawant Konkan Krishi Vidyapeeth	http://www.dbskkv.org
	Dr.Y.S.R. Horticultural University	http://www.aphu.edu.in
	G.B. Pant University of Agriculture & Technology	http://www.gbpuat.ac.in
	Guru Angad Dev Veterinary and Animal Sciences University	http://www.gadvasu.in

	Indira Gandhi Agricultural University	http://igau.edu.in/igkv/
	Jawaharlal Nehru Krishi Vishwavidyalaya	http://www.jnkvv. nic.in
	Junagadh Agricultural University	http://www.jau.in
	Karnataka Veterinary, Animal and Fisheries Sciences University	http://www.kvafsu.kar.nic.in
	Kerala Agricultural University	http://www.kau.edu
	Maharana Pratap University of Agriculture & Technology	http://mpuat.digitaluniversity.ac/
	Maharashtra Animal & Fishery Sciences University	http://www.mafsu in
	Mahatma Phule Krishi Vidyapeeth	http://mpkv.mah. nic.in
	Marathwada Agricultural University	http://mkv2.mah. nic.in
	Narendra Deva University of Agriculture & Technology	http://www.nduat.ernet.in
	Navsari Agricultural University	http://www.nau.in
	Orissa University of Agriculture & Technology	http://www.ouat.ac.in
	Punjab Agricultural University	http://web.pau.edu
	Rajendra Agricultural University	http://www.pusavarsity.org.in
	Rajmata Vijayraje Scindia Krishi Vishwa Vidyalaya	http://www.rvskvv.nic.in
	Sardar Vallabhbhai Patel University of Agriculture & Technology	http://www.svbpmeerut.ac.in
	Sardarkrushinagar Dantiwada Agricultural University	http://www.sdau.edu.in
	Sher-e- Kashmir University of Agricultural Sciences & Technology of Jammu	http://www.skuast.org/new/index.html
	Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir	http://www.skuastkashmir.ac.in
	Sri Venkateswara Veterinary University	http://svvu.edu.in
	Swami Keshwanand Rajasthan Agricultural University	http://www.raubikaner.org/index.asp
	Tamil Nadu Agricultural University	http://www.tnau.ac.in
	Tamil Nadu Veterinary & Animal Sciences University	http://www.tanuvas.tn.nic.in
	University of Agricultural Sciences, Bangalore	http://www.uasbangalore.edu.in
	University of Agricultural Sciences, Dharwad	http://www.uasd.edu
	University of Agricultural Sciences, Raichur	http://www.uasraichur.edu.in
	University of Horticultural Sciences, Bagalkot	http://www.uhsbagalkot.edu.in/#
	UP Pt. Deen Dayal Upadhyaya Veterinary Science University (DUVASU), Mathura	http://www.upvetuniv.edu.in
	Uttar Banga Krishi Viswavidyalaya	http://www.ubkv.ac.in
	West Bengal University of Animal & Fishery Sciences	http://www.wbuafscl.ac.in
Deemed–to–be Universities		
	Central Institute of Fisheries Education	http://www.cife.edu.in/cifemod2/index.php
	Indian Agricultural Research Institute	http://www.iari.res.in
	Indian Veterinary Research Institute	http://ivri.nic.in
	National Dairy Research Institute	http://www.ndri.res.in
	Sam Higginbottom Institute of Agriculture, Technology & Sciences (Formerly Allahabad Agricultural Institute)	http://www.aaidu.org.in
Central Universities with Agriculture Faculty		
	Aligarh Muslim University	http://www.amu.ac.in
	Banaras Hindu University	http://www.bhu.ac.in
	Nagaland University	http://www.nagauniv. org.in
	Visva-Bharati	http://www.visva-bharati.ac.in/

Source : http://www.icar.org.in/files/agr-univ-for-ICAR-IFs.pdf

Related Studies

Bernard (2000; 2001; 2002) examined specific web-related objects, location of common web objects and also expected location for a variety of web objects. Nielsen and Tahir (2002) stressed the importance of positioning the web objects in the websites. User expected locations for web objects has been identified by Markhum and Hall (2003) and also rated important ones in online purchase. Bernard and Sheshadri (2004) discuss the placing of common web objects and their expected locations that would give a competitive edge over the normal web pages.

Shaikh and Lenz (2006) examined whether user expectations for location of web objects have changed since 2001 study done by Bernard. They observed that changes were found in the expected location of the web objects in the site and these changes have not been dramatic but reflect updates in technology & advertising schemas.

Costa (2006) considered user expectations regarding the location of common e-commerce web objects for a sample of Portuguese people and found that the need to localize user-interfaces for specific regions will be less important, if the users from those regions are expert in the medium and have a cultural background that enable them to speak and understand other language / culture.

Narendra Kumar, et al. (2010) observed that most of the web objects are common among the universities. The placement of web objects is not common among university websites. Roth, et al. (2010) indicated that the users generally agree upon the fixed locations for certain common web objects.

Vasantha Raju and Harinarayana (2011) examined the placement of few web objects in library websites and revealed that the pattern of library web object placement is different compared to online trade web objects.

Objectives of the Study

The following are the objectives of the study:

1. To study the various web objects or links that are available in the websites of agricultural universities in India;
2. To study the location of various web objects or links found in the websites of agricultural universities in India;

Hypotheses of the Study

1. There is a significant difference in web objects commonly found in agricultural university websites.
2. There is a significant difference in the location of web objects found in Agricultural university websites.

Methodology of the study

Sample

Among the 54 Agricultural Universities, the website of Uttar Banga Krishi Viswavidyalaya cannot be opened up during the period of the study. Therefore 53 universities were taken up for the study.

Availability of Web Objects

There are 20 web objects taken up for the study. Out of the 20 web objects, seven web objects are available in all the agricultural university websites. They are About Us/ History, Academics, Back to

Home, Current Events/News, Logo, Title and Research. Therefore, remaining 13 web objects alone were taken up for the study.

The number of occurrences of the web objects or links in university websites is shown in Table 2. Besides, the non-availability of the web objects is also indicated in the Table.

Table 2. Availability of Web objects

S.No	Web objects	Available	%	Not Available	%
	Administration	48	90.57	5	9.43
	Admissions	44	83.02	9	16.98
	Careers / Jobs	34	64.15	19	35.85
	Contact Us	38	71.70	15	28.30
	Copyright	40	75.47	13	24.53
	E-Mail	32	60.38	21	39.62
	Extension	40	75.47	13	24.53
	Internal Search Engine	20	37.74	33	62.26
	Library	43	81.13	10	18.87
	Links	36	67.92	17	32.08
	Photo Gallery	34	64.15	19	35.85
	Publications	33	62.26	20	37.74
	Site Map	18	33.96	35	66.04
Total				**229**	

Majority of the web objects are available in the Agricultural University websites. The web objects that are not available in the university websites were also calculated. Chart Control method has been generally adopted for identifying the quality control of the attribute. Normally different charts used are pchart, np chart, c chart, and u chart. In this study, np chart is used to identify the quality control of the attribute. Np charts may be defined as the Fraction of non-conformants which is the ratio of the number of non-conforming objects found to the total number of web pages actually taken up for the study. np charts are statistical process control tools used to evaluate the items of non-conformity in a process.

The value of $\bar{p}$ is calculated using the formula

$$\bar{p} = \frac{\sum np}{\sum n}$$

$$\bar{p} = \frac{Total\ number\ of\ web\ objects\ \ available}{Total\ number\ of\ universities\ x\ Number\ of\ web\ objects}$$

While plotting the points in a graph, Control Limits, such as Upper Control Limit (UCL_{np}) and Lower Control Limit (LCL_{np}) were calculated using the formula

Control Limit$_{np}$ = $n\bar{p} \pm 3\sqrt{(n\bar{p}(1-\bar{p}))}$

Using the formula, UCL_{np} was found to be 27.9, LCL_{np} 7.3 and Central Line CL_{np} 17.6. Based on the above, lines were drawn for non-available web objects and the same is shown in Figure 1.

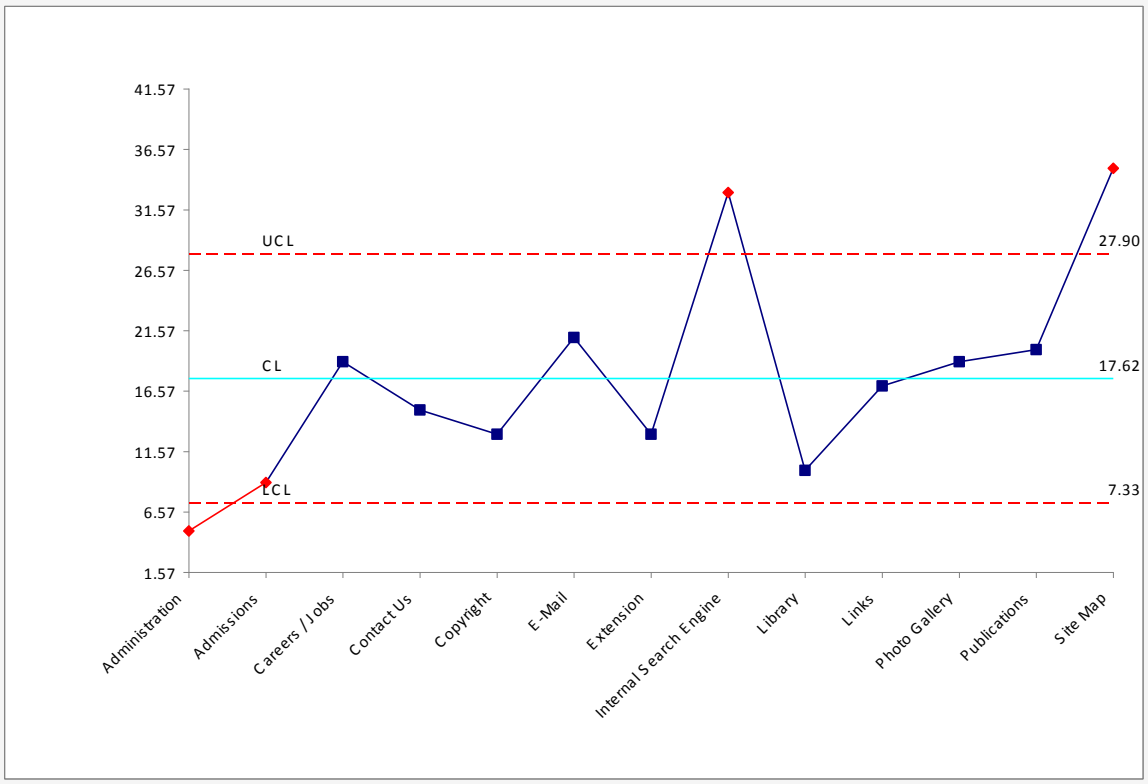

Figure 1. Control Chart for attributes

Position Identification Method

The position of web objects in the web page was measured using the matrix cell approach. The web page was classified into Rows and Columns and the intersecting point is specified as Cell. The no. of cells used for web objects positioning studies has been shown in Table 3.

Table 3: Quadrants adopted for web object analysis study

Sl.No.	Author	Grids Used
	Bernard and Sheshadri (2004)	7 x 6
	Bernard' (2000)	7 x 8
	Costa (2006)	7 x 8
	Di Nocera, Capponi and Ferlazzo (2004)[14]	4 x 4
	Markum and Hall (2003)	3 x 3
	Narendra Kumar…et al. (2010)	7 x 8
	Roth…et al. (2010)	12 x 8
	Shaikh and Lenz (2006)	5 x 5
	Shaikh, Chaparro and Joshi (2006)	7 x 6
	Vasantha Raju and Harinarayana (2011)	5 x 5

From the table, it can be seen that majority of the study were adopting 7 x 8 matrix cell approach. In this study also, 7 x 8 matrix cell approach has been adopted.

The screenshot of the university website has been taken and it is divided into seven horizontal rows and eight vertical columns grid squares. The starting point of the web object or link was considered as the location of that web object or link. The depiction of a browser window (university website) showing the

eight columns marked alphabets A to H and seven rows marked numbers 1 to 7 is illustrated in Figure 2. The address of each cell is obtained by the intersection of a column and a row such as A1, A2, A3,…, B1, B2, B3,…, C1, C2….etc.

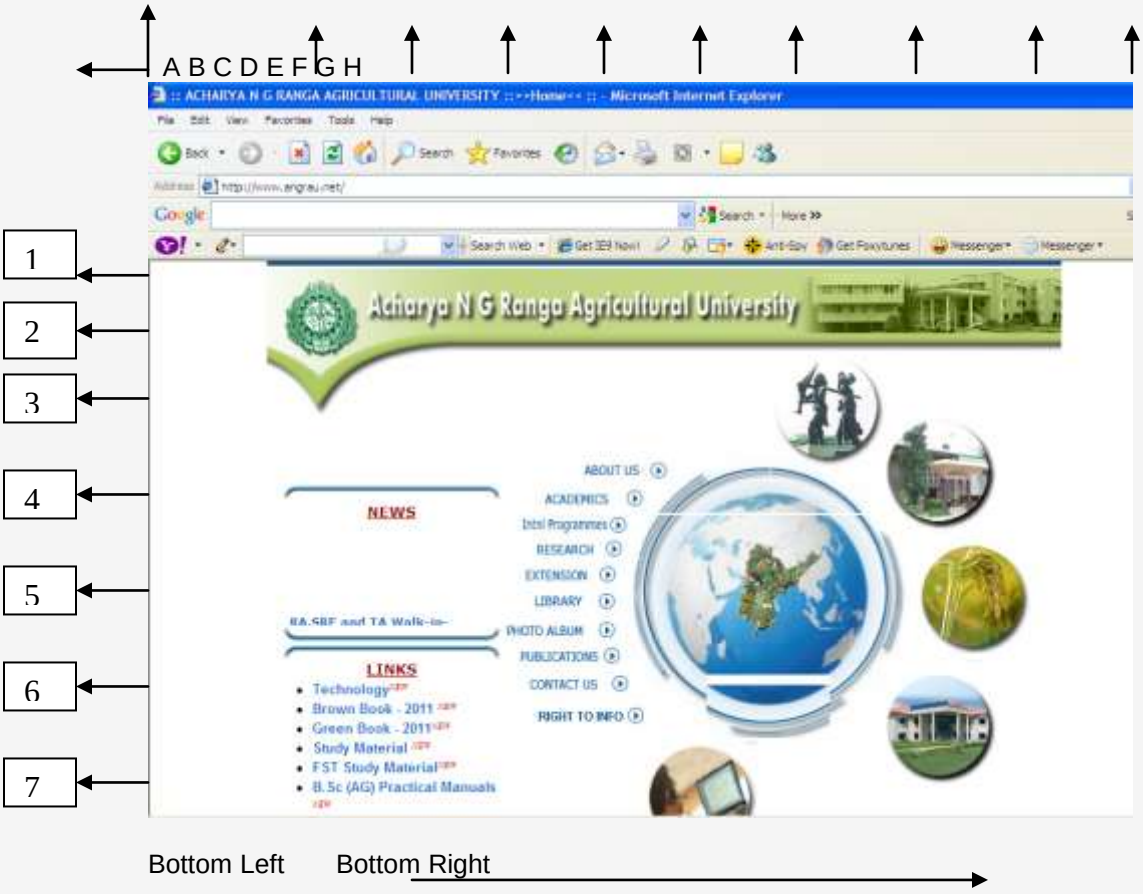

Figure 2 : Screenshot of the university website showing the rows and columns

The web objects and links which are placed in the grid are identified and their respective addresses of the cell were noted for the data analysis. It is shown in Table 4.

Table 4: Web Objects and their Positions

Sl.No	Web Objects	Position	Quantity	Total no. of universities	Percentage
	Administration	B2	12	53	22.64
	Admissions	A4	8	53	15.09
	Careers / Jobs	A7	9	53	16.98
	Contact Us	E2, G1, G5	5	53	9.43
	Copyright	Bottom Left	22	53	41.51
	E-Mail	H3	5	53	9.43
	Extension	A7	8	53	15.09
	Internal Search Engine	C4, F6,G1	3	53	5.66
	Library	A6	8	53	15.09
	Links	A7	9	53	16.98
	Photo Gallery	H7	6	53	11.32
	Publications	A6	6	53	11.32
	Site Map	G7	4	53	7.55

The web objects that are not commonly found in Indian agricultural universities' are given in Table 5.

Table 5: Web objects not commonly found in agricultural universities

Sl.NO.	Web object not commonly found
	Links to Agricultural Technology Information Centres (ATICs)
	Weather Report / Forecast
	Agricultural Experts Names
	Links to Research Stations, Research Consortia,…etc.
	Pest Control
	ICAR website
	Directorate of Farms
	Seeds
	Other agricultural universities in India
	Environmental Information System (ENVIS) India

Analysis and Discussion

- Among the 54 Agricultural Universities, the website of Uttar Banga Krishi Viswavidyalaya cannot be opened up during the period of the study. Therefore, 53 universities were taken up for the study.
- Web objects such as University Logo, Title, About Us/History, Back to Home, Academics and Research, Current Events/News were found in all the university websites, almost in the same location grids. It is also located in a visible location and uniformity cannot be seen in the positions. Hence, there is no significant difference in the web objects commonly found in agricultural universities (Hypothesis 1 is not true)
- The web objects, Internal Search Engine and Sitemap, cannot be expected in all the universities and they are not within the control.
- The web object, Administration, as the other web objects like Logo, Title,…etc. was found in almost all the agricultural university websites and it is very much below the control of the websites.
- Uniformity of the positions of 13 web objects can be seen in the range from 5.66% to 41.51%. The web objects placed in different locations and uniformity cannot be seen in agricultural university websites. Hence, there is a significant difference in the location of common web objects found in agricultural universities (Hypothesis 2 is true).
- 81.13% of the agricultural university websites provide links to library facility.
- Careers/ job opportunities/photo gallery/publications are given due importance in agricultural university websites.
- Important points noted from the websites of Indian Agricultural Universities
- Link to National Information System on Agricultural Education Network in India (NISAGENET) is found in most of the agricultural universities.
- Agropedia is found in CCS Haryana Agricultural University.
- Link to AgriCat, Union catalogue, of the holdings of 12 major libraries (IARI, IVRI, UAS, GBPUAT, CCSHAU, ANGRAU, NDRI, CIFE, CSKHPKV, MPKV, TanuVAS, DIPA) of the ICAR Institutes and SAUs combined together is found in the linking universities.
- Tamil Nadu Agricultural University is the only one university which has a AgriTech Portal.
- Digital University Portal is found in Maharana Pratap University of Agriculture & Technology.

Conclusion

The present study examines and explores the location of web objects in various Indian agricultural universities and the positions of web objects in the websites are also studied. It is found that there is no much significant difference in the commonly found web objects in the university websites. Also, there is a

significant difference in the location of web objects commonly found in the university websites. Further research may be done which could be applied to other university websites as well related to the location of web objects in the websites.

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