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A Survey on E-Learning Attributes of University Websites of Different Countries

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ABSTRACT

E-learning, has revolutionized the style of learning. Now learning material is available within the reach of students who want to continue higher education. Besides this, distance learning system is getting popularity in different countries. Website can play a vital role in case of providing different on-line services to the students. The incorporation of several facilities in educational websites can remove different problems. So the effectiveness of educational websites needs to be increased when ever required. Mainly this incorporation is required in the countries where enrollment ratio in higher education is very low.

LITERATURE REVIEW

A research on the use of websites to make parents involved in education and whether it is effective or not is discussed by Yoon J in the year 2004. A work on the development of effective educational website by integrating principle of active learning with the unique feature of the web was done by David A cook in the year 2004. A work on how education based SNS (Social Networking Sites) can be used most effectively in distance education courses as a technological tool for improved online communication among students in higher distance education courses is done by Kelvin P Brady.

METHODOLOGY

The design elements and content of some internationally acclaimed educational websites for distance learning have been analyzed for benchmarking the present status of educational websites for distance learning in India. A linear regression exists between the gross enrollment ratio and the number of attributes present in educational websites [2]. The major drawbacks of the educational websites in India is identified in this study and necessary suggestions were given to improve the websites' usability. If the websites provide the services like enrolling of students, e-learning materials and other learning resources during the entire course span then more students will be attracted to enroll in higher education. In this study the portions dedicated to distance learning of four university websites in India, four in Australia and same number of websites of America have been analyzed which are dedicated to provide necessary information and service to the intended users and also the drawbacks of Indian websites in providing information and services to the pupils were identified.

Australia, USA and India are three populations. The study compares these three multivariate population means using one way ANOVA. Before computation three assumptions are taken. These are $X_{i1}, X_{i2}, \dots, X_{in}$ is considered as a random sample of size n_i from a population having mean μ_i where $i=1,2,3$. The random samples are independent in nature. Here all populations have a common co-variance matrix. Every population in this example is multivariate normal.

In this example, the null hypothesis is the equality of the three means $\mu_1 = \mu_2 = \mu_3$. If μ is the overall mean component then $\mu_i = \mu + (\mu_i - \mu)$ where $i=1,2,3$.

Now the mean of i^{th} population is the summation of overall mean and the treatment effect of i^{th} population.

Table.1: Presence of attributes in e-learning university websites in different countries

Attribute Number	Attribute Names	Australia	America	India
1	e-learning materials	4	4	1
2	online examination	4	4	0
3	online payment	4	4	0
4	computer-based training	2	0	0
5	web-based training	4	2	0
6	instructor-led training	3	2	0
7	online registration	4	4	1
8	online career counseling	4	4	1
9	web conferences	4	3	0
10	online helpdesk	4	4	2
11	study link to grow more	1	3	4
12	e forum	4	2	0
13	courses at per industry standard	4	3	1
14	Group email for learners	4	4	2
15	campuses in remote places to engage rural students	0	0	0
16	online competitions like e-debates	1	0	0
17	Online news to students regarding higher education	2	2	1
18	online career workshops	2	2	1
19	Intellectual Property Virtual Scholar Program	0	1	0
20	blended learning	0	0	0
21	mobile learning	0	0	0
22	Digital library	0	1	2
23	Digital Question paper access system	0	0	1

In the above table, the scores representing the presence of attributes are considered out of four as for each country four educational websites have been selected randomly and the presence of attributes, in these websites are observed.

Then ANOVA analysis is performed on the set of data to state whether the sampled data can be considered or not in support of the hypothesis that the samples are taken from populations with equal means.

RESULTS AND DISCUSSIONS

Table: 2- Calculation of Q_1, Q_2

																						T_i	n_i	T_i^2/n_i				
AUS	4	4	4	2	4	3	4	4	4	4	1	4	4	4	0	1	2	2	0	0	0	0	0	0	55	23	131.5217	
AME	4	4	4	0	2	2	4	4	3	4	3	2	3	4	0	0	2	2	1	0	0	1	0	0	49	23	104.3913	
IND	1	0	0	0	0	0	1	1	0	2	4	0	1	2	0	0	1	1	0	0	0	2	1	0	17	23	12.56522	
																									T	121	N=69	

In one factor classification the total variation is given by $Q = N \left\{ \frac{1}{N} \sum \sum (x_{ij} - \bar{x})^2 \right\}$
 $= N \left\{ \frac{1}{N} \sum \sum x_{ij}^2 - \left(\frac{1}{N} \sum \sum x_{ij} \right)^2 \right\}$

$= \sum \sum x_{ij}^2 - T^2/N = 395 - 212.1884 = 182.811$ where $T = \sum \sum x_{ij}$

Similarly for the i^{th} class

$\sum_j (x_{ij} - \bar{x}_i)^2 = \sum_j x_{ij}^2 - T_i^2/n_i$ where $T_i = \sum_j x_{ij}$

and $Q_2 = \sum_i \sum_j (x_{ij} - \bar{x}_i)^2 = \sum_i \sum_j x_{ij}^2 - \sum_i T_i^2/n_i = 395 - 248.4783 = 146.5217$

and $Q_1=Q-Q_2=\sum_i T_i^2/n_i - T^2/N=182.811-146.5217=36.289$

Here N is equal to the total number of elements which is equal to 69.

Table: 2-ANOVA Table for One Factor Classification

ANOVA Table for One Factor Classification				
Sources of Variation	Sum of Squares	Degrees of Freedom	Mean Square	Variance Ratio
(S.V)	(S.S)	(D.O.F)	(M.S)	(V.R)
Between Classes	$Q_1=36.289727$	$h-1=2$	$Q_1/(h-1)=18.144$	$\frac{Q_1/(h-1)}{Q_2/(N-h)}=8.1729=F$
Within Classes	$Q_2=146.52173$	$N-h=66$	$Q_2/(N-h)=2.220$	
Total	$SST=182.811$	$N-1=68$		

If the above, population is considered as normal distribution then sum of square of the observation=Sum of square of overall mean+ Sum of square of treatment effect+ sum of square of the residual this is written in the below mentioned section.

$395=212.1884058+36.289727+146.5217371$

Where $F=(SS_{\text{Treatment}}/2)/(SS_{\text{Res}}/66)=8.1729 > F_{.01\%}(2,66)$.

So null hypothesis or H_0 of equality of means is rejected.

CONCLUSIONS

It can be concluded that the mean of the three populations from which the samples are taken differs significantly. So there is a lot of difference in presence of attributes of Indian, American and Australian university websites. Also the numbers of attributes in Indian university websites need to be increased.

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