Discriminant Analysis of the influence of Faculty Members' Socio-Economic Characteristics on the use of Social networks: a study of KSWU, Bijapur

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Abstract: **This article describes and applies the discriminant analysis module in this study to evaluate the influence of faculty member's socio- economic characteristics on the use of Social networks in KSWU Bijapur. Data were obtained from 105 faculty members selected through stratified sampling method. The discriminant analysis was used to analyze the collected data. In the present study nine predicator variables are used to assess the use of social networking, among these variables, Communication (.725), Sharing photos (.409), Entertainment (.184), Domicile (.132) and Gender (.065) have made positive contribution towards use of social networking and while other four variables namely Research (-.230) Age (-.150), Income (-.028) and New updates/events (.05) have made negative contribution towards discriminant between heavy user group and low user group. Further it can be reveals that Communication, Sharing photos, Research, and age are the highest discriminating variables and make significant contribution as discriminators between the heavy user group and low user group for the use of social networks by the faculty members. Finally it can be concluded that priority should be given to communication and other positive variables to enhance the use of social networking.**

Keywords: **Discriminant Analysis, Socio-Economic Characteristics, Social Networking**

1. Introduction:

Discriminant Analysis (DA) is used to predict group membership. This technique is used to classify individuals/ objects into one of the alternative groups on the basis of set of predictor variables. The dependent variable in discriminant analysis is categorical and on a nominal scale, whereas the independent or predicator variables are either interval or ration scale. When there are two groups of dependent variable, we have two groups descriminant analysis and when there are more than two groups it is multiple case of discriminant analysis. In case of two groups discriminant analysis, there is one discriminant function, where as in case of multiple discriminant analysis, the number of functions is one less than the number of groups.

It is used to identify the variables/ statements that are discriminating and on which people with diverse view will respond differently.

The main objectives of discriminant analysis are to find out a linear combination of variables that discriminate between categories of dependent variable in the best possible manner. To find out which independent variables are relatively better in discriminating between groups.

2. About KSWUB

Karnataka State Women's University, established in 2003 in the city of Bijapur is the only Women's University in Karnataka dedicated exclusively for women's education. It is recognized under 2(f) and 12(B) of the UGC Act. One not five women's colleges spread in enter Karnataka are affiliated to this University. The University offers various UG programmes leading to Bachelor's degree in Arts, Business Administration, Computer Applications, Commerce, Education, Fashion Technology, Home Science, Physical Education, Science and Social Work. It also offers 20 P G Courses, P G Diploma and Certificate Courses in the Faculties of Arts, Commerce and Management, Social Sciences, Science and Technology and Education.

Presently there are about 250 faculty members are working in the university, among these

55 members are permanent faculty and remaining 195 are working on temporary basis in twenty PG departments at the university campus, of which 105 faculty members are selected are for the present study.

3. Material and Methods

This study was conducted at Karnataka state women's university, Bijapur for the faculty members working in the PG departments at the University campus. Data were collected from both primary and secondary sources. Primary data were collected by means of a structured questionnaire which is designed and developed as per the objectives of the study and collected relevant information from the faculty members.

Measurement of Variable: The independent variable of the study is type of user (Heavy user/ Low user) and the predicator of

the variables (Communication, Sharing photos, Research, Entertainment and Age, Income and New updates/Events) is treated as dependent variables. The five points scale was used for communication, sharing of photos, research, entertainment and updates/events to measure the extent of use of social networking.

3.1 Analytical Model.

Discriminant analysis was employed to analyze the effects of the socio- economic characteristics of the respondents on their use of social networking. The discriminant model is given by

$$Z= b_0+b_1X_1+b_2X_2+b_3X_3+b_4X_4+b_5X_5+b_6X_6+b_7X_7+b_8X_8+b_9X_9$$

Where Z= Total score on the discriminant function, bs = beta coefficients (weights or discriminant function coefficients) in respect of the socio-economic variables X_1-X_9 which was estimated

4. Results and Discussions

Analysis of the study is based on the data collected from 105 faculty members of KSWU Bijapur. An attempt has been made to analyze and interpret the data by using discriminant analysis module to discriminate between categories of dependent variable in the best possible manner with respect to use of social networking by the faculty members of KSWU Bijapur.

4.1 Characteristics of Study Population

The study population consists of faculty members of all the departments of KSWU, Bijapur. Out of 105 respondents, 54.3 %(57) were male and 45.7%(48) were female. While more than 76% of the respondents were from urban area. Majority of the respondents under study have 5-10 years of experience. Average age of the respondents was 27.6 years and average income of the respondents was 3.5 lakhs. Further, 44.8% of the respondents belong to Low User group and 55.2% of them belongs to heavy user group.

Table-1 provides mean and standard deviation of the predictor variables under study

Table-1 Mean and Standard deviation of the predicator variables

Users	Characteristics	Mean	Std. Deviation
Low Users	Communication	3.4043	.77065
	Sharing photos	5.4655	.97721
	Research	5.3617	2.33523
	Entertainment	3.6383	2.04754
	New updates/events	4.4681	1.31630
Heavy Users	Communication	5.4310	1.25813
	Sharing photos	4.8298	2.62363
	Research	7.7241	2.10090
	Entertainment	4.1207	1.92925
	New updates/events	5.0862	1.26053
Difference	Communication	-2.0267	-0.48748
	Sharing photos	0.6357	1.64642
	Research	-2.3624	0.23433
	Entertainment	-0.4824	0.11829
	New updates/events	-0.6181	0.05577

It is observed from table-1 that the mean score for communication for the heavy user group of social networking is 5.43, whereas for the low user group it is 3.403. The significant difference is observed (-2.0267) between the heavy user group and low user group in case of communication. Further it is found that there is significant difference is also observed in research, in which mean score of the heavy user group is 7.72 whereas it is 5.36 for the low user group. Further, in case of entertainment and New updates/ events slight difference is observed between heavy user group and low user group. However, in case of sharing photos the score for the low user group is (5.46) is slight higher than that of the heavy user group (4.82). Therefore from the above analysis it can be predicted that expect photo sharing all the predictor variables could useful in discriminating between potential users and low users.

4.1 Test for differences in group means

To know, which of the variables/Characteristics a significant difference is exists between the means of two groups, a one way ANOVA is carried out for each of the characteristics, where each of the predictor variables (Communication, sharing photos, Research, entertainment and Age income and new updates/events) is treated as dependent variables and the type of user group as an independent variable. The results are present in table-2

Table-2 Tests of Equality of Group Means

Variables/ characteristics	Wilks' Lambda	F	df1	df2	Sig.
Communication	.524	93.452	1	103	.000
Sharing photos	.973	2.912	1	103	.091
Research	.776	29.704	1	103	.000
Entertainment	.985	1.536	1	103	.218
Age	.977	2.475	1	103	.119
Domicile	.971	3.114	1	103	.081
Gender	.917	9.380	1	103	.003
Income	.999	.067	1	103	.796
New updates/events	.945	6.000	1	103	.016

It is observed from the table-1 that the significant difference is observed in case of communication, Research, Gender and new updates/events for which the p value is less than.05 at the appropriate level of significance. However, in case of sharing photos, Entertainment, age, domicile and income no significant difference is observed as their p value is more than.05.

Further, correlation matrix test was carried out to examine the problem of multicollinearity (high correlation between the pair of predicator variables). It is noticed that the correlation coefficient between any pair of predictor variables is greater than .075, it indicates that both the variables in that particular pair share a large amount of common share variance and might reflect the same attribute. In the present study any pair of predicator variables does not exceed 0.75. the present study does not have any problem of multicollinearity.

Table-3 Summary of Canonical Discriminant Functions (Eigen values)

Function	Eigen value	% of Variance	Cumulative %	Canonical Correlation
1	1.725(a)	100.0	100.0	.796

a First 1 canonical discriminant functions were used in the analysis.

The eigenvalue for the above estimated descriminant function is1.725 as shown in the table-3 with 100 percent variance explained. The last column of the table indicates canonical correlation, which is the simple correlation coefficient between the discriminant score and thier corresponding user groups, its value is found to be .796 when it squared, we get .6336, which indicates 63.36 percent of the variance in the discriminating model between a potential user/ low user is due to the changes in the nine predicator variables.

4.2 Significance of discriminant function model

It is very important that the discriminant function is statistically significant as this will enhance the reliability that the group exists. In case the discriminant function is not significant it can not be used further analysis to carry out the tests. To check is there is statistics called wilks' lambda which indicates the significance of the discriminant function module. In the present study it is found to be .367, its value is in between 0 and 1 and lower the value of wilks' lambda, the higher is the significance of the discriminant function (0 value is most preferred one). In the present study, it is found to be very significant.

Table-4 Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.367	100.766	5	.000

4.3 Relative importance of the discriminating variables

Table-5 presents the summary of data for the discriminant analysis of the two levels (heavy user/ Low user). The results of the analysis are presented in table-5. The standardized discriminant function coefficients are used in expressing the relative importance of the discriminating variables entered in the model. In the present study nine predicator variables, among these variables, Communication (.725), Sharing photos (.409), Entertainment (.184), Domicile (.132) and Gender (.065) have made positive contribution towards use of social networking and while other four variables namely Research (-.230) Age (-.150), Income (-.028) and New updates/events (.05) have made negative contribution towards discriminate between heavy user group and low user group. It is important to know that the larger the standardized coefficients, the larger is the respective variables' unique contribution to the discrimination (irrespective of the sign of the coefficients) specified by the respective discriminant function. In the present study Communication (.725), Sharing photos (.409), Research (-.230) and age   (-.150) are the highest discriminator in discriminating between heavy users group and low user group of social networks. While, domicile, gender, and income and new updates/events are not play significant role in discriminating between heavy user group and low user group for the use of social networking. It can be concluded from the above analysis that the communication, sharing photos, research and age play significant role in the usage of social networking.

Table-5 Discriminant Function Coefficient

Variables	Function
Communication	.725
Sharing photos	.409
Research	-.230
Entertainment	.184
Age	-.150
Domicile	.132
Gender	.065
Income	-.028
New updates /events	-.005

4.4 Classification of cases using the Discriminant Function

We can calculate the mean discriminant scores of the heavy user groups and lower user groups separately. This is known as group centroids. The value is worked out to be -1.445 for the low user groups and 1.171 for the heavy user group.

Table-6 Functions at Group Centroids

Use of media	Function
	1
Less User	-1.445
Heavy User	1.171

Unstandardized canonical discriminant functions evaluated at group means

5. Conclusion

The study examined the influence of the respondents socio-economic characteristics on use of social networking by faculty members of KSWU Bijapur. The results of the discriminant analysis shows that the discriminant function coefficients (b) revealed the positive contribution for the variables, Communication, Sharing photos , Entertainment and Domicile towards the use of social networking. However negative coefficients were obtained for the variables Research, Age, Income and New updates/events. Finally it can be concluded that Communication, Sharing photos, Research, and age are the highest discriminating variables and make significant contribution as discriminators between the heavy user group and low user group for the use of social networks by the faculty members. Finally it can be concluded that priority should be given to communication and other positive variables to enhance the use of social networking.

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