DISCRIMINATORS OF EXCEL USERS WITH ADVANCED AND AVERAGE LEVEL SKILLS IN MANAGEMENT AND RESEARCH INSTITUTES

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ABSTRACT

Microsoft office is the most widely used Office productivity software worldwide. Over the time, its applications viz. Word, Excel, and PowerPoint have grown immensely, in terms of features and functionalities, a majority of features remain unused by a vast majority of users possessing basic or average level skills. A questionnaire comprised of 20 questions/tasks in Excel was used to assess users' skills and for classifying them as basic, average/intermediary or advanced level user of Excel. Besides, data related to user-level variables like frequency of use, comfort level, need of help, familiarity with menus and icons, ownership of Personal Computer etc. were also collected. This paper reports outcomes related to skills in Microsoft Excel; possessed by users in academic institutions; and attempts to identify major discriminators from the other variables between average and advanced level users of Excel.

Keywords:

Excel, Excel in Academics, Excel Skills Assessment.

Introduction:

Microsoft office is the most widely used Office productivity software worldwide. Over the time, its applications viz. Word, Excel, and PowerPoint have grown immensely, in terms of features and functionalities, but a vast majority of users barely scratch the surface (Kane, n.d.). To evaluate the skills possessed by users in academic setups, comprising management and research institutions, questions were selected from Dove Rosenberg's skills assessment inventory for Excel, based on responses of fourteen IT experts associated with academic institutions. These experts also, rated complexity associated with these tasks, required for assessing users' skills and classifying them as basic, average/intermediary or advanced level

user of Excel. The questionnaire comprised a separate section with 20 questions/tasks in Excel. Moreover, data related to user-level variables like frequency of use, comfort level, need of help, familiarity with menus & icons, , ownership of Personal Computer etc. were also collected.

This paper reports outcomes related to skills of Microsoft Excel, possessed by users in academic institutions; and attempts to identify major discriminators from the other variables related to between average and advance users of Excel.

Data and Skills Classification:

The responses of 259 Excel users representing faculty, non-faculty and students from four management institutions offering BBA[1], MBA[2] or PGDM[3] courses and two research institutions were collected using a questionnaire, to evaluate their skills. The sample comprised 51 (19%) Faculty members 43 (17%) non-faculty a total of 165 (64%) students.

Classification of users into basic, average/intermediary and advance level users was done on the basis of skills reported by users in conducting tasks with different levels of complexity, on their own. A user to be classified into any category should be able to perform at least one of the task corresponding to that complexity-level on his own. To elucidate, a basic user of Excel should be able to perform at least one activity from the basic tasks of Excel included for assessment in this study. A basic level user of Excel with skills to perform any activity corresponding to intermediary-level has been classified as Average/Intermediary user of Excel. A basic or intermediary level user of Excel able to perform any task corresponding to advanced–level has been classified as an advanced user of Excel. The list of tasks incorporated for classification of users' skills is given as Table-A.

[1] Bachelor of Business Administration
[2] Master of Business Administration
[3] Post-Graduate Diploma in Management

Table A: List of Excel Tasks by Complexity Level Used for Classification of Respondents' Skills

Basic Level	Enter Edit data	Copy Paste Cells and Group of Cells (Range)	Insert, Delete Row Columns	Use Basic Calculation like +, -, x, /	Cell/ Range Format	Split and Merge Cells	Move Tables and Graphs from Excel to Word or PowerPoint
Average Level	Multi-Column Filter	Create Formula Using Functions Like Sum, Average etc.	Copy Values Using Fill Down and Fill across	Create and Manipulate Graphs	Select and Sort Data	Page Setup and Layout for Printing	
Advanced Level	Pivot Tables	Conditional Formatting	Goal Seek Tool	Data Validation Tool	Using Macros	Problem Solving using Help	Relative and Absolute Referencing

It was hypothesized that majority of users do not possess skills to use advance features.

Profile of Users:

More than 75% of Excel users in the sample were males. In all, 63% users owned a PC, in that, 82% faculty, 65% non-faculty and 56% of students owned a personal computer. As per the skill classification scheme used in the study, 29 (11%), 189 (73%) and 41 (16%) users were classified as basic, average and advanced users of Excel respectively. Distribution of users by other variables viz. comfort level, need of help, frequency of use, familiarity with menus & icons, etc. separately for basic, average and advanced-level users is given in Table-1. These characteristics are described below.

a) Comfort Level with Excel:

As regards the comfort while using Excel, more than 35% of all users were uncomfortable or very uncomfortable. Taking together "very comfortable" and "comfortable" categories as representative of comfort, 24%, 67% and 78% users among basic, average and advanced levels respectively reported that they were comfortable using Excel.

Table-1: Distribution of Users with Different Skills by Background Variables

A) Comfort Level					
	Very Comfortable	Comfortable	Uncomfortable	Very Uncomfortable	Total
Basic	**4**	**3**	**21**	**1**	**29**
Row %	13.8%	10.3%	72.4%	3.4%	100.0%
Average	**48**	**80**	**56**	**5**	**189**
Row %	25.4%	42.3%	29.6%	2.6%	100.0%
Advanced	**14**	**18**	**7**	**2**	**41**
Row %	34.1%	43.9%	17.1%	4.9%	100.0%
All	**66**	**101**	**84**	**8**	**259**
Row %	25.5%	39.0%	32.4%	3.1%	100.0%
B) Need of Help					
	Rarely	Sometimes	Frequently	Total	
Basic	**4**	**17**	**8**	**29**	
Row %	13.8%	58.6%	27.6%	100.0%	
Average	**25**	**90**	**74**	**189**	
Row %	13.2%	47.6%	39.2%	100.0%	
Advanced	**16**	**22**	**3**	**41**	
Row %	39.0%	53.7%	7.3%	100.0%	
All	**45**	**129**	**85**	**259**	
Row %	17.4%	49.8%	32.8%	100.0%	
C) Frequency of Use					
	Occasionally	Often	Daily	Total	
Basic	**14**	**11**	**4**	**29**	
Row %	48.3%	37.9%	13.8%	100.0%	
Average	**57**	**87**	**45**	**189**	
Row %	30.2%	46.0%	23.8%	100.0%	
Advanced	**8**	**11**	**22**	**41**	
Row %	19.5%	26.8%	53.7%	100.0%	
All	**79**	**109**	**71**	**259**	
Row %	30.5%	42.1%	27.4%	100.0%	
D) Familiarity with Menus & Icons					
	Not Familiar	Somewhat Familiar	Familiar	Very Familiar	Total
Basic	**4**	**12**	**9**	**4**	**29**
Row %	13.8%	41.4%	31.0%	13.8%	100.0%
Average	**10**	**48**	**78**	**50**	**186**
Row %	5.4%	25.8%	41.9%	26.9%	100.0%
Advanced	**2**	**6**	**19**	**14**	**41**
Row %	4.9%	14.6%	46.3%	34.1%	100.0%

All	**16**	**66**	**106**	**68**	**256**
Row %	6.3%	25.8%	41.4%	26.6%	100.0%
E) Whether Non-Faculty/Support Staff?					
	Faculty/Student	Non-Faculty	Total		
Basic	24	5	29		
Col %	11.1	11.6%	11.2		
Average	163	26	189		
Col %	75.5%	60.5%	73.0%		
Advanced	29	12	41		
Col %	13.4%	27.9%	15.8%		
All	216	43	259		
Col %	**100%**	**100%**	**100.0%**		

b) Need of Help:

While working in Excel, almost 33% of the users, frequently require help from others; whereas 50% users report need of help sometimes and only 17% users report that they rarely need help. Exactly 39% advanced users, around 13% average and 13% basic users report that they rarely need help using Excel.

c) Frequency of Use:

More than 30% users report that they use Excel occasionally, whereas 42% and 27% report often and daily usage respectively. Daily usage of Excel was found to be higher (54%) among advanced users.

d) Familiarity with Menus & Icons:

Clubbing the options "familiar" and "very familiar"; 68% users reported familiarity with menus and icons of Excel. 45% among basic users and 68% among average users report familiarity with menus and icons of Excel. Among advanced users, more than 80% users report familiarity with menus and icons.

e) Whether Non-Faculty/Support Staff?:

In all, 43 (17%) of the respondents were non-faculty. Among the non-faculty users, almost 28% were advanced level users, whereas 61% and 12% users were average and basic level users of Excel respectively.

Discriminators of User Skill Levels:

For discriminating between average and advanced level users of Excel, discriminant analysis with six independent variables viz. Ownership of PC (1 = Yes 2 = No), comfort level (1 Very Comfortable - 4 Very Uncomfortable) need of help (1 Rarely, 2 Sometimes, 3 Frequently), frequency of use (1 Occasionally, 2 Often, 3 Daily), familiarity with menus & icons (1 Not Familiar – 4 Very familiar) and whether non-faculty? (0 Student/Faculty 1 Non-faculty) was performed.

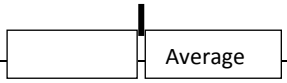
After excluding basic Users and adjusting for missing values, in all 227 respondents, 41 Advance users and 186 Average users could be included in this analysis. The analysis resulted in Wilks' Lambda value of 0.80 which was significant (P<0.0001). Other outcomes of the analysis are given in Table-2.

The outcomes show that advanced users in academic institutes are likely to be the ones with more comfort in using Excel, lower need of help, higher frequency of using Excel, higher familiarity with menus and icons of Excel, not owning PC and non-faculty members.

Table-2: Outcomes of Discriminant Analysis

Wilks' Lambda					
Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.	
1	.799	49.845	6	.000	

Standardized Canonical Discriminant Function Coefficients		**Canonical Discriminant Function Coefficients**		**Functions at Group Centroids**	
Comfort	.438	Comfort	.537	Average	.234
Need of Help	.802	Need of Help	1.203	Advanced	-1.064
How frequently do you use Excel	-.640	How frequently do you use Excel	-.860	Unstandardized canonical discriminant functions evaluated at group means	
Familiarity with Menu and Icons	-.035	Familiarity with Menu and Icons	-.041	Midpoint of Centroids **-0.415**	



You have your own PC/Laptop	-.135	You have your own PC/Laptop	-.280		
Non-Faculty	-.354	Non-Faculty	-.957		
		(Constant)	-.439		
		Unstandardized coefficients			

It is observed from the absolute value of standardized coefficients that the discriminators in the order of reducing strength are Need of help (.86), Frequency of using Excel (.64), Comfort (.44), being non-faculty (.35), Ownership of PC (.14) and Familiarity with menus and icons of Excel (.04). The resulting linear discriminant function based on unstandardized coefficients is given below.

F = -0.439+0.537 (Comfort) +1.2 (Need of Help) -0.86 (Frequency of Use) -0.041 (Familiarity with menus and icons of Excel) -0.28 (PC ownership) -.957 (being non-faculty).

The values of group centroids -1.064 for Advanced and +0.234 for Average users result into mid-point of -0.415, meaning that values to the left of -0.415 will result into classification of user as advanced whereas those above -0.415 will lead to classification of the user as average. It is also worth noting that ownership of PC does not improve the prospects of classification as advanced user. Also, familiarity with menus and icons does not have a strong discriminating impact between advanced and average users.

Conclusions:

Though Excel is a feature rich application, the proportion of users with the skills to use advanced level features, in academic setups is only 16%. A majority of users (86%) only possess the skills to use basic or average level features and functionalities of Excel. Discriminant analysis with seven independent variables exhibits that need of help while

working in Excel, frequency of using Excel Comfort level in the use of Excel and being non-faculty are major discriminating variables between advanced and average users.

References:

Kane, J. (n.d.), MS Office Training, http://simply-effective.com/Training/office.shtml [accessed July 14, 2010]