A Comparative Analysis of the Relative Role of Different Factors Affecting the Participation of Working Women in Workforce Across the Two Sub-Sectors i.e., Teaching and Banking of Jammu Division.

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**Abstract**: Clustering or cluster analysis means to group or segment or classify different objects in accordance with the rule that objects in one group look more similar, while between different groups, there is dissimilarity. There are different ways to do cluster analysis. One of the methods is k-means clustering, which has been used in the current research. It means that a pre-defined no. of clusters is decided. It is one of the popular methods used by scholars (Pham et al., 2005; Zhu et al., 2011). It can be easily used. Furthermore, the k-means algorithm needs numerical data as input to apply a distance metric to detect the clusters (Likas et al., 2003).The main idea of the paper is to analyze the comparative analysis of the relative role of different factors affecting the participation of working women in workforce across the two sub-sectors i.e., ‘teaching and banking’.

**Keywords:** Cluster analysis, current research, algorithm, teaching and banking.

**Cluster analysis**: **Introduction**

Clustering or cluster analysis means to group or segment or classify different objects in accordance with the rule that objects in one group look more similar, while between different groups, there is dissimilarity.

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The earlier applications of cluster analysis can be widely found in the literature on markets. Many scholars have used it to segment the customers into different groups. Wendell (1956) did it so as to understand the different needs of different customers. As customers with similar needs cluster together, this tool helps identify their needs, so that future marketing techniques can be adjusted accordingly. Kolter (2000) too classified customers into different buying groups. Perreault and McCarthy (2005) established through their research that customers belonging to one group share some common features. Bearden et al. (2003) too grouped customers into different groups and concluded that as different groups differ widely with regard to marketing behavior; their differences can be utilized for better marketing of products.

Apart from market segmentation, cluster analysis has now been extended to many other fields. Though this technique is still not popular in case of segmenting employees, few scholars (e.g. Boudreau and Ziskin, 2011) have advocated its use in this field to have a better understanding of employees. Waite (2007) stated in his research that if proper cluster analysis is done, we get clusters of employees with high intra-class similarity and low interclass similarity. Similar opinion was held by Rokach (2009). Thus employees with dissimilar demographic and psychographic (attitude based response) features can be further studied for wide socio-economic implications.

In the current paper, it has been used to classify the women employees of two professions, teachers and bankers.

Before starting with the analysis, few steps need to be followed. Though Kotler (2000) did research on markets, his approach to segmentation does have general applications. On the basis of it, there are three stages involved in this analysis: survey stage, analytical stage and planning stage. During the survey stage, the basic information about the respondents is collected. It includes the data collected during survey, both demographics related as well as the one required by the objectives of the study. Stage 2 involves factor analysis. Apart from Kotler (2000), few other scholars (Zhang and Cheung, 2020) too have suggested that dimensionality reduction is a pre-requisite for cluster analysis. In the final stage, the results of cluster analysis are used for analyzing their demographics or their different attitudes to the same items asked during the survey. The clusters are then named in accordance with the features of respondents clustered together.

**The main objective of the paper**- To analyze the comparative analysis of the relative role of different factors affecting the participation of working women in workforce across the two sub-sectors i.e., ‘teaching and banking’.

**Research Methodology**

**Selection area and Sample size**

The universe for conducting the present study is Jammu division of the Union Territory of J&K (earlier, a state).Jammu division consists of 10 districts. Out of these, three districts-Jammu, Udhampur, Kathua were chosen, since they have the maximum no. of female teachers (Primary government schools, Secondary schools, Higher secondary schools) and maximum no. of commercial and cooperative Banks. Two Blocks from each district, namely R.S Pura, Marh (Jammu) Chenani, Udhampur (Udhampur) and Hiranagar, Barnoti (Kathua), having maximum no. of schools and commercial and cooperative Banks were selected in order to cover the districts. Thus, two blocks from each district were selected to serve the purpose of the study. From these blocks, different no. of schools and banks have been chosen. In short, multistage sampling has been relied upon to collect the data.

Thus, a total sample of 435 females was selected, out of which 296 teachers and 139 bankers were selected as the sample, using the Slovin’s Formula.

**Data Collection**

It is based on both primary data as well as secondary data. Secondary data was collected from Journals, RBI annual reports and other websites as well as the NSSO, PLS, Annual Report, Economic Surveys, Census data etc. Primary data was collected through a self-designed questionnaire.

**Technique used**

 Cluster analysis- Cluster analysis is used to test the hypothesis.

**The hypothesis of the study is-**

 H0: There is no difference between the two sub- sectors with regard to relative role of different determinants affecting the participation of working women in workforce.

 HA: There is a difference between the two sub-sectors with regard to relative role of different determinants affecting the participation of working women in workforce.

**Results of cluster analysis**

Before reaching any conclusion with regard to whether the respondents are segmented on the basis of professions (sectors) or not, a general cluster analysis was run. K means cluster analysis has been run. Before reaching the final clusters, different no. of clusters were tried till the desired no. was obtained. One of the conditions of cluster analysis is that no. of cases should be comparable in all the clusters.

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| **Number of Cases in each Cluster**  |
| Cluster  | 1  | 270.000  |
| 2  | 165.000  |
| Valid  | 435.000  |
| Missing  | .000  |

As has been depicted above, two cluster have been formed with (62.06%) and (37.93%) of the cases

respectively.

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| **ANOVA**  |
|  | Cluster  | Error  | F  | Sig.  |  |
| Mean Square  | df  | Mean Square  | df  |
| I need to work to meet expenses of children's education.  | 39.693  | 1  | 1.402  | 433  | 28.311  | <.001  |
| Young children prevent women from joining the job.  | 6.973  | 1  | 1.411  | 433  | 4.942  | .027  |
| I am a role model for my kids.  | 4.785  | 1  | 1.300  | 433  | 3.681  | .056  |
| The availability of time saving machines at home helps me a lot.  | 14.383  | 1  | 1.011  | 433  | 14.224  | <.001  |
| Being in job has helped me to improve the quality of my life.  | 16.524  | 1  | .503  | 433  | 32.833  | <.001  |

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| --- | --- | --- | --- | --- | --- | --- |
| My family supported and encouraged me to participate in the workforce.  | 12.510  | 1  | .857  | 433  | 14.590  | <.001  |
| Working women are more empowered with regard to decision-making at household level.  | 54.622  | 1  | .534  | 433  | 102.320  | <.001  |
| Job has given me recognition at home.  | 34.308  | 1  | .407  | 433  | 84.274  | <.001  |
| A Working women is respected in the society.  | 46.117  | 1  | .703  | 433  | 65.585  | <.001  |
| A Working women has better management skills.  | 104.354  | 1  | 1.044  | 433  | 100.002  | <.001 |
| Low economic condition of the family compelled me to join the job.  | 271.980  | 1  | 1.383  | 433  | 196.706  | <.001  |
| Job helped me to cope with economic shocks at household level.  | 306.860  | 1  | 1.167  | 433  | 262.941  | <.001  |

The ANOVA table show that except five items ‘I am a role model for my kids’(.056),’ My society has played a great role in my participation in the workforce’ ( .069), ‘My mother’s educational qualification has played an important role in my participation in workforce’(.062), ‘My Father’s educational qualification has played an important role in my participation in workforce’(.109),’ My spouse educational qualification has played an important role in my participation in workforce’(.551) all other items are significantly different in the two clusters. The most important item is item no 13.(Job helped me to cope with economic shocks at household , F= 262.941), followed by Low economic condition of the family compelled me to join the job, (F= 196.706), Working women are more empowered with regard to decision-making at household level, F= 102.320). The two clusters differ significantly with regard to perception of working women on their participation in workforce. The women of cluster 1 have on an average a higher level of agreement to most of the items, as compared those of group two. This can be observed from the table drawn below showing mean score values for each item in the two clusters.

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| **Final Cluster Centers**  |
|  | Cluster  |  |
| 1  | 2  |  |
| I need to work to meet expenses of children's education.  | 4.11  | 3.48  |
| Young children prevent women from joining the job.  | 3.71  | 3.98  |
| I am a role model for my kids.  | 4.16  | 3.94  |
| The availability of time saving machines at home helps me a lot.  | 4.34  | 3.97  |
| Being in job has helped me to improve the quality of my life.  | 4.63  | 4.22  |
| My family supported and encouraged me to participate in the workforce.  | 4.49  | 4.14  |
| Working women are more empowered with regard to decision-making at household level.  | 4.63  | 3.90 |
| Job has given me recognition at home.  | 4.70  | 4.12 |
| A Working women is respected in the society.  | 4.57  | 3.90 |
| A Working woman has better management skills.  | 4.59  | 3.58 |
| Low economic condition of the family compelled me to join the job.  | 4.36  | 2.73 |
| Job helped me to cope with economic shocks at household level.  | 4.40  | 2.63 |
| Participation in the workforce makes you understand the value of money.  | 4.55  | 4.03 |
| Women's participation can contribute towards the economy.  | 4.53  | 4.22 |
| Religion to which I belong has helped me lot in my participation in the workforce.  | 4.01  | 3.74  |
| My society has played a great role in my participation in the workforce.  | 3.33  | 3.56 |
| Financial Independence motivated me to join the Job.  | 4.49  | 3.71  |
| Education has helped me to get the Job.  | 4.54  | 4.37  |
| My mother's educational qualification has played an important role in my participation in workforce.  | 4.22  | 4.04  |
| My Father's educational qualification has played and important role in my participation in workforce.  | 4.19  | 4.02  |
| My Spouse' educational qualification has played an important role in my participation in workforce.  | 4.48  | 4.44  |

However, to examine the profession wise clustering, Chi-square test was conducted between profession and cluster member-ship.

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| **Profession \* Cluster Number of Case Cross tabulation**  |
| Count  |
|  | Cluster Number of Case  |  | Total  |
| 1  |  | 2  |
| Profession  | Bank Employee  | 72  | 26.6%  | 67  | 40.60%  | 139  |
|  | Teacher  | 198  | 73.33%  | 98  | 59.39%  | 296  |
| Total  | 270  | 100.0%  | 165  | 100.0%  | 435  |
| **Chi-Square Tests**  |
|  | Value  | Df  | Asymptotic Significance (2-sided)  | Exact Sig. (2-sided)  | Exact Sig. (1-sided)  |
| Pearson Chi-Square  | 9.152a  | 1  | .002  |  |  |
| Continuity Correction  | 8.522  | 1  | .004  |  |  |
| Likelihood Ratio  | 9.041  | 1  | .003  |  |  |
| Fisher's Exact Test  |  |  |  | .003  | .002  |
| Linear-by-Linear Association  | 9.131  | 1  | .003  |  |  |
| N of Valid Cases  | 435  |  |  |  |  |
| a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 52.72.  |
| b. Computed only for a 2x2 table  |

As can be observed from the table taken, there is significant association between the profession and cluster membership of the respondent. Further, it is clear from the table ( Profession \* Cluster Number of Case Cross tabulation**)** that there are 26.6% Bank employees and 73.33% Teachers in cluster 1 and 40.60% Bank employees and 59.39% Teachers in cluster 2.The distribution of cluster 1 is more unequal as compared to cluster 2, with relatively more % of teachers. Thus, in cluster 1 it can be interpreted that women in teaching profession perceive these positive factors much more than those employed as bankers. This is probably due to teaching being a more privileged profession with regard to facilities regarding summer and winter breaks other leaves and a profession known to be feminine in nature. This has been a profession chosen by most of the women during the early days of their participation in workforce. Still, it continues to be the first preference among most of the women. As compared to it, bank employees have long working hours, no frequent vacations, no summer/ winter breaks and even non availability of leaves due to pressure of work at certain instances of the year, despite the fact that they too are entitled to many such leaves. (Some studies focused on teaching sector Sankar et al.2008; Ullah, 2016; Sumulyan, 2006; Mitrano, 1978; Ariogul & Can, 2010;Kundu & Basu, 2022) and others related to (Raghurama, 2013;Ranganathan, 2020; Das, 2016).Probably due to these reasons, the level of agreement of women employed as bankers is less than that of the teachers.

**Conclusion:** Cluster analysis means to group or classify different objects in accordance with the rule that objects in one group look more similar while between different groups, there is dissimilarity. Annova and Chi-square test results found that women employed as teachers tend to perceive the positive factors to greater extent as compared to those employed as bankers. This can be attributed to teaching being more women- friendly profession as compared to banking as in case of the latter many a time, irrespective of gender, they need to work late hours and also leaves are not sanctioned with that extent of flexibility as is granted to teachers though they are entitled to it.

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