



Perceptual Environment: A Study on Organizational Climate Using Cluster Analysis

Ramkrishna Mohanta¹, Dr. Subir Sen², Anasuya Adhikari³, Indranil Pal⁴

¹Assistant Professor, Dishari College of Education, Burdwan, West Bengal, India

²Associate Professor, Department of Education, S.K.B. University, West Bengal, India

³Research Scholar, Department of Education, S.K.B. University, West Bengal, India

⁴M.Ed. Student, Rajendra Academy for Teachers' Education, Durgapur, West Bengal, India

ABSTRACT

The research work is under taken to get through the opinion of the teachers on Institutional Climate. Doing this, 400 Secondary School Teachers are taken as sample through Stratified Random Sampling, which later contribute to forming of four clusters. The findings of the research paper says that male teachers who are teaching in rural area have similar response about Institutional Climate. It is also found that female teachers who are teaching at rural area have similar response about institutional climate. Thereafter, views about institutional climate are gender dependent for all the institutions located in rural area. Similar results are found for institutions located in urban area. Here, male and female teachers form two different clusters each according to the response recorded for institutional climate. The findings about institutional climate are gender dependent. Considering the above two facts it may be concluded that response about institutional climate is both gender and location of the institution depended.

Keywords: Organizational Climate, Cluster Analysis, Clusters, Gender, Location

Introduction

Organizational climate can be defined as employees' shared perceptions of and meaning connected to the policies, practices, and procedures they encounter, as well as the behaviour they observe being rewarded and supported and expected (Ostroff et al. 2003, Schneider & Reichers 1983, Schneider et al. 2011; Mohanta & Saha, 2022). Around 1970, significant quantitative research on organizational climate began (Schneider et al. 2011). Early organizational climate research was marked by little agreement on its definition, almost no abstract orientation to the initial measures designed to assess it, and, paradoxically, almost entire ignoring of the term 'organizational.' As a result, early climate research accompanied a more traditional individual differences methodology typical of industrial psychology at the time. Organizational climate faded to the background as the field of organizational culture started to explode in the early 1980s, as it continued to struggle with the levels-of-analysis issue. To some extent, the 1980s surge in interest in organizational culture could be attributed to the fact that it appeared to capture the richness of the organizational environment in ways that climate research did not. It was also found that leadership style posed a great amount of effect on the organizational climate (Mohanta & Saha, 2021). It was observed by Pettigrew that, "[There is] the impression that climate studies have been boxed in by the appearance in the nest of this rather over nourished, noisy, and enigmatic cuckoo called organizational culture. This pressure from an interloper may, however, be energizing climate researchers to rethink the role of climate studies." Pettigrew's depiction of climate research was foresighted, as renewed interest in the topic resulted in significant advances in conceptual thinking and research methodologies (Kuenzi & Schminke, 2009).

Hierarchical and k-means clustering do not scale efficiently when N is very large, two step cluster analysis is a method of the statistical software package SPSS used for large data bases (Garson, 2009). This analysis is applicable when there are categorical variables with three or more categories and can be used for both categorical and continuous variables. Two-step cluster analysis is a method that only requires one pass through the data. The procedure is divided into two major steps: the first involves the initial clustering of observations into small subclusters, which are then treated as separate observations. The distance criteria are used to determine whether an observation should be added to an existing cluster or whether a new cluster should be formed. The hierarchical cluster method is used to group these new observations. The algorithm of the two-step cluster analysis can determine the number of clusters, or the number of clusters can be designated beforehand. The second step is groping, in which the subclusters serve as the foundation for the analysis and are grouped into the required number of clusters. Because the number of subclusters is significantly less than the number of observations, traditional grouping methods are simple to apply. If there are more subclusters, the method becomes more precise (Zhang et al. 1996).

Literature Review

Benassi et al. (2020) in their paper *Using Two-Step Cluster Analysis and Latent Class Cluster Analysis to Classify the Cognitive Heterogeneity of Cross-Diagnostic Psychiatric Inpatients* is of the opinion that the diversity of cognitive profiles among psychiatric patients carries significant clinical information. However, how to best characterize such cognitive heterogeneity remains a point of contention. Despite their suitability for clinical data, cluster analysis techniques such as the Two-Step and the Latent Class have received little to no attention in the literature. The current study sought to assess the validity of cluster solutions derived from Two-Step and Latent Class cluster analysis on the cognitive profile of 387 psychiatric inpatients from various diagnoses. Two-step and Latent Class cluster analysis yielded comparable and dependable results. According to the overall findings, all psychiatric inpatients can be classified into Low and High Cognitive Profiles, with schizophrenia and bipolar disorder patients having more cognitive heterogeneity than depressive disorder and personality disorder patients.

Nelson (2014) in his research paper *Student motivational profiles in an introductory MIS course: An exploratory cluster analysis* concentrates on the profiles of students in an introductory MIS course based on a variety of variables related to academic major choice. The information was gathered through a survey distributed to 12 sections of the course. Gender as a categorical variable was used in a two-step cluster analysis, as were students' perceptions of task value (interest, importance, and utility) in the domain of information systems, self-efficacy regarding computer and applications, and attitudes towards computer use. There were five clusters discovered. Clusters were formed along gender lines, with one all-male cluster demonstrating positive motivation on all dimensions, one all-female cluster demonstrating positive motivation except for computer self-efficacy, one all-male cluster demonstrating negative motivation except for computer efficacy, one all-female cluster demonstrating negative motivation except for applications efficacy, and one IT-averse cluster demonstrating very low scores on all dimensions of motivation. The two clusters of positive motivation included all of the MIS majors in the sample. A subsequent profile analysis was performed to investigate the variation of other traits among various student sections that were not included in the cluster analysis, such as the number of IS courses taken in high school, attitude towards change, and the influence of salient referents on academic major choice.

Saha et al. (2021) in their research paper *Analysis of Attitude Towards Yoga Among College Students Using Clustering Techniques* discusses Yoga is an ancient practice that combines physical, mental, and spiritual aspects. The current study looks at the attitudes of undergraduate college students in the Purulia district of West Bengal, India, towards yoga practice. A scale of attitude towards yoga was used to collect responses from 570 UG students. This study takes into account four independent variables such as Gender, College Location, Student Residence, and Streams, as well as one dependent variable score of the questionnaire. Data Clustering is the task of grouping a collection of objects so that objects in the same group are more similar to those in other groups. To carry out the current study, a two-step cluster analysis is performed, and five clusters are formed.

Gorain et al. (2022) in their research paper *A Study on Relationship and Cluster Analysis among Internet Dependency, Social Isolation and Personality* discusses how, in the twenty-first century, there is a new slogan that everyone is shouting in unison: "data is the new oil." Because we cannot imagine surviving a single day without energy such as crude oil, life in this decade has become overly reliant on data consumption. Naturally, internet addiction and growing social isolation have become an unspoken truth that must be addressed. The current study compares various psychological aspects of university level students. Correlations between various variables such as Internet Dependency, Social Isolation, and five different personality factors are investigated. This study takes into account two groups: science and arts. Although there are minimal and mediocre relationships between these variables, three clusters are formed. Relationships between the variables Internet Dependency, Social Isolation, and five different personality factors, namely Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness for arts, science, and total learners of arts and science, are studied with the aforementioned objectives in mind. Each pair of variables has either a very low or a mediocre relationship. Surprisingly, three clusters form. Male and female arts learners formed two distinct clusters, whereas science learners formed a separate cluster.

Rationale of the Study

Gender and Location of the institution contributes important inputs on the views of teachers regarding Institutional Climate. Therefore, teachers (Male and Female) working in Rural and Urban schools may have different views regarding Institutional Climate. Clustering Analysis is a helpful technique to study the situation about the accumulation of inputs given by teachers with respect to their gender and location.

Objectives of the Study

The objectives of the research work taken up are:

1. To find out pair wise relationship among different dimensions.
2. To find out the cluster using independent variables – gender and location, and dependent variables- Autonomy, Manager, Team, Reward, Perception and Support as dimensions of Institutional Climate Inventory.

Method: Descriptive Survey Method is used.

Sample: 400 teachers from West Bengal Board of Secondary Education (WBBSE) were taken as sample.

Sampling Procedure: Stratified Random Sampling is used.

Statistical Techniques Used:

- Calculating Coefficient of Correlation by Product Moment Method.
- Two step clustering technique is used to classify the total sample into different clusters.

Results and Discussions

The Results and Discussions will follow few abbreviations, which are enumerated here. Autonomy = Employees Perception of Autonomy

Manager = Trust on Manager

Team = Team Work

Reward = Reward and Recognition

Perception = Employees Perception towards Fairness

Support = Employees Perception Towards Organizational Support.

Correlations		Autonomy	Manager	Team	Reward	Perception	Support
Autonomy	Pearson Correlation	1	.189**	.235**	.542**	-.130**	.314**
	Sig. (2-tailed)		.000	.000	.000	.009	.000
	N	400	400	400	400	400	400
Manager	Pearson Correlation	.189**	1	.116*	.089	.131**	.145**
	Sig. (2-tailed)	.000		.021	.076	.008	.004
	N	400	400	400	400	400	400
Team	Pearson Correlation	.235**	.116*	1	.351**	.531**	.354**
	Sig. (2-tailed)	.000	.021		.000	.000	.000
	N	400	400	400	400	400	400
Reward	Pearson Correlation	.542**	.089	.351**	1	.068	.245**
	Sig. (2-tailed)	.000	.076	.000		.176	.000
	N	400	400	400	400	400	400
Perception	Pearson Correlation	-.130**	.131**	.531**	.068	1	.160**
	Sig. (2-tailed)	.009	.008	.000	.176		.001
	N	400	400	400	400	400	400
Support	Pearson Correlation	.314**	.145**	.354**	.245**	.160**	1
	Sig. (2-tailed)	.000	.004	.000	.000	.001	
	N	400	400	400	400	400	400
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

Table 1: Correlation Coefficients among Different Dimensions

Table 1 represents the relationship among different dimensions of Organizational Climate in terms of coefficients of correlation among different dimensions. It is found that Autonomy is significantly correlated with other dimensions (Autonomy, Manager, Team, Reward, Perception and Support) at .01 level of significance. The dimension Manager is significantly correlated with Autonomy, Perception and Support (.01 level of significance). It is also significantly correlated with Team (.05 level of significance), but not significantly correlated with Reward. It is found that Team is significantly correlated with other dimensions (Autonomy, Manager, Team, Reward, Perception and Support) at .01 level of significance. The dimension Reward is significantly correlated with Autonomy, Team and Support (.01 level of significance), but not significantly correlated with Manager and Perception. The dimension Perception is significantly correlated with Autonomy, Perception and Support (.01 level of significance), but not significantly correlated with Reward. The dimension Support is significantly correlated with Autonomy, Perception, Team and Reward (.01 level of significance).

Centroids													
		Autonomy		Manager		Team		Reward		Perception		Support	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Cluster	1	34.08	3.418	29.96	3.517	32.86	2.850	41.18	3.773	39.80	4.841	36.67	3.882
	2	33.92	3.030	30.60	3.804	33.78	2.837	41.34	3.570	41.74	3.748	37.44	2.795
	3	32.78	3.747	29.57	3.180	32.55	3.080	41.31	3.827	39.88	4.256	36.31	3.131
	4	33.37	3.489	28.88	3.207	33.93	2.146	41.19	3.009	41.59	2.414	35.82	1.476
	Combined	33.53	3.476	29.82	3.475	33.17	2.863	41.26	3.610	40.60	4.156	36.60	3.125

Table 2: Centroids of Different Clusters

Table 2 represents the centroids for four clusters for different dimensions (Autonomy, Manager, Team, Reward, Perception and Support) of Institutional Climate.

Gender					
		male		female	
		Frequency	Percent	Frequency	Percent
Cluster	1	0	0.0%	114	62.6%
	2	97	44.5%	0	0.0%
	3	121	55.5%	0	0.0%
	4	0	0.0%	68	37.4%
	Combined	218	100.0%	182	100.0%

Table 3: Cluster Wise Distribution of Male and Female Teachers

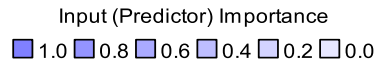
Table 3 represent the frequencies and percentages of male and female teachers for different clusters. It is interesting to observe that Male teachers accumulated in cluster 2 and 3 where Female teachers accumulated in cluster 1 and 4.

Location					
		Urban		Rural	
		Frequency	Percent	Frequency	Percent
Cluster	1	114	54.0%	0	0.0%
	2	97	46.0%	0	0.0%
	3	0	0.0%	121	64.0%
	4	0	0.0%	68	36.0%
	Combined	211	100.0%	189	100.0%

Table 4: Cluster Wise Distribution of Rural and Urban Institutions

Table 4 represent the frequencies and percentages of teachers belonging to rural and urban institutions for different clusters. It is interesting to observe that urban institutions accumulated in cluster 1 and 2 where rural institutions accumulated in cluster 3 and 4.

Clusters

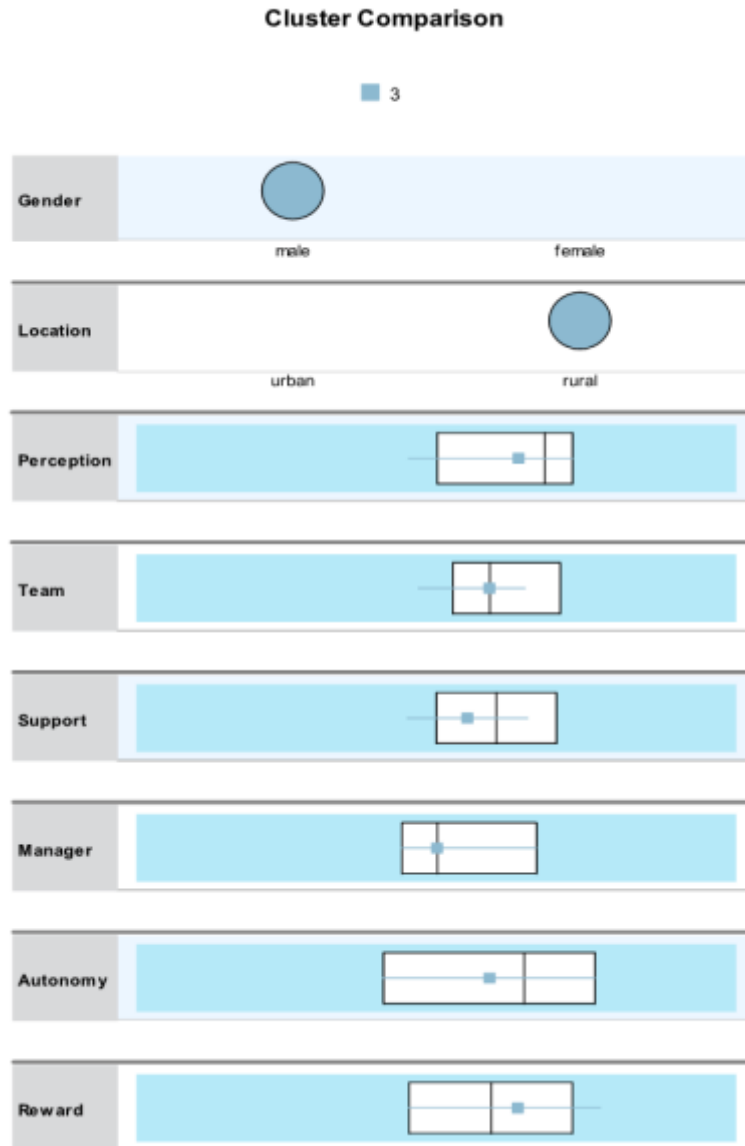


Cluster	3	1	2	4
Label				
Description				
Size	30.2% (121)	28.5% (114)	24.2% (97)	17.0% (68)
Inputs	Gender male (100.0%)	Gender female (100.0%)	Gender male (100.0%)	Gender female (100.0%)
	Location rural (100.0%)	Location urban (100.0%)	Location urban (100.0%)	Location rural (100.0%)
	Perception 39.88	Perception 39.80	Perception 41.74	Perception 41.59
	Team 32.55	Team 32.86	Team 33.78	Team 33.93
	Support 36.31	Support 36.67	Support 37.44	Support 35.82
	Manager 29.57	Manager 29.96	Manager 30.60	Manager 28.88
	Autonomy 32.78	Autonomy 34.08	Autonomy 33.92	Autonomy 33.37
	Reward 41.31	Reward 41.18	Reward 41.34	Reward 41.19

Table 5: Representation of the Clusters

Table 5 represents four clusters. According to size cluster no. 3 occupies 30.2% data (N=121). It consists of male teachers (100%) belonging to institutions located in the rural area (100%) .

Figure 1: Representation of the Cluster Comparison (Cluster 3)



Cluster 3 is the largest cluster consisting of 30.2% of total members of the teachers. It is constructed by 100% male teachers (N=121) who are teaching in schools located in rural area. Mean scores for Perception, Team, Support, Manager, Autonomy and Reward are 39.88, 32.55, 36.31, 29.57, 32.78 and 41.31 respectively. Pictorial representation for Cluster 3 is given in Figure 1.

Cluster Comparison

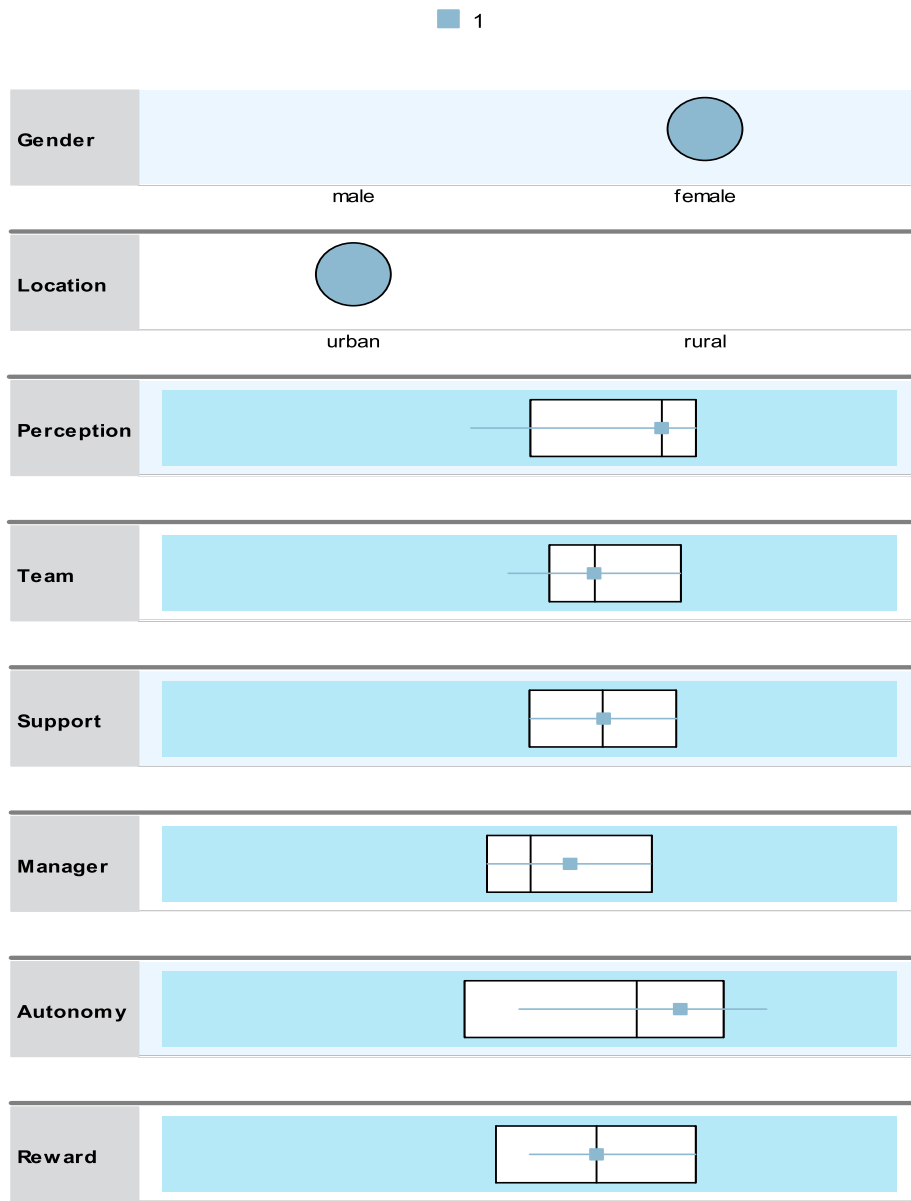


Figure 2: Representation of the Cluster Comparison (Cluster 1)

Cluster 1 is the largest cluster consisting of 28.5% of total members of the teachers. It is constructed by 100% male teachers (N=114) who are teaching in schools located in rural area. Mean scores for Perception, Team, Support, Manager, Autonomy and Reward are 39.80, 32.86, 36.67, 29.96, 34.08 and 41.18 respectively. Pictorial representation for Cluster 1 is given in Figure 2.

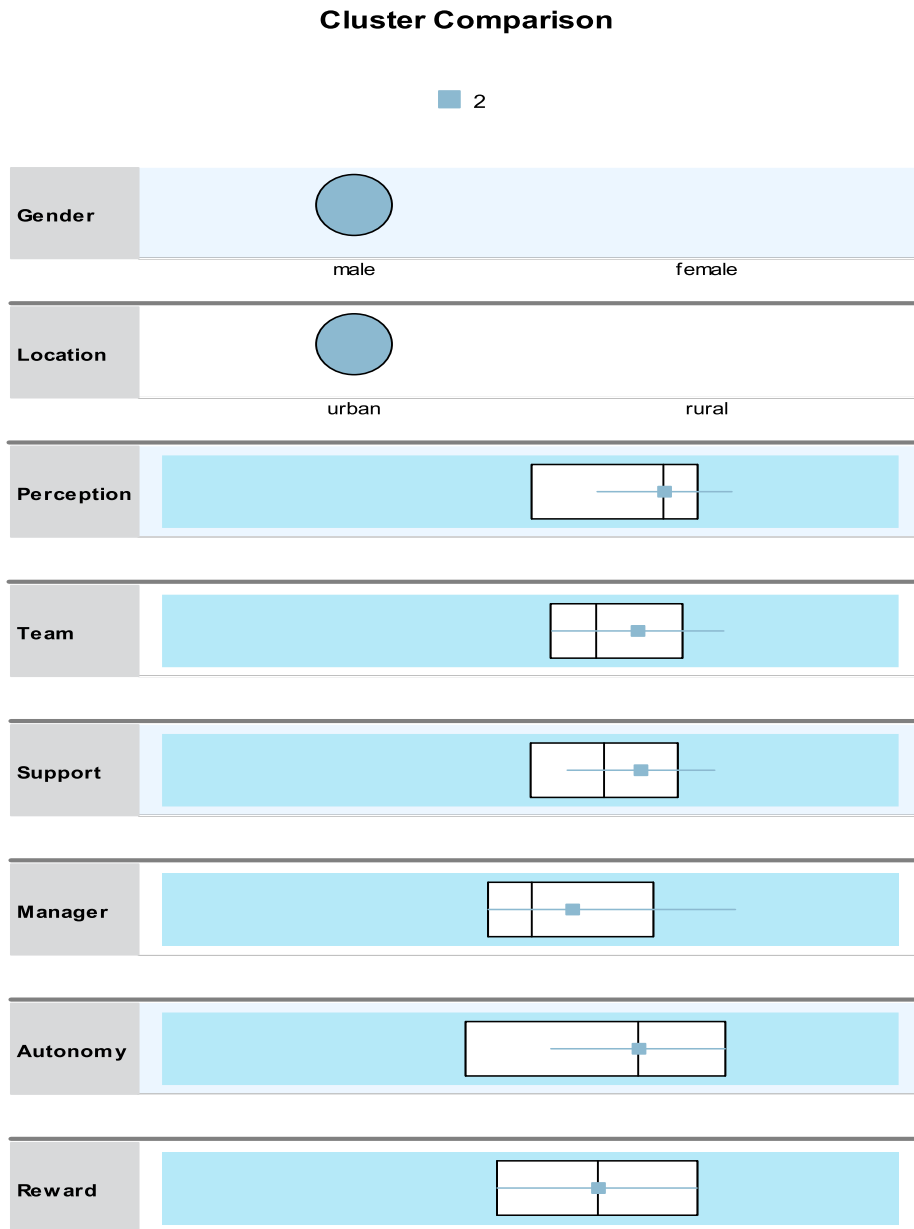


Figure 3:

Representation of the Cluster Comparison (Cluster 2)

Cluster 2 is the largest cluster consisting of 24.2% of total members of the teachers. It is constructed by 100% male teachers (N=97) who are teaching in schools located in rural area. Mean scores for Perception, Team, Support, Manager, Autonomy and Reward are 41.74, 33.78, 37.44, 30.60, 33.92 and 41.34 respectively. Pictorial representation

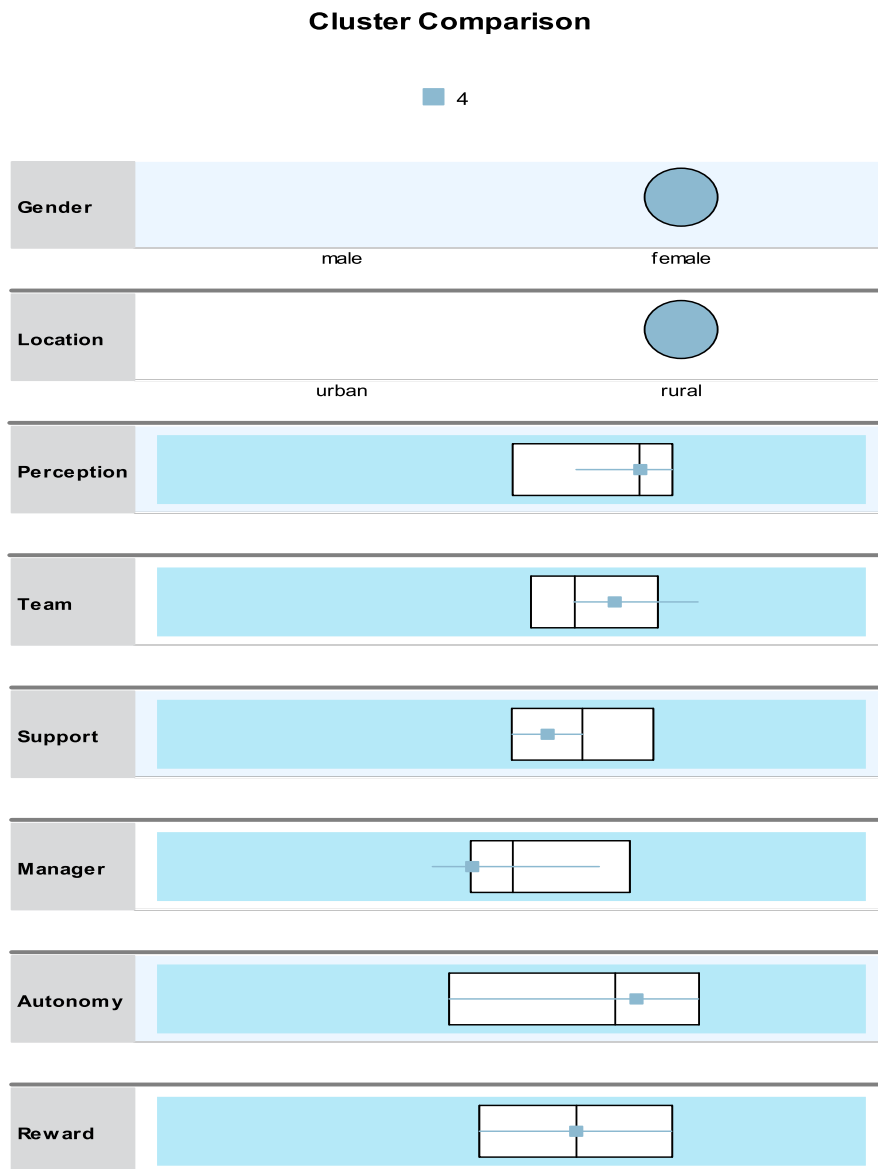


Figure 4: Representation of the Cluster Comparison (Cluster 4)

Cluster 4 is the largest cluster consisting of 17.0% of total members of the teachers. It is constructed by 100% male teachers (N=68) who are teaching in schools located in rural area. Mean scores for Perception, Team, Support, Manager, Autonomy and Reward are 41.59, 33.93, 35.82, 28.88, 33.37 and 41.19 respectively. Pictorial representation for Cluster 4 is given in Figure 4.

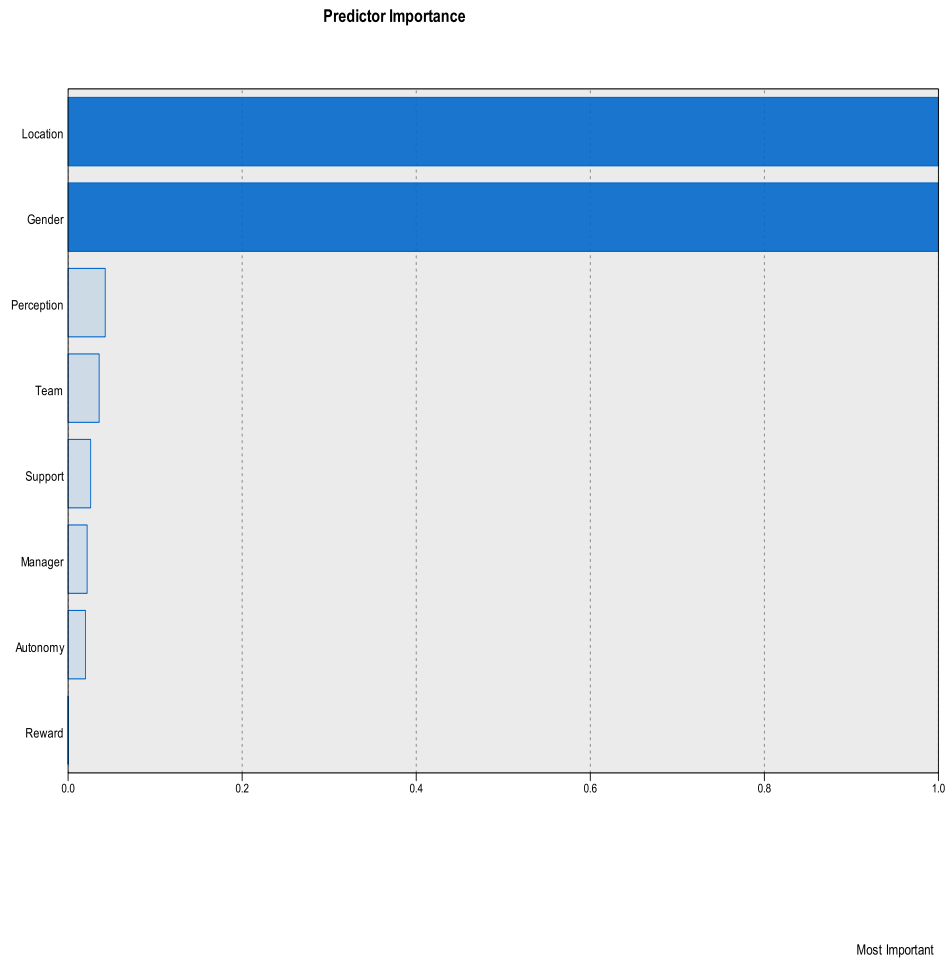


Figure 5: Representation of the Predictor Importance

Conclusion

Organizational climate emerges from a social information process that concerns the meaning employees attach to the policies, practises, and procedures they encounter, as well as the behaviours they observe being rewarded, supported, and expected. Organizational climate research with a focus on a strategically relevant outcome and/or process outperforms generic climate research with no specific focus in understanding specific relevant outcomes. The aggregation of opinions of climate into higher levels of analysis is achieved through both the survey items designed to capture climate and the statistical procedures used to justify such aggregation. Climate strength, defined as the degree to which people in a unit agree on their perceptions, has been found to frequently moderate the relationship between climate aggregate means and desired results.

Four clusters are found as per the teachers' opinions on Institutional Climate. Male teachers in rural areas have similar reactions to the institutional climate. It has also been discovered that female teachers who teach in rural areas have similar responses to the institutional climate. For all institutions located in rural areas, feelings about institutional climate differ by gender. Similar findings are found for institutions in urban areas. Based on the response recorded for institutional climate, male and female teachers form two distinct clusters. Gender influences feelings about institutional climate as well. Given the preceding two facts, it is reasonable to conclude that the response to the Institutional Climate Inventory is gender and location dependent.

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