Examination of the Effect of Employees' Perception of Reward and Punishment on Their Future Prospect

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Abstract

Organisational justice is the of employees' perception of fairness regarding the implementations in their organisation. In this context, employees having a perception that rewards and punishments given to them are accurate and fair bears significance in terms of both their job satisfaction and expectations from future. This perception leads to a feeling that their workplace is a safe environment and also increases their work capacity and organisational commitment. Nonlinear canonical correlation analysis is a method that targets to model and explain the correlation power between two or more variable clusters, and that can be effectively applied on different fields. The aim of this study is to investigate the relationship between the reward and punishment perceptions of employees and their work capacity as well as the relationship between their future expectations and perceptions of reward and punishment. The study used questionnaire data from 208 individuals and findings were obtained through Nonlinear Canonical Correlation Analysis. Based on the findings obtained from the analysis, a relation exists between work capacity and reward and punishment at a rate of 72.4%. It was observed in the study that the work capacity of individuals that experienced frequent concerns over possible punishments, were sometimes afraid that they might be charged with ungrounded allegations, and that they needed to work quite a lot in their jobs were at medium-high level. The perception of employees that the rewards and punishments are fair will increase their hopes for the future along with the feeling that employees are an asset for the organisation and foster the thought of having fair gains in future. As a result of the analysis, it was observed that a relation at a rate of 69.2% exists between future expectations and reward and punishment perceptions. Furthermore, it was also established that individuals who aim to advance in their career in their workplace, have concerns over this, and believe that the salary they earn currently may not be possible to earn in another workplace within 5-7 years have high hopes for the future. This shows that the employees believe working in their current workplace will be rewarding and they have faith in that their expectations from the future will eventually come true.

Keywords: Organisational justice, Nonlinear canonical correlation analysis, perception of reward and punishment, work capacity, future prospects

1. Introduction

Job security is one of the most important issues to be emphasized for the maintenance of working life in a certain order and stability. It is considered that the meaning of "job security" will become clearer and be better understood after describing "job insecurity".

Job insecurity has been defined in various ways. Definitions of job insecurity such as the powerlessness to maintain the desired continuity in a threatened job situation" (Greenhalg and Rosenblatt, 1984); the difference between the expected level of job security and the present level of job security (Jacobson and Hartley, 1991); feeling of uncertainty about the continuation of one's job (Hartley, 1991; De Witte, 1999); level of anxiety (Davy et al., 1997) and a perception of potential threat to continuity in his or her current job (Heaney et al., 1994) attract attention to the different aspects of the matter. Despite Greenhalg and Rosenblatt's definition of job insecurity as the individual's powerlessness to maintain the desired continuity, Hartley (1991) and De Witte (1999) focused on extra-personal factors and especially on practices posing a threat for the job, rather than on the role of the individual for the continuity of the job.

Klandermans and Vuuren (1999) stated that job insecurity is not only an economic and social phenomenon but also a risk that can be felt at different levels depending on the organizations and individuals. Fear of losing job is a psychological phenomenon that is perceivable in many fields of society.

2. Method

Non-parametric canonical correlation

Canonical Correlation Analysis (CCA) corresponds to the multi-variate multiple regression analysis and may be defined in general under the multiple regression analysis. In this analysis, where basically more than one independent variable explains more than one dependent variable was firstly set forth by Hotelling (1935). CCA is a multivariate analysis technique trying to acquire the maximum correlations among the linear functions

within the cluster of random variables (Tatlıdil, 2002 p.217; Shafto, et. al., 1997).

On the conditions where the two sets of variables can be separated as independent or dependent, the analysis aims to determine whether the set of independent variables affect the set of dependent variables. In canonical correlation analysis, it is not compulsory to subject $X^{(1)}$ and $X^{(2)}$ variable sets to a distinction as dependent and independent variable sets (Albayrak, 2010). In this case, two variable sets are called as Set1 and Set2 and there, the canonical correlation aims to present the relation between the Set1 and Set2 (Pedhazur, 1997; Stevens, 2009).

After finding out the linear components of the variable sets, correlation between the two variable sets is determined by means of the canonical variables calculated through the components. Data matrix of X^1 set includes p (in number) variables while the matrix of X^2 includes q (in number) variables. Number of variables in the sets should be p>1, q>1 and p=q condition is not a must (Oktay and Çınar, 2002).

For both variable sets, new variables are obtained through canonical correlation analysis, from the linear combinations of variables included in sets. These new variables obtained are called as canonical variables and the correlation between them is called as canonical correlations (Keskin, Kor and Başpınar, 2005; Van der Burg, et. Al.,1984).

To benefit from linear canonical correlation analysis, below given assumptions should be ensured (Özdamar, 2004:421-422):
- Variables should comply with the multivariate normal distribution.
- For the reliability of the analysis results, number of data in the sets should be high enough.
- There should not be any outliers in the data set.
- Data matrix should not include variables more than enough and which are not related with the problem itself.
- There should not be complete correlation among the variables.

Moreover, in linear canonical correlation analysis, variables should be interval and ratio scaled (Golob, 1985:4). If these assumptions cannot be ensured, non-linear canonical correlation analysis is used. Solution technique of non-linear CCA was set forth by Gifi in 1981; and by Van der Burg de Leew and Veerdegaal in 1984. In this analysis, variables may be at different measurement levels. In addition to this, analysis does not introduce any restriction in terms of the normal distribution of the variables or linearity of the relations. In the analysis, there is no restriction except that the variables in clusters should not have any outliers (Süt, 2001:15).

As well as quantitative variables, being able to include the categorical variables to the analysis and being able to use them in the two-dimension graphic presentations are among the advantages of the analysis (Bayram and Ertaş, 2001; Kolukısaoğlu, 2013).

Aim of the non-linear canonical correlation analysis is to analyse the relation of variables with two or more variable clusters, rather than addressing the relations among the variables themselves; and to explain the level of similarity among the clusters of categorical variables (Meulman and Heiser, 2005:11,48).

In some basic resources, it is seen that in Non-Linear Canonic Correlation Analysis, the abbreviation of OVERALS is used for the variable sets which are more than two, and CANALS for the two variable sets (Giray, 2011:97).

Non-parametric canonical correlation analysis aims to model and explain the correlation power among two or more variable clusters (Theodosiou et al., 2008:205).

Non-linear canonical correlation analysis has been designed to analyse the nominal (categorical) and ordinal scale variables together (Golob, 1985:5).

For non-linear canonical correlation analysis, loss function $X'X = nI_p$ and $u'X = 0$ together with normalization restrictions are given as below (Michailidis and Leeuw, 1995).

$$s(X,Y) = K^{-1} \sum_K SSQ \left(X - \sum_{i=j(k)} G_j Y_j \right)$$

where X represents object scores matrix with nxp dimension; Y_j, categorical quantifications with $k_j$xp dimension; G_j, indicator matrix of j variable with nxk_j dimension; K , number of clusters; SSQ, total of squares. Moreover, J is divided into k sub-clusters as J(1),...,J(k),....j(K) J cluster index of variables. Related function is minimized by using Alternating Least Squares (ALS) algorithm, and optimal solution values are obtained (Bayram and Ertaş, 2001).

3. Analysis and Findings
Job Anxiety Scale
In his study Srivastava (1977) tried to determine the factors leading to the job anxiety by addressing the atmosphere causing anxiety, i.e. the current job. Srivastava described 7 factors leading to the job anxiety which are listed as *"Security"* within the scope of job and personnel security; *"Recognition"* within the framework of the fair evaluation, participation, approval, praise and freedom to manifest being qualified; *"Human Relations at*

work" within the framework of interpersonal relationships, coordination and communication*; "Reward and punishment methods"* within the framework of the operations of the supervisor, blaming, unjust criticism and financial gains; *"Self-esteem"* within the framework of self- confidence, self-respect and social status at work; *"Future prospects"* within the framework of advancements and increasing the efficiency; *and "Capacity to work"* within the framework of abilities, responsibility and self-confidence. For this study, Srivastava (1977) developed the "Job Anxiety Questionnaire" concerning the factors identified by himself to render the job anxiety on the employee measurable and consisting of a total 80 yes/no questions, 10 of which measures the anxiety of "Security"; 10, *"Recognition"*; 15, *Human Relations at work";* 15, *"Reward and punishment methods"*; 10, *"Self-esteem"*; 10, *"Future prospects"* and 10, *"Capacity to work"*(Srivastava, 1977).

In our study, the questionnaire developed by Srivastava is employed and analysis is composed of the two main parts which are given below;

a) Examination of the relation between the perception of reward/punishment and future prospects

b) Examination of the relation between the perception of reward/punishment and work capacity

The aim of this study is to investigate the relation between the reward/punishment perception of employees and their work capacity as well as the relation between their future expectations and reward/punishment perceptions.

a) Examination of the relation between the reward/punishment and future prospects

In this study, relation between the reward/punishment and future prospects was examined through canonical correlation.

Values in Table 1 may be regarded as an indication that the data fits the analysis. Loss and fitness values indicate the significance of the analysis.

Table1 Fitness values of the Analysis

		Dimension		Total
		1	2	
Loss function	Set 1	.154	.252	.406
	Set 2	.154	.252	.406
	Average	.154	.252	.406
Eigenvalue		.846	.748	
Fitness				1.594

Eigenvalue for the first dimension has been determined as (1 – 0.154 = 0.846). For the second dimension, the eigenvalue has been determined as (1 – 0.252 = 0.748). Total fitness value has been obtained by the addition of eigenvalues. Accordingly, total fitness has turned out to be   (0.846+ 0.748 = 1.594. Average loss value is the difference between the maximum fitness and the realized fitness and has been found out as 2 – 1.594 = 0.406.

In the case of two sets, canonical correlation coefficient per dimension has been $P_d = 2E_d - 1$ In the first dimension, canonical correlation coefficient has been identified as $2 * 0.846 - 1 = 0.692$ In the second dimension, correlation coefficient has been found out as $2 * 0.748 - 1 = 0.496$. Accordingly, as per the first dimension of the solution, the relation between the reward/punishment and future prospects has been 69.2%.

Table 2 displays the weight values of the variables; and these values are the coefficients in obtaining canonical variables, used variables. Weight values of the variables indicate the contributions of the solution to the fitness value. Accordingly, s60 (employees' not being able to talk about their rights in the concerned workplace) variable in the 1st set and s48 (low probability of increase in the wages despite the increasing expenditures) variable in the 2nd set have the highest contribution to the fitness value of the 1st dimension.

Table 2 Weight Values and Component Loadings

Set		Weight Values		Component Loadings	
		Dimension		Dimension	
		1	2	1	2
1	s11	-.049	-.372	.098	-.396
	s18	-.034	.032	-.070	.030
	s20	-.015	-.388	.241	-.481
	s25	.060	-.429	.273	-.529
	s32	.006	-.177	.082	-.200
	s39	.086	.163	.433	-.033
	s46	.218	.049	.554	-.004
	s53	-.011	-.066	.119	-.047
	s57	.106	-.253	.402	-.274
	s60	.489	.376	.754	.200
	s63	-.033	.024	.337	-.031
	s65	.161	.017	.358	-.083
	s67	.217	-.086	.475	-.111
	s71	.183	.070	.481	-.059
	s76	.075	-.036	.395	-.163
2	s4	.172	-.543	.191	-.508
	s13	.111	.203	.407	.189
	s16	.042	-.102	.171	.070
	s27	.097	-.421	.384	-.438
	s34	.242	-.204	.530	-.150
	s41	.139	-.187	.456	-.011
	s48	.396	.453	.682	.331
	s55	.202	-.019	.585	-.066
	s61	.240	.101	.568	.048
	s66	-.050	-.238	-.165	-.281

Values of component loadings are presented in Table 2; and these values are the correlation coefficients between the digitized variable and the object scores. Absolute highness of the loading values of variables point that they are beneficial and important in terms of solution. Accordingly, the variables with highest loading values are s60 (employees' not being able to talk about their rights in the concerned workplace), s48 (low probability of increase in the wages despite the increasing expenditures), s55 (Low chance of promotion due to frequent screenings), s61 (not obtaining an increase in the wage even after a certain period of working); s46 (occasional thoughts of being charged with ungrounded allegations), s34 (low chance of deserved promotion in this job) and s25 (frequent concerns about possible punishments).
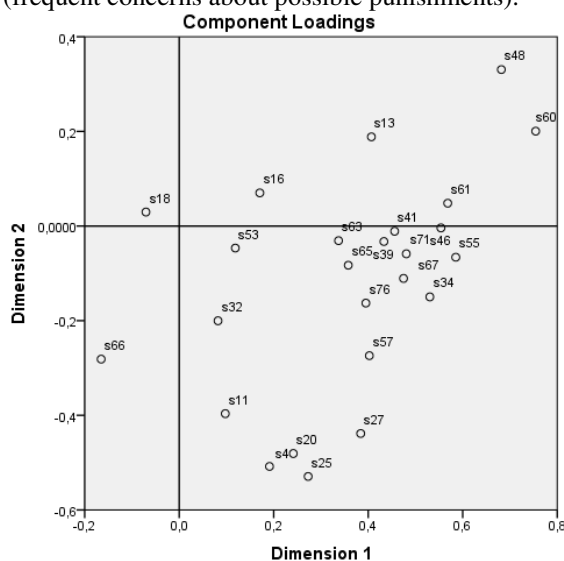

Figure 1 Graphical representation of component loadings

As seen in Figure 1, s60 (employees' not being able to talk about their rights in the concerned workplace), and s48 (low level of increase in the wages despite the increasing expenditures) variables are the most important ones.

As single and multiple fitness values in Table 3 have been found out to be very close to each other for each variable, multiple digitalization has not been deemed necessary.

Table 3 Single and Multiple Fitness Values

Set		Multiple Fitness			Single Fitness		
		Dimension		Total	Dimension		Total
		1	2		1	2	
1	s11[a]	.002	.138	.141	.002	.138	.141
	s18[a]	.001	.001	.002	.001	.001	.002
	s20[a]	.000	.150	.150	.000	.150	.150
	s25[a]	.004	.184	.188	.004	.184	.188
	s32[a]	.000	.031	.031	.000	.031	.031
	s39[a]	.007	.027	.034	.007	.027	.034
	s46[a]	.048	.002	.050	.048	.002	.050
	s53[a]	.000	.004	.005	.000	.004	.005
	s57[a]	.011	.064	.075	.011	.064	.075
	s60[a]	.239	.141	.381	.239	.141	.381
	s63[a]	.001	.001	.002	.001	.001	.002
	s65[a]	.026	.000	.026	.026	.000	.026
	s67[a]	.047	.007	.055	.047	.007	.055
	s71[a]	.034	.005	.039	.034	.005	.039
	s76[a]	.006	.001	.007	.006	.001	.007
2	s4[a]	.029	.295	.324	.029	.295	.324
	s13[a]	.012	.041	.053	.012	.041	.053
	s16[a]	.002	.010	.012	.002	.010	.012
	s27[a]	.009	.177	.187	.009	.177	.187
	s34[a]	.058	.042	.100	.058	.042	.100
	s41[a]	.019	.035	.054	.019	.035	.054
	s48[a]	.156	.206	.362	.156	.206	.362
	s55[a]	.041	.000	.041	.041	.000	.041
	s61[a]	.058	.010	.068	.058	.010	.068
	s66[a]	.003	.057	.059	.003	.057	.059

According to Table 3, variables with the highest fitness value are s60 (employees' not being able to talk about their rights in the concerned workplace), s48 (low probability of increase in the wages despite the increasing expenditures), s4 (frequent concerns about promotions) and s25 (frequent concerns about possible punishments). Accordingly, these variables are more important than the other variables in the analysis.

Centroids graphics in Figure 2 enables the determination of groups with highest level of relation and displaying relatively homogeneous behaviour.
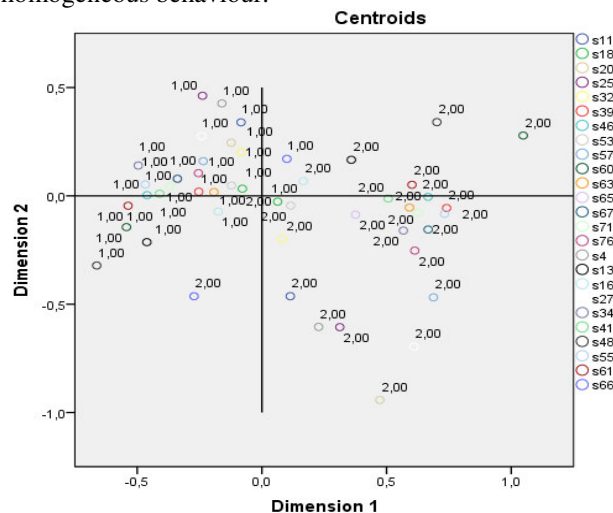

Figure 2 Graphical representation of centroids

As seen in Figure 2, future prospects of the individuals under s39 (annoyance of the superiors about the job done without any reason), s63 (fear from the superiors or employers, even without any reason), s18 (failure to get love, respect, support and affectionate from relatives due to being paid a low wage in this workplace) are at medium level.

However, future prospects of the individuals under s4 (frequent concerns about promotions), s66 (impossibility of earning the same wage in another company, within 5 to 7 years), s27 (worry about not getting a

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job in a bigger company, after a long period of work in the concerned workplace) are high.

b) Examination of the relation between the reward/punishment and capacity to work

Values in Table 4 point that the data fits the analysis. Loss and fitness values indicate the significance of the analysis.

Table 4 Summary of the Analysis

		Dimension		Total
		1	2	
Loss Function	Set 1	.138	.245	.383
	Set 2	.138	.245	.383
	Average	.138	.245	.383
Eigenvalue		.862	.755	
Fitness				1.617

Eigenvalue for the first dimension has been determined as 1 – 0.138= 0.862. For the second dimension, eigenvalue has been determined as 1 – 0.245 = 0.755.

Total fitness obtained by the addition of eigenvalues has been 0.862+ 0.755 = 1.617.

Average loss value is the difference between the maximum fitness and the realized fitness and has been found out as 2 – 1.617 = 0.383.

In the case of two sets, canonical correlation coefficient per dimension has been $P_d = 2E_d - 1$ In the first dimension, canonic correlation coefficient has been identified as $2 * 0.862 - 1 = 0.724$. In the second dimension, correlation coefficient has been found out as $2 * 0.755 - 1 = 0.51$. Accordingly, as per the first dimension of the solution, the relation between the punishment/reward and future prospects has been 72.4%.

Table 5 displays the weight values of the variables; and these values are the coefficients of used variables in obtaining canonical variables. Weight values of the variables indicate the contributions of the solution to the fitness value. Accordingly, s46 (occasional thoughts of being charged with ungrounded allegations) variable in the 1st set and s44 (thought of not having selected a suitable job) variable in the 2nd set have the highest contribution to the fitness value of the 1st dimension.

Table 5 Weight Values and Component Loadings

Set		Weight Values		Component Loadings	
		Dimension		Dimension	
		1	2	1	2
1	s11	.049	.365	-.110	.376
	s18	.051	.018	.065	-.025
	s20	-.225	.184	-.441	.272
	s25	-.036	-.169	-.339	-.130
	s32	.041	.147	-.091	.259
	s39	.023	.070	-.396	.154
	s46	-.269	-.241	-.539	-.201
	s53	.079	.206	-.035	.291
	s57	-.118	.168	-.407	.160
	s60	-.240	-.175	-.606	-.061
	s63	-.095	.232	-.443	.219
	s65	-.190	.095	-.432	.149
	s67	-.162	-.486	-.426	-.506
	s71	-.316	.176	-.599	.210
	s76	-.111	.034	-.430	.130
2	s7	-.059	-.002	-.089	.046
	s21	-.158	.012	-.393	-.052
	s28	-.277	-.381	-.565	-.126
	s35	-.242	.258	-.470	.245
	s42	-.158	-.559	-.361	-.447
	s44	-.362	-.185	-.654	-.157
	s49	-.039	.253	-.134	.223
	s56	-.132	.408	-.518	.383
	s70	-.122	-.108	-.485	-.110
	s74	-.198	.443	-.495	.317

Values of component loadings are presented in Table 5; and these values are the correlation coefficients between the digitized variable and the object scores. Absolute highness of the loading values of variables point that they are beneficial and important in terms of solution. Accordingly, the variables with highest loading values are s60 (employees' not being able to talk about their rights in the concerned workplace),

s71 (idea of working in a terrible environment), s44 (thought of not having selected a suitable job); and s28 (need to work hard in the current workplace).
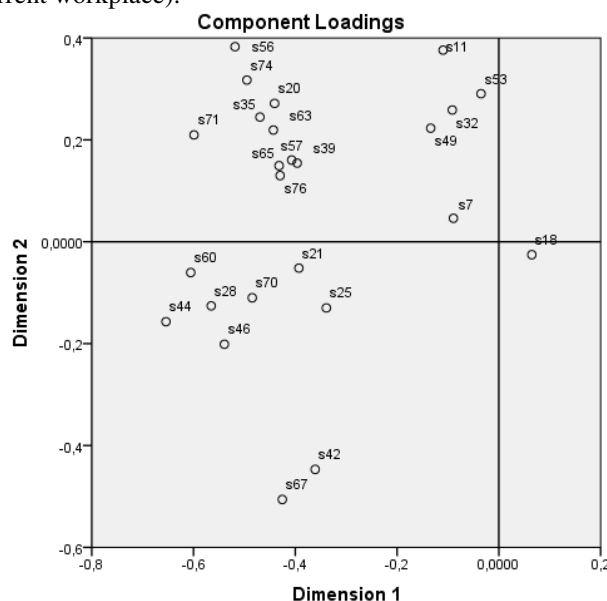

Figure 3 Graphical representation of the Component Loadings

As seen in Figure 3, s67 (superiors' thinking of their comfort only, not that of employees), s11 (anxiety for being criticized by the superiors and colleagues about himself/herself or his/her work), s53 (employees' being properly treated in this workplace) and s42 (belief of being able to work more easily and efficiently in another job) variables can be listed as the most important variables.

As single and multiple fitness values in Table 6 were found out to be very close to each other for variables, multiple digitalization was not made.

Table 6 Single and Multiple Fitness Values

Set		Multiple Fitness			Single Fitness		
		Dimension		Total	Dimension		Total
		1	2		1	2	
1	s11[a]	.002	.133	.135	.002	.133	.135
	s18[a]	.003	.000	.003	.003	.000	.003
	s20[a]	.050	.034	.084	.050	.034	.084
	s25[a]	.001	.029	.030	.001	.029	.030
	s32[a]	.002	.022	.023	.002	.022	.023
	s39[a]	.001	.005	.005	.001	.005	.005
	s46[a]	.072	.058	.131	.072	.058	.131
	s53[a]	.006	.042	.049	.006	.042	.049
	s57[a]	.014	.028	.042	.014	.028	.042
	s60[a]	.058	.031	.088	.058	.031	.088
	s63[a]	.009	.054	.063	.009	.054	.063
	s65[a]	.036	.009	.045	.036	.009	.045
	s67[a]	.026	.236	.262	.026	.236	.262
	s71[a]	.100	.031	.131	.100	.031	.131
	s76[a]	.012	.001	.013	.012	.001	.013
2	s7[a]	.003	.000	.003	.003	.000	.003
	s21[a]	.025	.000	.025	.025	.000	.025
	s28[a]	.077	.145	.222	.077	.145	.222
	s35[a]	.058	.067	.125	.058	.067	.125
	s42[a]	.025	.313	.338	.025	.313	.338
	s44[b]	.131	.034	.165	.131	.034	.165
	s49[a]	.002	.064	.066	.002	.064	.066
	s56[b]	.017	.166	.184	.017	.166	.184
	s70[a]	.015	.012	.027	.015	.012	.027
	s74[a]	.039	.196	.236	.039	.196	.236

According to Table 6, variables with the highest fitness value are s42 (belief of being able to work more easily and efficiently in another job), s67 (superiors' thinking of their comfort only, not that of employees) and s74 (feeling of stress and fear while being watched during work by superiors). Accordingly, these variables

are more important than the other variables in the analysis. Centroids graphics enables the determination of groups with highest level of relation (Figure 4).
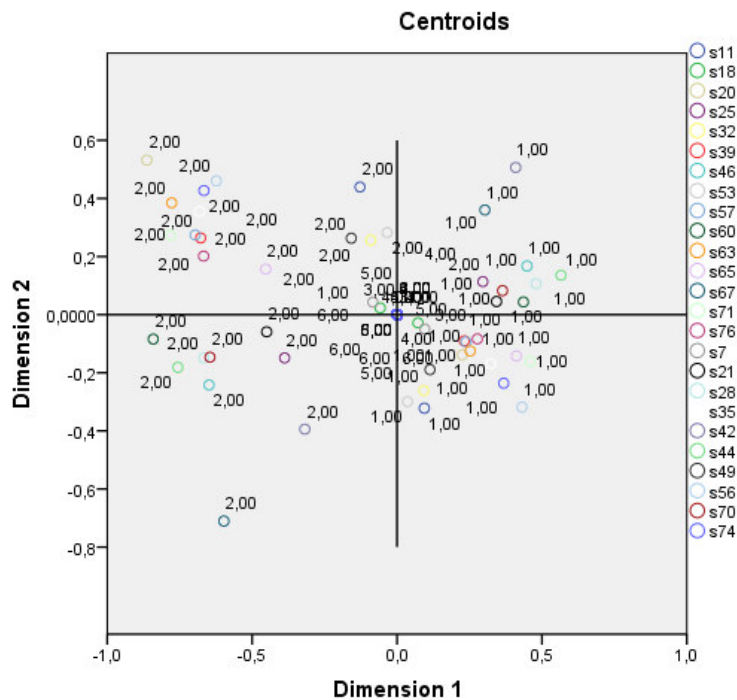

Figure 4 Graphical representation of the Centroids

When Figure 4 is examined, it is seen that individuals under s25 (frequent concerns about possible punishments), s76 (frequent fear of being scolded by superiors), s67 (superiors' thinking of their comfort only, not that of employees), s46 (occasional thoughts of being charged with ungrounded allegations), s28 (need to work hard in the current workplace)display a medium-high level of capacity to work. However, individuals under s63 (fear from the superiors or employers, even without any reason), s35 (doing work under heavy stress), s7 (thought of not being able to do his/her job properly), s74 (feeling of stress and fear while being watched during work by superiors) display a lower level of capacity to work.

3. Conclusion

This study aims to analyse the relation between the employees' perception of reward/punishment and the capacity to work as well as the relation between the employees' perception of reward/punishment and his/her future prospects and attempts to explain them, if any.

In this study, data in the questionnaires of 208 individuals were used and then, findings were obtained through Non-Linear Canonical Correlation Analysis. According to the findings of the analysis, the level of relation between the reward/punishment and capacity to work is 72.4%. Moreover, it has been found out that individuals under s25 (frequent concerns about possible punishments), s76 (frequent fear of being scolded by superiors), s67 (Superiors' thinking of only their comfort, not that of employees), s46 (occasional thoughts of being charged with ungrounded allegations), s28 (need to work hard in the current workplace) display a medium-high level of capacity to work.

According to the findings of the analysis, the level of relation between the perception of reward/punishment and future prospects is 69.2%. It has been found out in the study that individuals under s4 (frequent concerns about promotions), s66 (impossibility of earning the same wage in another company, within 5 to 7 years), s27 (worry about not getting a job in a bigger company, after a long period of work in the concerned workplace) have a high level of future prospects. Accordingly, it is observed that individuals aiming to promote in his/her current job, satisfied with his/her income, considering that the conditions of his/her current job best fits his/her qualifications have higher future prospects. The fact that individuals who achieved a certain position in a company after long years of working there feel loyalty to that company and do not want to quit may also affect their future prospects.

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