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Research Article

Explanation of the relationship between power of managers and employees' aggression using rough set theory approach (Case study: Sarcheshmeh Copper Complex)

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ABSTRACT
A manager with no degree of power will have problems in conducting the attempts of subordinate. Therefore, managers need to apply the kind of power that does not lead to situations such as anger and aggression in the staff. For this purpose, the present research first conceptually described the types of managers' power in an organization as the affecting characteristics on the features of decision- the staff's aggression. Then, different situations and the relevant scenarios were examined through data analysis by the software Rose2. The study population consisted of all personnel in Sarcheshmeh Copper Complex including 4060 individuals. This study employed the method of random stratified class according to the stratified size. A sample size of 216 individuals was considered based on Kukran formula. Accordingly, the conceptual design in this research included five power levels of expertise, legitimacy, referent, reward and coercion. These were analyzed in a descriptive survey using a questionnaire tool among statistical samples from the staff of Sarcheshmeh Copper Complex. By comparing the differences between different items, a series of rules were produced to explain the effect of each variable on the employees' level of aggression. In this study, each rule elucidates the relationships between the conditional features with the feature of decision.

Keywords: Types of power, Aggression of employees, Rough set theory

INTRODUCTION
With a little reflection on the organizational environment, it can be observed that the staff shows a variety of reactions dealing with a small action on behalf of the superiors. They display their rage against some of behaviors from their superiors in different manners (Ahmadi, 2000). Because aggression is a common event in response to frustrations at the commercial organization, and also can inflict serious economic losses upon individuals and institutions in the forms of strikes and other activities, Stagner (cited in Korman, the Farsi version, 2005) believes that our ability in predicting and understanding the conditions under which the aggressions occur is of theoretical and practical importance; unfortunately, despite the importance of this issue, experimental research and the relevant theories are scarce so that there are not many basic matters to raise.

Power is one of the determinants for the effectiveness of management. Bennis and Nanus (cited in Singh, 2005) conclude that power is the most fundamental strength required to start and support the work, as well as a factor without which the leaders cannot afford to leadership; in fact, power is the basis for leadership and

management tasks (Singh, 2005). All human beings are affected by power and influence, but many people are unaware of their helpful and necessary powers over others (Johnson & Johnson, 2012). Application of power has consequences for both the one who applies the power and the individual upon which the power was exerted. When an individual exercises power over another one, this may arise some kind of hate disclosing imbalances in their relative power (Hollander et al., 1999). To be a successful manager, it is necessary to apply one's ability to use the power wisely, and also to be sensitive about the working circumstances and conditions, details of people under one's supervision, the one's working situation and many other factors (Saatchi, 2005). Power is an issue of the real world. Leaders who know their strength and understand how to use are more influential than those who neither know nor use it. We need to know that for successful penetration into the behaviors of others, leaders must be aware of the effects of power on different leadership styles (Hersi & Blanchard, 2014; in Persian). Therefore, managers should employ the kind of power that does not lead to situations such as anger and aggression in the staff. Hence, this study examines the relationship between the power sources of managers and level of aggression in the personnel of Sarcheshmeh Copper Complex.

Research literature

Bases of power

The bases of power include expertise, legitimacy, referent, reward, and coercion.

Expertise power

This kind of awareness is formed on the basis of knowledge. In simple words, special skills and specialization of the staff and other experts would empower them (Hicks Goulet 2014).

Legitimatepower

Legitimate powers is granted to a person through reliance from institutional authorities. This power, therefore, originates from the organization. Administrator has the legal authority against the subordinates and so on (Moorhead & Griftin, 2009). Stodent considers legal power as the strongest reasonfor obedience (Hersey & Blanchard, 2014).Bachman also signifies the legal power to beof high-grade as well as the most important reason for the obedience in the staff.

Referent power

Referent power comes mainly from an individual, when one can apply power against the other one whom respected that individual. In general, referent power is mostly associated with confidence, similarity, adaption, kindness, the tendency to imitate, and mental dependencies (Ghasemi, 2009). Ivanovich&Dangly (Hersey and Blanchard, 2014) note that referent power is positively correlated to the performance.

Reward power

This type of power is the ability to provide things that people like to have (Rezaeian, 2012). Anderson and Kyprianou comment on the reward power that applying this type of power including the ability to elevate salaries, positions, and desired jobs, and also to recognize the necessity for appreciation may allow to encourage others to comply with desirable behaviors and goals of the organization.

Power of coercion

The power of coercion occurs when someone has the ability to punish or inflict physical or mental harm to other (Ghasemi, 2009). Employing the power of coercion causes resistance in the employees, people generally do not like it, and is inversely correlated to satisfaction. Fortunately, power of coercion lies in the last rank of influence. This organizational surveys have shown that what sort of power in an organization result in both high job satisfaction and organizational performance (Lotfi, 2001).

Aggression

Aggression is an irrational behavior caused by failure situations. The severity of helplessness may be such that it leads to destructive behaviors such as hostility and violence. People will apply their hostility, if possible, toward an individual or

an object they feel might have caused their failure. An angry worker may attempt to harm the boss, or to destroy his/her job and reputation through detractors the other vindictive behaviors (Rezaeian, 2012). According to definitions presented about the research variables and components, a conceptual model was designed to explain the relationship between the variables and the connection among the elements was investigated. The conceptual model is presented as follows:

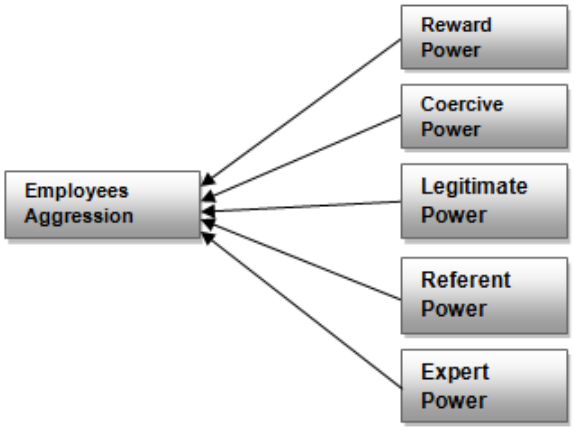

Figure 1: The Conceptual Model

Research question

What is the level of aggression among the staff of Sarcheshmeh Copper Complex?

Methodology

The Rough Sets Theory was applied in order to address the research question and to find the factors influencing the aggression of staff. Rough sets is a powerful mathematical tool for reasoning in cases of ambiguity and uncertainty that provide methods to eliminate or reduce irrelevant knowledge or the need for additional information from databases (Ziarko, 1993).

The rough set theory defined by Pawlak in the early 1980s is one of the mathematical tools capable of justifying the uncertainty and ambiguity (Pawlak, 1991,1982). It emphasizes on the discovery of certain patterns within the incomplete data derived from information sources (Pawlak, 1996, Slowinski and Stefanowski, 1989). This theory can be the basis for detailed reasoning with unreliable information (Pawlak, 1997). One of the most important applications of Rough Set is in the issues of classification and categorization. The main objective of the Rough set analysis is to obtain approximate concepts from acquired data and to provide methods for the elimination of excess data. Rough set can be used to resolve major problems concerning data analysis, including determining a set of objects based on the attribute values, finding dependencies between features, elimination (reduction or trimming) extra features (data), detecting the characteristics, and creating decision rules.

Information system

Information system is actually a table of data in which the columns introduce characteristics and the rows represent examples, topics or items. There is a q inside each column and each x row contains a value of ρ(x, q). Each row in the table represents the amounts and features related to an issue or object of U. Qualitative features should be encoded, and quantitative ones should also accurately be separated and codified properly and then be tabulated (Predki & Wilk, 1999).

A set of all similar groups is shown as p* according to the relationship of ~p in U. The (Desp(X) represents and interprets these equalities (A preliminary set of -P) for X ∈ P* displayed as below (Predki & Wilk, 1999):

$$i.e.: Des_p(X) = \{(q, v) \mid p(x,q) = v, \quad x \in X, \ \forall q \in P\} \qquad (1)$$

Sets of approximation

To evaluate the issue that a set of {Desp(X)X ∈ P*} how accurately introduces and identifies the subjects involved specific set, Pavlak has presented and defined the following concepts:

Suppose: Y ⊆ U, P ⊆ Q, Then top and down approximations, respectively, are displayed $\underline{PY}$ and $\overline{PY}$ defined as follows:

$$\underline{PY} = U\{X \in P* \mid X \subseteq Y\} \quad (2)$$

$$\overline{PY} = U\{X \in P* \mid X \cap Y \neq \varnothing\} \quad (3)$$

The $\underline{PY}$ set is a total of all components of U that entirely definitely belong to a classified group, Y, by considering and applying the features in P. The $\overline{PY}$ set is a collection of U, which may belong to a classified group, Y, by considering and applying

$$\mathrm{Bn}_p(\mathrm{Y}) = \overline{\mathrm{PY}} - \underline{\mathrm{PY}}.$$

the features in P. Also, Bnp(Y) is a set of components, about which it cannot be stated definitely that they belong to a classified group, Y, by considering the features in P; it is calculated by the following equation (Predki & Wilk, 1999):

(4)

For each subset of Y ⊆ U, an accuracy of approximation can be defined for the set Y based on the features of P in S, briefly called accuracy of Y:

The accuracy of the approximation is called the classification accuracy as well, because this amount could represent the accuracy of defined levels for independent parameters (features of decisions) in the information system.

$$\alpha_p(Y) = \frac{card(\underline{PY})}{card(\overline{PY})} \quad (5)$$

where $|A| = card(A)$ shows the main number of the set A.

- Rough classification

Suppose that S is an information system, and X ={Y1, Y2, ..., Yn}, P ⊆ Q is a classification defined in U, provided that the following conditions are met:

$$Y_i \neq \varnothing \qquad i = 1, 2, ..., n$$

$$\mathrm{Y_i} \cap \mathrm{Y_j} = \varnothing, \quad \forall \mathrm{i, j} \leq \mathrm{n}, \mathrm{i} \neq \mathrm{j} \text{ and } \bigcup_{\mathrm{i=1}}^{\mathrm{n}} \mathrm{Y_i} = \mathrm{U}.$$

(6)

Yi is called X classes or groups. In fact, IND(P) is a equivalence relationship, and top and down approximations for X in S will be as follows: (7)

In this case, the coefficient $\gamma_P(X)$ in the following

$$\underline{\mathrm{P}}X = \{\underline{\mathrm{PY}}_1, \underline{\mathrm{PY}}_2, ..., \underline{\mathrm{PY}}_n\} \quad \text{و} \quad \overline{\mathrm{P}}X = \{\overline{\mathrm{PY}}_1, \overline{\mathrm{PY}}_2, ..., \overline{\mathrm{PY}}_n\}$$

formula is defined as quality approximation to classify X taking into account the existing set of features or, in brief, X classification quality. This factor represents the ratio of the number of samples classified correctly according to the characteristics of P to the total samples included in the system (Predki & Wilk, 1999).

$$\gamma_P(X) = \frac{\sum_{i=1}^{n} \mathrm{card}(\underline{\mathrm{PY}}_i)}{\mathrm{card}(\mathrm{U})} \quad (8)$$

Among the other basic concepts of rough set theory is the production of decision-making rules. The rules are actually an explanation of exact or approximate relationships between characteristics of situation (independent variables), and features of decisions (dependent variables). The rules are phrased as "if …., then ...". A rule may be exact and definite, or approximate and uncertain. In a certain rule, levels (codes) for features of decisions are always associated with similar levels (codes) in the features of situations (similar situations or conditions will hold the same decisions), while in a non-deterministic rule, more than one level of decision-making feature can be associated with the same levels of condition features (identical modes or conditions will produce different decisions) (Pawlak, 1991).

The samples and selection of variables

The study population consisted of all workers in Sarcheshmeh Copper Complex including 4060 individuals. This study employed the method of random stratified class according to the stratified size. A sample size of 216 individuals was considered based on Kukran formula. Data were collected using a standard questionnaire, and the staff were asked to express their opinions about the effect of each power source on the aggression

leading to compiling required data using standardized questionnaires in this field study. In order to determine the role of key variables affecting the level of aggression and to realize the position and priority of these parameter in the staff's views, the parameters affecting the level of aggression were marked in five items assessable by the Likert's 5-point range. The questionnaire was completed by the staff who expressed their opinions concerning each of these parameters considering the situations present. Following summing up and extracting the results, the priority and status of each parameter was determined. Information on the variable, decision (dependent variable) was collected through raising a fundamental question about the aggression: "what is the level of aggression in the staff of Sarcheshmeh Copper Complex?" This study considered a total of five levels for attributes of decisions as shown in Table 1.

Table 1: Classification of attribute (a ∈ A)

Code or Numerical Value	linguistic Value	Range of Scores	Row
1	Very low	0≤ a (x) ≤0.25	1
2	low	0.25≤ a (x) ≤0. 5	2
3	moderate	0. 5≤ a (x) ≤0.75	3
4	high	0.75≤ a (x) ≤1	4
5	Very high	1≤ a (x) ≤1.25	5

The staff expressed their opinions on each of the variables taking into account the situation of the organization. After data were collected by the questionnaire, the next step in the procedure was to determine the independent variables. In this phase, a list of possible power sources affecting on the level of aggression in the staff should be detected and encoded as independent variables to be used in the analysis program by the rough set theory. In other words, the situation attributes are the same factors involved in the level of the staff's aggression, for which a code is assigned. The decision attribute considered in this study was the aggression level in the staff divided into five levels of very high, high, medium, low and very low.

A total of five attributes considered in this study include: expertise power, legitimate power, referent power, reward power and coercion power. The decision attributes and its categorization is shown in Table 2.

Table 2: Decision attribute and its linguistic values

Decision feature	Assumed states				
Level of employees aggression	Very high	High	Moderate	Low	Very low

Two types of rules are applicable with any decision table:

1. Inconsistent (contradictory) rules: Those having the same position features with different decision features.
2. Compatible (identical) rules: Those with different situation features and various decision attributes.

Based on these two principles, the equivalence classes of position and decision can be written, which may be deduced following formation of reduction matrix.

The results of rough theory sets analysis

Considering the level of employees' aggression as decision feature as well as taking into account the characteristics of different positions and the relevant scenarios, data were analyzed by the software Rose2. The information system is shown in Table 3.

Table 3: Decision table

d = Aggression	N	a_5 = Exp ert Power	a_4 = Referent Power	a_3 = legitimate power	a_2 = Coercive power	a_1 = Reward Power	U
3	6	5	4	3	1	4	x1
3	2	3	3	2	2	3	x2

4	10	4	5	4	2	4	x3
5	1	3	5	5	3	5	x4
3	2	3	3	2	3	3	x5
2	3	3	1	2	1	3	x6
4	2	5	4	4	3	4	x7
5	1	5	5	5	2	5	x8
3	5	3	1	4	1	3	x9
1	3	1	1	1	1	1	x10
5	26	5	4	4	4	4	X11
3	14	1	3	2	1	2	X12
5	2 9	2	2	3	1	3	X13
3	9	3	5	2	1	2	X14
3	31	2	2	3	1	3	X15
2	26	1	3	2	1	2	X16
4	21	5	4	4	4	4	X17
1	9	3	5	2	1	2	X18
2	10	1	2	1	4	1	X19
3	6	1	2	1	4	1	X20

As can be seen, tokens or objects X11 and X17, or X12 and X16, or X13 and X15, or X18 and X14, and finally X20 and X19 have led to contradictory decisions and are, therefore, incompatible.

Method 1: The easiest way to fix this problem is to separate the compatibles and incompatibles (Tables 4 & 5).

Table 4. Incompatible ratios in decision table

d = Aggression	a_5 = Expert Power	a_4 = Referent Power	a_3 = legitimate power	a_2 = Coercive power	a_1 = Reward Power	U
4	5	4	4	4	4	X11
5	5	4	4	4	4	X1 7
2	1	3	2	1	2	X 12
3	1	3	2	1	2	X1 6
3	2	2	3	1	3	X1 3
5	2	2	3	1	3	X1 5
1	3	5	2	1	2	X1 4
3	3	5	2	1	2	X18
3	1	2	1	4	1	X19
2	1	2	1	4	1	X20

Table 5: Compatible ratios in decision table

d = Aggression	a_5 = Expert Power	a_4 = Referent Power	a_3 = legitimate power	a_2 = Coercive power	a_1 = Reward Power	U
3	5	4	3	1	4	x1
3	3	3	2	2	3	x2
4	4	5	4	2	4	x3
5	3	5	5	3	5	x4
3	3	3	2	3	3	x5
2	3	1	2	1	3	x6
4	5	4	4	3	4	x7
5	5	5	5	2	5	x8
3	3	1	4	1	3	x9
1	1	1	1	1	1	x10

In decision tables, those rules are regarded that are compatible (Kryszkiewicz, 1994). For this reason, the components of Table 4 are set aside and Table 5 is taken into account. Of course, this is a sort of problem deletion to be addressed in the next section.

Equivalence set

If R is a family of equivalence relations, and if $P \subseteq R$ providing $\cap P \neq \varnothing$, i.e. shared P is not equal to the empty set, all equivalent relationships belonging to P are equivalent relationship as well abbreviated as IND(P). Therefore, U/IND(P) or in brief, U/P refers to the knowledge concerned with the equivalence family in p, which is noted the p knowledge base regarding U around the dependency system.

$$[x]_{IND(P)} = \bigcap_{R \in P} [x]_R \quad (9)$$

(U partitioning in amounts of D).

Let us get back to the issue on: A = {a1, a2, a3, a4, a5}

Insert: the range of decision levels V (d) = {1,2,3,4,5} = d

Then:

D1 = {x ε U: d (x) = 5} = {x4, x8} = very High

D2 = {x ε U: d (x) = 4} = {x3, x7} = High

D3 = {x ε U: d (x) = 3} = {x1, x2, x5, x9} = Average

D4 = {x ε U: d (x) = 2} = {x6} = Low

D5 = {x ε U: d (x) = 1} = {x10} = very Low

U/D = [{x4, x8},{x3, x7},{x1, x2, x5, x9},{x6},{x10}]= Set of equivalence classes

Partitioning a set

This means to make sub-partitions of a set into paired incompatible ones so that sharing each of those sub-sets with each other gives a null set (separate sets) and that the sum of all sub-sets is equal to the partitioned set as shown in Figure 2

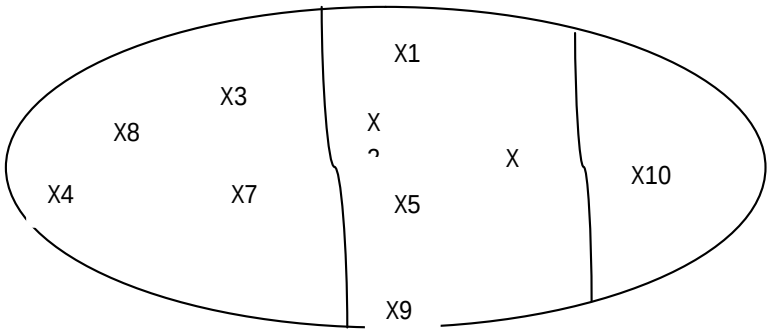

Figure 2. Equivalence Classes

Resolution matrix (for reduction)

The distinguishable components in low-sized samples are identified using this matrix. In this case, a 10 × 10 matrix is drawn (Table 6). This matrix is done only for groups that differ in the value of decision variable. The testable cases which are similar, indistinctive in decision variable are found in the table and marked by λ meaning trueness.

Table 6. Resolution matrix

X10	X9	X8	X7	X6	X5	X4	X3	X2	X1	
										X1
									λ	X2
								a1, a 3, a4, a5	a2, a3, a4, a5	X3
							a1, a 2, a 3, a5	a1, a2, a3, a4	a1, a2, a3, a4, a5	X4

						a1, a 3, a4	a1, a2, a3, a4	λ	λ	X5
					a2, a4	a1, a2, a3, a4	a1, a2, a3, a4, a5	a2, a 4	a1, a3, a4, a5	X6
				a1, a2, a3, a4, a5	a1, a3, a4, a5	a1, a 3, a 4, a5	λ	a1, a2, a3, a4, a5	a2, a3	X7
			a1, a2, a3, a4	a1, a2, a3, a4, a5	a1, a2, a3, a4, a5	λ	a1, a 3, a5	a1, a 3, a4, a5	a1, a2, a3, a4	X8
		a1, a2, a3, a4, a, 5	a1, a2, a4, a5	a3	λ	a1, a2, a3, a4	a1, a2, a4, a5	λ	λ	X9
	a1, a3, a5	a1, a2, a3, a4, a, 5	a1, a2, a3, a4, a, 5	a1, a3, a5	a1, a2, a3, a4, a, 5	a1, a2, a3, a4, a5	a1, a2, a3, a4, a5	a1, a2, a3, a4, a5	a1, a3, a4, a5	X10

Element 10 × 10 = 100
100-10 = 90
90/2 = 45

A core can be achieved from shared reductions; thence, the core was calculated through the output of software ROSE 2, from which the a3 components were obtained as a core.

Core = ∩ RED = {a $_{3}$}

Table 7: Attributes in Core

Attributes in Core:
Core: legitimate power
Number of attributes in core: 1 Decision: Decision

Table 8 shows the number of reductions, which are two cases resulted from data analysis in this study.

Table 8: Reduction number

Length	Reduction	#
2	Coercive power, legitimate {power}	1
2	legitimate power, Referent {Power}	2
Number of Reductions: 2		

The approximate decision-making (atoms) classes searched for at the next step. According to the results of the software operations, there were 10 atoms in the information system of this study.

The outputs of the software include: accuracy of approximation, quality of classification and generated rules, which are discussed in order. By dividing the down by the top approximations of any class or level defined, it is possible to achieve the accuracy of every dependent parameter level. The quality and accuracy of the classification and characteristics defined in the system can be assessed, the amounts of which depend on how it is partly defined and groupings defined for them. The different accuracy levels of decision trait are given in Table 9. It is observed that the accuracy and quality of ratings equals one meaning that, according to the characteristics defined in the system, the changes observed in the level of aggression of staff can be precisely interpreted and analyzed.

Table 9. Quality and precision of rankings

Levels of decision-making	The number of cases	Low approximation	High approximation	Accuracy
1	1	1	1	1
2	1	1	1	1
3	4	4	4	1
4	2	2	2	1
5	2	2	2	1
Quality of rating = 1				
Number of atoms: 10				

Rules generated by the software

By comparing the differences between different items, a set of rules are created to explain the effects of each power source on the aggression level of the staff. Each rule elucidates the

relationships between descriptive features and characteristics of the decision-making expressed as a phrase of " if ... then ...".

```
# LEM2
# C:\Users\SONY\Desktop\z1.isf
# objects = 10
# attributes = 6
# decision = d
# classes = {1, 2, 3, 4, 5}
# Fri Feb 27 22:32:19 2015
# 0 s
rule 1. (a1 = 1) => (d = 1); [1, 1, 100.00%, 100.00%][1, 0, 0, 0, 0]
[{10}, {}, {}, {}, {}]
rule 2. (a3 = 2) & (a4 = 1) => (d = 2); [1, 1, 100.00%, 100.00%][0, 1, 0, 0, 0]
[{}, {6}, {}, {}, {}]
rule 3. (a4 = 3) => (d = 3); [2, 2, 50.00%, 100.00%][0, 0, 2, 0, 0]
[{}, {}, {2, 5}, {}, {}]
rule 4. (a3 = 3) => (d = 3); [1, 1, 25.00%, 100.00%][0, 0, 1, 0, 0]
[{}, {}, {1}, {}, {}]
rule 5. (a3 = 4) & (a4 = 1) => (d = 3); [1, 1, 25.00%, 100.00%][0, 0, 1, 0, 0]
[{}, {}, {9}, {}, {}]
rule 6. (a1 = 4) & (a3 = 4) => (d = 4); [2, 2, 100.00%, 100.00%][0, 0, 0, 2, 0]
[{}, {}, {}, {3, 7}, {}]
rule 7. (a1 = 5) => (d = 5); [2, 2, 100.00%, 100.00%][0, 0, 0, 0, 2]

[{}, {}, {}, {}, {4, 8}]

                                                                **END
```

The second method on how to act with intransigents is to remove those objects that work by lesser factors of accuracy and precision. Looking at Table 3, we have:

$D_1 = \{X\ 10, X\ 14\}$

$D_2 = \{X\ 6, X\ 12, X\ 20\}$

$D_3 = \{X\ 1, X\ 2, X\ 5, X\ 9, X\ 13, X\ 16, X\ 18, X\ 19\}$

$D_4 = \{X\ 3, X\ 7, X\ 11\}$

$D_5 = \{X\ 4, X\ 8, X\ 15, X\ 17\}$

In addition, for the sets of equivalence classes in relation to the conditional features A, i.e. U/I , we have :

$$U/IA = U/A = \{\{X1\},\}X2\},\{X3\},\{X4\},\{X5\},\{X6\},\{X7\},\{X8\},\{X9\},\{X10\},\{X11, X17\},\{X12, X16\},\{X13, X15\},\{X14, X18\},\{X19, X20\}\}$$

Also, for the down and high approximations of each conceptual or preliminary set, D_i , according to the conditional set features in A, for $i = 1, 2, ..., 5$ we have based on the definition:

$$\underline{AD_i} = U\{Y \in U/A \mid Y \subseteq D_i\}$$

$$\overline{AD_i} = U\{Y \in U/A \mid Y \cap D_i \neq \varnothing\}$$

Therefore:

$\overline{AD_1} = \{x\,10\}$

و

$\overline{AD_1} = \{x\,10, x\,14, x\,18\}$

$\overline{AD_2} = \{x\,6\}$

و

$\overline{AD_2} = \{x\,6, x\,12, x\,16, x\,19, x\,20\}$

$\overline{A\ D\ _2} = \{\ x\ \ 6\ \}$

و

$\overline{A\ D\ _2} = \{\ x\ \ 6\ ,\ x\ \ 1\ 2\ ,\ x\ \ 1\ 6\ ,\ x\ \ 1\ 9\ ,\ x\ \ 2\ 0\ \}$

$\overline{AD_3} = \{x\,1, x\,2, x\,5, x\,9\}$

و

$\overline{AD_3} = \{x\,1, x\,2, x\,5, x\,9, x\,13, x\,14, x\,15, x\,16, x\,18, x\,19, x\,20\}$

$\overline{AD_4} = \{x\,3, x\,7\}$

و

$\overline{AD_4} = \{x\,3, x\,7, x\,11, x\,17\}$

And finally:

$\overline{AD_5} = \{x\,4, x\,8\}$

و

$\overline{AD_5} = \{x\,4, x\,8, x\,11, x\,13, x\,15, x\,17\}$

Figure3 depicts the equivalence classes.

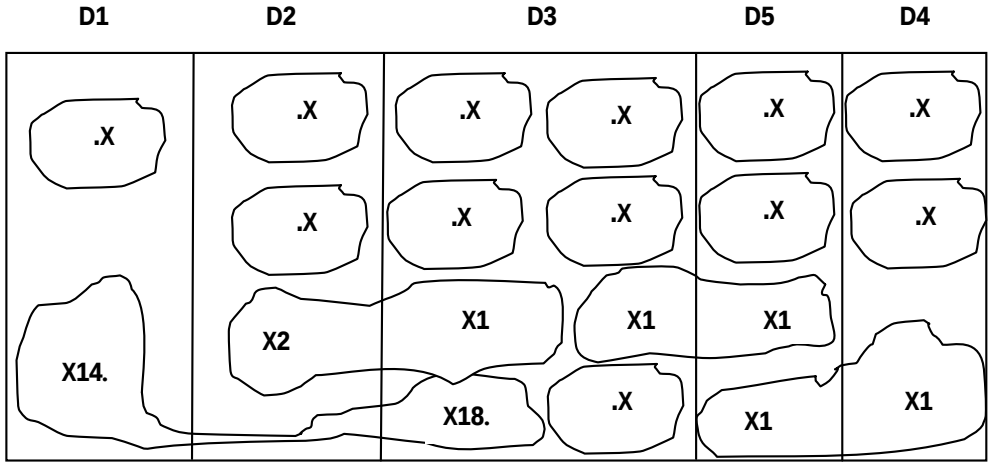

Figure 3. Class equivalence

As noted, incompatible elements with lesser accuracy coefficients were removed.

Table 10. Accuracy coefficients calculated.

No.	D_i	$\underline{AD}_i$ و $\overline{AD}_i$	$\underline{\gamma}(D_i)$	$\overline{\gamma}(D_i)$	$\gamma(D_i)$
1	{x10, x14}	{x10} , {x10,x14,x18}	$1/20$	$3/20$	$1/3$
2	{x6,x12,x20}	{x6},{x6,x12,x16,x19,x20}	$1/20$	$5/20$	$1/5$

3	**{x1,x2,x5,x6,x9,x13,x18,x19}**	**{x1,x2,x5,x9},{x1,x2,x5,x9,x13,x14,x15,x16,x18,x19,x20}**	$4/20$	$11/20$	$4/11$
4	**{x3,x7,x11}**	**{x3,x7},{x3,x7,x11,x17}**	$2/20$	$4/20$	$1/2$
5	**{x4,x8,x15,x17}**	**{x4,x8},{x4,x8,x11,x13,x15,x17}**	$2/20$	$6/20$	$1/3$

So x4, x14, x15, and x20 are deleted (Table 11).

Table 11: Table of decision

d=Aggression	a_5=Expertise power	a_4=Referent power	a_3=Legitimate power	a_2=Coercion power	a_1=Reward power	U
3	5	4	3	1	4	x1
3	3	3	2	2	3	x2
4	4	5	4	2	4	x3
3	3	3	2	3	3	x5
2	3	1	2	1	3	x6
4	5	4	4	3	4	x7
5	5	5	5	2	5	x8
3	3	1	4	1	3	x9
1	1	1	1	1	1	x10
4	5	4	4	4	4	X11
2	1	3	2	1	2	X12
3	2	2	3	1	3	X13
3	1	3	2	1	2	X16
5	5	4	4	4	4	X17
3	3	5	2	1	2	X18
3	1	2	1	4	1	X19

A set of minimal features

Since the decision (d) variable has five modes (very high, high, medium, low, and very low), it is plausible to build minimal sets. The respondents' ratings (1, 2, 3, 4, 5) for the decision variable are individually placed in a single set, resulting in a total of five sets referred to as equivalence decision classes.

$$X\,1=\{X\ \in U\,|d\,(X\,)=1\}=\{X\,10\}$$

$$X\,2=\{X\ \in U\,|d\,(X\,)=2\}=\{X\,6,x\,12\}$$

$$X\,3=\{X\ \in U\,|d\,(X\,)=3\}=\{X\,1,x\,2,x\,5,x\,9,x\,13,x\,16,x\,18,x\,19\}$$

$$X\,4=\{X\ \in U\,|d\,(X\,)=4\}=\{X\,3,x\,7,x\,11\}$$

$$X\,5=\{X\ \in U\,|d\,(X\,)=5\}=\{X\,8,x\,17\}$$

The low and high approximations are obtained according to the five sets of X_1, X_2, X_3, X_4, and X_5. It should be noted that A is defined as the following set:

$$A=\{a_1,a_2,a_3,a_4,a_5\}$$

Table 12. The nearly approximations for the five-set concept including X_4, X_5 X_1, X_2, X_3

X_1	X_2	X_3	X_4	X_5
$[X\ 10]_A = \{X\ 10\}$	$[X\ 6]_A = \{X\ 6\}$	$[X\ 1]_A = \{X\ 1\}$	$[X\ 3]_A = \{X\ 3\}$	$[X\ 8]_A = \{X\ 8\}$
	$[X\ 12]_A = \{X\ 12\}$	$[X\ 2]_A = \{X\ 2\}$	$[X\ 7]_A = \{X\ 7\}$	$[X\ 17]_A = \{X\ 17\}$
		$[X\ 5]_A = \{X\ 5\}$	$[X\ 11]_A = \{X\ 11\}$	
		$[X\ 9]_A = \{X\ 9\}$		
		$[X\ 13]_A = \{X\ 13\}$		
		$[X\ 16]_A = \{X\ 16\}$		
		$[X\ 18]_A = \{X\ 18\}$		
		$[X\ 19]_A = \{X\ 19\}$		

$\frac{U}{IA} = \frac{U}{A} = \{\{X\ 1\},\{X\ 2\},\{X\ 3\},\{X\ 5\},\{X\ 6\},\{X\ 7\},\{X\ 8\},$ **- Resolution matrix (for reduction)**

$\{X\ 9\},\{X\ 10\}\{11\},\{12\},\{13\},\{16\},\{17\},\{18\},\{19\}\}$

Table 13. Resolution matrix.

x19	x18	x17	x16	x13	x12	x11	x10	x9	x8	x7	x6	x5	x3	x2	x1	
																x1
															λ	x2
														a1, a3, a4, a5	a2, a3, a4, a5	x3
													a1, a2, a3, a4, a5	λ	λ	x5
												a2, a4	a1, a2, a3, a4, a5	a2, a4, a5	a1, a2, a3, a4, a5	x6
											a1, a2, a3, a4, a5	a1, a3, a4, a5	λ	a1, a2, a3, a4, a5	a2, a3	x7
										a1, a2, a3, a4	a1, a2, a3, a4, a5	a1, a2, a3, a4, a5	a1, a3, a4, a5	a1, a3, a4, a5	a1, a2, a3, a4	x8
									a1, a2, a3, a4, a5	a1, a2, a4, a5	a3	λ	a1, a2, a4, a5	λ	λ	x9
								a1, a3, a5	a1, a2, a3, a4, a5	a1, a2, a3, a4, a5	a1, a3, a5	a1, a2, a3, a4, a5	a1, a2, a3, a4, a5	a1, a2, a3, a4, a5	a1, a3, a4, a5	x10
							a1, a2, a3, a4, a5	a1, a2, a4, a5	a2	λ	a1, a2, a3, a4, a5	a1, a2, a3, a4, a5	λ	a1, a2, a3, a4, a5	a2, a3	x11
						a1,	a1,	a1,	a1,	a1,	λ	a1,	a1,	a1,	a1,	x12

						a2, a3, a4, a5	a3, a4	a3, a4, a5	a2, a3, a4, a5	a2, a3, a4, a5		a2, a5	a2, a3, a4, a5	a2, a5	a3, a4, a5	
					a1, a3, a4, a5	a1, a2, a3, a4, a5	a1, a3, a4, a5	λ	a1, a2, a3, a4, a5	a1, a2, a3, a4, a5	a3, a4, a5	λ	a1, a2, a3, a4, a5	λ	λ	x13
				a1, a3, a4, a5	λ	a1, a2, a3, a4, a5	a1, a3, a4	λ	a1, a2, a3, a4, a5	a1, a2, a3, a4, a5	a1, a4, a5	λ	a1, a2, a3, a4, a5	a1, a2, a5	λ	x16
			a1, a2, a3, a4, a5	a1, a2, a3, a4, a5	a1, a2, a3, a4, a5	λ	a1, a2, a3, a4, a5	a1, a2, a4, a5	λ	a2	a1, a2, a3, a4, a5	a1, a2, a4	a2, a4, a5	a1, a2, a3, a4, a5	a2, a3	x17
		a1, a2, a3, a4, a5	λ	λ	a4, a5	a1, a2, a3, a4, a5	a1, a3, a4, a5	λ	a1, a2, a3, a5	a1, a2, a3, a4, a5	a1, a4	λ	a1, a2, a3, a5	λ	λ	x18
	λ	a1, a3, a4, a5	λ	λ	a1, a2, a3, a4	a1, a3, a4, a5	a2, a4	λ	a1, a2, a3, a4, a5	a1, a2, a3, a4, a5	a1, a2, a3, a4, a5	λ	a1, a2, a3, a4, a5	λ	λ	x19

CONCLUSION

1. Given the $\underline{A}X_1$ set, it can be concluded that the respondents mentioned in this set are confident that the level of employees' aggression in their organization is very low showing that the components of the managers' powers quite low as well. Additionally, $\overline{A}X_1$ reveals that there are individuals among the respondents who believe that the level of employees' aggression in their organization is very low and that the components of the managers' powers are probably of very low and average levels.

2. With regard to $\underline{A}X_2$ set, it can be deduced that the respondents noted in this set are convinced that the aggression level of employees in their organization is low and the power components of managers are low. $\underline{A}X_2$ also demonstrates that there are individuals among the respondents who believe that the level of employees' aggression in their organization is low and that the components of the managers' powers are probably of low levels.

3. Taking into account $\underline{A}X_3$ set, it can be concluded that the respondents noted in this set are convinced that the aggression level of employees in their organization is as well as the power components of managers are average. $\underline{A}X_3$ also demonstrates that there are individuals among the respondents who believe that the level of employees' aggression in their organization and also the components of the managers' powers are probably of average levels.

4. Regarding $\underline{A}X_4$ set, it can be deduced that the respondents noted in this set are convinced that the aggression level of employees in their organization as well as the power components of managers are high. $\underline{A}X_4$ also demonstrates that there are individuals among the respondents who believe that the level of employees' aggression in their organization and also the components of the managers' powers are probably of high levels.

5. Considering $\underline{A}X_5$ set, it can be concluded that respondents mentioned in this set are confident that the aggression of employees and also the components of managers' power in their organization are at very high levels.

Decision rules

Table 14. Decision rules

IF $a_1 = 1$, $a_2 = 1$, $a_3 = 1$, $a_4 = 1$, a5 = 1 THEN Result = 1
IF $a_1 = 3$, $a_2 = 1$, $a_3 = 2$, $a_4 = 1$, a5 = 3 THEN Result = 2
IF $a_1 = 2$, $a_2 = 1$, $a_3 = 2$, $a_4 = 3$, a5 = 1 THEN Result = 2
IF $a_1 = 4$, $a_2 = 1$, $a_3 = 3$, $a_4 = 4$, a5 = 5 THEN Result = 3

IF $a_1 = 3, a_2 = 2, a_3 = 2, a_4 = 3, a5 = 3$ THEN Result = 3
IF $a_1 = 3, a_2 = 3, a_3 = 2, a_4 = 3, a5 = 3$ THEN Result = 3
IF $a_1 = 3, a_2 = 1, a_3 = 4, a_4 = 1, a5 = 3$ THEN Result = 3
IF $a_1 = 3, a_2 = 1, a_3 = 3, a_4 = 2, a5 = 2$ THEN Result = 3
IF $a_1 = 2, a_2 = 1, a_3 = 2, a_4 = 3, a5 = 1$ THEN Result = 3
IF $a_1 = 2, a_2 = 1, a_3 = 2, a_4 = 5, a5 = 3$ THEN Result = 3
IF $a_1 = 1, a_2 = 4, a_3 = 1, a_4 = 2, a5 = 1$ THEN Result = 3
IF $a_1 = 4, a_2 = 2, a_3 = 4, a_4 = 5, a5 = 4$ THEN Result = 4
IF $a_1 = 4, a_2 = 3, a_3 = 4, a_4 = 4, a5 = 5$ THEN Result = 4
IF $a_1 =4, a_2 =4, a_3 =4, a_4 =4, a5=5$ THEN Result=4
IF $a_1 =5, a_2 =2, a_3 =5, a_4 =5, a5=5$ THEN Result=5
IF $a_1 =4, a_2 =4, a_3 =4, a_4 =4, a5=5$ THEN Result=5

According to both the reduced data and reduction table, it is possible to describe d =2 by a_2 =1 which is called the reducing value.

IF a_2 =1 THEN Result=2

So if the parameters of managers' power are very low in the organization, then the employee's aggression level in the organization will be at low levels. Using a similar reasoning, the above 16 rules can be summarized as follows:

IF a_1 =1, a_3 =1 THEN Result=1

IF a_2 =1, a_3 =2 THEN Result=2

IF a_2 =1, a_3 =2 THEN Result=3

IF a_1 =4, a_3 =4 THEN Result=4

IF $a_{5=}$ 5 THEN Result = 5

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