MEASUREMENT OF BEHAVIORAL COMPLEXITY LEVELS IN THE GENERAL COMMISSION FOR GEOLOGICAL SURVEY

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ABSTRACT

The objective of this research is to investigate the behavioral complexity of the GSO. The sample was chosen for this purpose and included the employees in the departments that depend on the work of the work teams. Therefore, we gave 109 questionnaires to the employees. Statistical methods were used to measure behavioral complexity as well as standard deviation and mean. The results indicated that the senior management in the body investigated has a clear behavioral differentiation with the employees, especially in terms of change according to the employees' behavior, according to the organizational position and according to the employees and their different personalities. However, there is some decline by senior management in the practice of behavior (router, negotiator and coordinator).

Keywords: behavioral complexity, Behavioral repertoire , behavioral differentiation.

FIRST: RESEARCH METHODOLOGY

1. Search problem

The issue of verifying the impact of behavioral complexity on the performance of public organizations is important in managing organizations and activating the role of departments and organizational levels in achieving the objectives optimally. Therefore, the current research characterizes the problem by trying to study the extent of the nature of the behavioral complexity of the leaders in the General Authority for Geological Survey of Iraq.

2. Research objectives

Identify the level of behavioral complexity and its impact on performance Public organizations represented by the General Authority for Geological Survey, and provide practical, scientific and logical solutions to the problems faced by the organization in the field of these variables. And work to communicate with previous research efforts to increase intellectual enrichment and knowledge production in the field of research variables.

3. Sample search

Table (1) provides details of the research sample as follows:

Table (1) Characteristics of the research sample				
Personal attributes of the search sample	**Categories**	**Ratio**	**Num ber**	
Gender	Male	53.2%	58	
	Female	%46.8	51	
Total		100.0	109	
Age	30 and less	7.3%	8	
	31-40	%36.7	40	
	41-50	43.1%	47	
	51 and more	%12.8	14	
Total		100.0	109	
Years of Service	5 Less than	6.4%	7	
	6- 10	9.2%	10	
	11-15	18.3%	20	
	16-20	38.5%	42	
	21-25	7.3%	8	
	25 and more	20.2%	22	
Total		100.0	109	
Qualifications	Diploma	39.4%	43	
	BA	53.2%	58	
	High Diploma	5.5%	6	
	Master	1.8%	2	
Total		100.0	109	

SECOND: THEORETICAL SIDE

1. **Behavioral complexity**

The influence of leadership behaviors on performance has been at the center of the study for many years. More recently, many researchers have presented the idea of "behavioral complexity" as a field to explore this effect.

Behavioral complexity refers to the development of a range of leadership functions that allow the leader to respond to complex demands (Laljani, 2009: 47).

Satish (1997) emphasized that adaptation and reorganization are characteristics of complex systems, and the theory of behavioral complexity focuses on: (Satish, 1997: 2048)

a) Structural processes used by individuals, groups, teams and organizations for adaptation.

b) The differences between individuals and the interaction between a volatile and complex environment, perhaps ambiguous with individuals or groups who try to deal with that environment.

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There is a difference in views on the behavioral complexity of the concept of leadership and this depends on two types of orientation: Denison et al., 1995: 526.

In terms of classical perception the behavioral complexity seen to command it as an enormous, possibly endless set of contingencies that are in a state of constant change. When organizational environments become more complex, the problem becomes more difficult, so a productive approach may be to try to define a portfolio of roles that allow the leader to respond to complex demands.

From the point of view of modern literature, Hooijberg (1992) suggests that the concept of behavioral complexity may be related to related fields such as cognitive and social complexity, behavioral doctrines and an integrative dynamic that merits further conceptual development. (Denison et al., 1995: 526).

The researcher believes that this holistic perspective challenges the way we think about leadership roles. As well as contextual factors contributing to the possibility of describing leadership responses to all potential emergencies. This perspective goes beyond the current approach to emergencies requiring the commander to determine the characteristics of the situation and then to choose the appropriate behavior.

Both Hooijberg& Quinn (1991) point out that leadership effectiveness requires not only complex thought processes, but also behavioral complexity, "the ability to act through a wide range of roles at the personal or organizational level".

Previous research has shown evidence that more behaviorally complex leaders view them as more effective leaders by subordinates, presidents and peers, and that behavioral complexity is the ability of the leader to demonstrate competing and even contradictory behavior in leadership roles (Richard, 1992: 65).

Hart & Quinn (1993: 544) noted that research to date has provided a wealth of information on leadership style and more effective leadership traits. Effective leaders have been portrayed as innovative, dynamic, charismatic, transformative, and participatory. On the other hand, leaders are described as having strong, resolute, decisive, expert and analytical characteristics.

The concept of behavioral complexity is used to refer to the need for leaders to have a wide range of leadership positions in the Organization. This suggests that leaders will be more effective than leaders who perform only one command function (Denison et al., 1995: 526).

Denison et al. (1995) defined behavioral complexity as the ability of a leader to perform multiple organizational roles that required very different patterns of behavior. Supporters of this approach describe leadership as the ability to perform multiple roles and behaviors that respond to the desired diversity of the regulatory and environmental context. (Denison et al., 1995: 526).

The concept of behavioral complexity refers to the ability of effective leaders to perform multiple leadership roles that require different and sometimes contradictory behavioral patterns, and to play these roles selectively depending on circumstances (Zaccaro, 2001: 123).

Bedeian& Hunt (2006) defines behavioral complexity as the ability of the individual to exhibit a wide range of contradictory behaviors. This behavioral diversity integrates a broader set of roles associated with both management and leadership). Lawrence et al., 2009: 87).

According to Wangler (2009: 12), behavioral complexity is defined as "the number of behaviors a manager has in his behavioral chain: the more behavior the greater the level of behavioral complexity of the manager".

Finally, Scott (2012: 11) defines behavioral complexity as the ability of a leader to assume multiple leadership roles and perform roles that are necessary to achieve contextually relevant goals.

The researcher considers that behavioral complexity is the ability of the leader to perform and practice a range of active leadership roles to achieve goals according to regulatory and environmental conditions.

THIRD: THE DIMENSIONS OF BEHAVIORAL COMPLEXITY

Preliminary studies on behavioral complexity have suggested the importance of behavioral ammunition and its role in behavioral complexity until the study of Hooijberg (1996) and presented another dimension of behavioral differentiation. The researcher will address these dimensions in some detail:

1. Behavioral repertoire

Hooijberg, 1996: 919 refers to the concept of behavioral ammunition as a set of leadership functions that a manager can perform.

Behavioral ammunition is defined as a portfolio of leadership roles that can be performed by the administrative leader. The greater the size of the portfolio, the more likely the leader will choose the appropriate roles and perform them effectively as the situation and expectations of a range of stakeholders (Hooijberg et al., 1997: 387).

It is also a set of behavioral functions and the integrated rules upon which the leader relies to carry out his duties to the fullest. He also enables him to take appropriate leadership actions according to the behavioral abilities he possesses, which are often characterized by complexity, effectiveness and excellence (Carmeli&Halevi, 2009: 214).

It is defined as a set of accumulated leadership behaviors possessed by business leaders that appear instinctively or schematically within the context of the regulatory environment. (Cenac, 2014: 12)

The concept of behavioral ammunition refers to the ability of the leader to enact a wide range of managerial behaviors and leadership roles. Leaders with a large behavioral stock can simply "do more" and are often seen in many roles as shown in the framework of competing values.

Behavioral ammunition allows the leader to respond appropriately to a variety of scenarios and organizational demands. The more roles a commander can play, the more likely he or she will be able to respond to the needs of the situation at any given moment. (Mitchinson, 2016: 10)

Behavioral ammunition is an essential component of behavioral complexity and corresponds to a number of behaviors that an individual knows and can be put into practice (Rouleau, 2015: 10)

If the commander's behavioral inventory is too broad, the commander can respond appropriately to environmental demands. Behavioral ammunition is particularly important because administrative functions have become more complex. (Laljani, 2009: 48) There is a wide range

of leadership roles that make it likely that the leader will perform the appropriate leadership roles in a specific situation and meet the expectations of a variety of beneficiaries. It can be said that leaders who perform multiple leadership roles record the highest level of leadership effectiveness from those who do not. (Zaccaro et al., 2001: 108)

The researcher believes that the behavioral ammunition is a variety of behaviors practiced by the leader and represented by his skills and practical and scientific experience, which help him to adapt to the regulatory environment.

2. Behavioral Differentiation

The concept of behavioral differentiation refers to the ability of managers to perform leadership functions that they have in their behavioral munitions differently (more adaptive) , More flexible, more appropriate, and more unique (depending on the organizational position (Hooijberg, 1996: 922) and this is consistent with the researcher.

Denison et al. (1995: 526) point out that behavioral discrimination is the ability of managerial leaders to perform leadership roles differently depending on the organizational situation.

McCarthy sees behavioral differentiation as the ability to apply an appropriate behavioral repertoire, as dictated by the situation. (McCarthy, 2012: 22)

ROULEAU believes that an effective leader has a broad behavioral repertoire and has the ability to use and adjust it according to the established context. (Rouleau, 2015: 10)

The concept of behavioral differentiation also suggests that leaders whose leadership roles differ depending on their relationship with those who interact with them will work more effectively than those who do not. (Zaccaro et al., 2001: 110).

Behavioral differentiation relates to how the leader applies different behaviors to their ammunition, specifically whether leaders differ in their behavior across different contexts and social interactions. Where leaders choose the appropriate behavioral response based on the perceived demands of the situation at hand. It can be argued that the hallmark of behavioral differentiation

is the ability of leaders to change their behavior, choose one role in one case, and a different role from other roles. (Mitchinson, 2016: 10)

Research conducted at the intermediate and operational levels of the organizational structure has emphasized that leaders should take into account the characteristics of their subordinates and the structures and clarity of the task in shaping their leadership roles (Zaccaro&Klimoski, 2001: 111) Managers must carefully choose the appropriate leadership role to interact with subordinates, , Or presidents, and it is clear that managers who differ in the way they perform their leadership functions depending on the relationships they have with the people they interact with will work more effectively than Olek who do not (Hooijberg, 1996: 923).

On the other hand, leaders may understand the differences in expectations between their subordinates and their superiors, but this does not mean that these leaders can behave in a similar behavioral manner to meet the expectations of both groups. Leaders who can perform their leadership roles to meet the expectations of their subordinates and their superiors are said to be more behavioral in character than those leaders who only meet

the expectations of their subordinates or superiors (Hooijberg, Hunt & Dodge, 1997: 390).

The researcher agrees with (Hooijberg, 1996: 922) in the introduction of the concept of behavioral differentiation because it explained the concept more fully.

FOURTH: THE PRACTICAL FRAME OF RESEARCH

1. Results of the normal distribution test of the data:

Table 2 and Figure 2 show the results of the normal distribution test using the Kolmogorov-Smirnov test and the torsion and flattening coefficient at each dimension of the variables in the research that are included in the hypothesis test models as independent or dependent variables. The variables and distances that do not follow the normal distribution will be processed using the standard formula, known as the standardization or standardization method used in the current research, after dividing the difference between the values of variables from their computational dimensions on their standard deviations (Chatterjee and Hadi, 2006: 140-139).

Table (2) Results of normal distribution test							
Variable	**Kolmogorov-Smirnov**			**Skew**	**c.r.**	**Kurtosis**	**c.r.**
	Statistic	**df**	**Sig**				
Behavioral repertoire	0.123	0.000	Unconscious	-.549	-2.342	-.477	-1.016
Behavioral differentiation	0.182	0.000	Unconscious	-1.060	-4.520	.781	1.664
Behavioral complexity	0.144	0.000	Unconscious	-.832	-3.547	.238	.508

2. Trusted Search Measurement Tool

The concept of the instrument's reliability refers to the ability to accurately and reliably measure the construction to be measured, ie the extent to which the measuring instrument represents the characteristics that exist in the phenomenon under investigation. This aspect included three axes: (Split-half), consistency between components of the scale (alpha-cronbach), and the constructive honesty of the test of the measuring instrument (the empirical analysis).

a) Correlation between components of the scale (Alpha Cronbach)

As for the results of the stability test or internal consistency through the correlation coefficient (Cronbach Alpha) is shown in table (3), which confirmed the internal consistency of the scales of the scale at the level of the variable Behavioral complexity has exceeded the values of correlation coefficients (Cronbach Alpha) the minimum acceptable (0.70) Of the scale and therefore its required stability if the test is repeated.

Table (3) Results of the test of the internal consistency of the scale		
the scale	**Number of paragraphs**	**Alpha Cronbach's dimensional coefficient**
Behavioral complexity	16	0.859
Behavioral repertoire	10	0.862
Behavioral differentiation	6	0.863

b) Internal consistency of the Split-half Reliability Tests

The Split-Half method is used to measure stability, which is to find the correlation coefficient between the scores of the individual questions and the scores of the marital questions in the questionnaire. The correlation coefficient is corrected by the Spearman -Brown equation. If the coefficient of stability (0.67) it is sufficient for research, which is based on the questionnaire. When applying this method, it was found that the correlation coefficient of the questionnaire was 0.882, which means that it is of various measurements with good stability and can be adopted at different times and for the same individuals.

c) Internal consistency of the Split-half Reliability Tests

The Split-Half method is used to measure stability, which is to find the correlation coefficient between the scores of the individual questions and the scores of the marital questions in the questionnaire. The correlation

coefficient is corrected by the Spearman -Brown equation. If the coefficient of stability (0.67) it is sufficient for research, which is based on the questionnaire. When applying this method, it was found that the correlation coefficient of the questionnaire was 0.882, which means that it is of various measurements with good stability and can be adopted at different times and for the same individuals.

3. The empirical analysis of the behavioral complexity variable

Figure (1) shows the empirical analysis of the behavioral complexity model, which consists of two basic dimensions, consisting of (19) paragraphs, as shown in Figure (1). By observing the quality indicators of the model and the phenomenon in Figure (1), most of these indicators To adapt and improve these indicators, we will adjust them according to the recommendations of the Modification Criteria (Barbara M. Byrne, 2009: 90), which include either deleting or modifying the high-contrast items in the model. After this procedure, the final model after adjustment as shown In Figure (2).
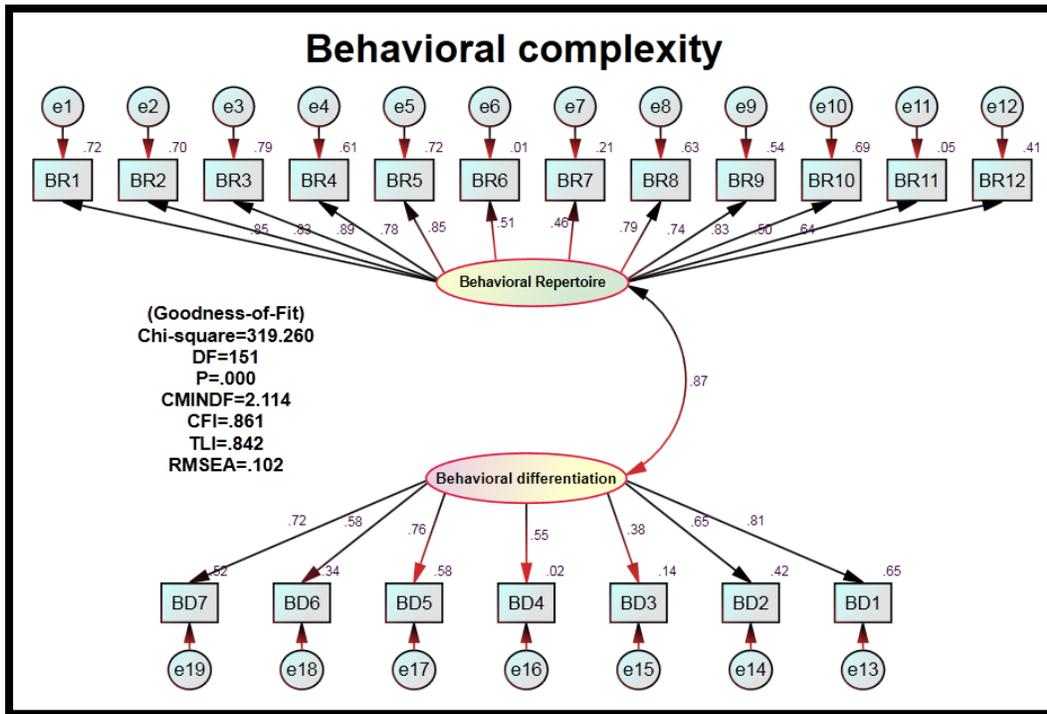
Figure (1) The constructional honesty of the variable behavioral complexity
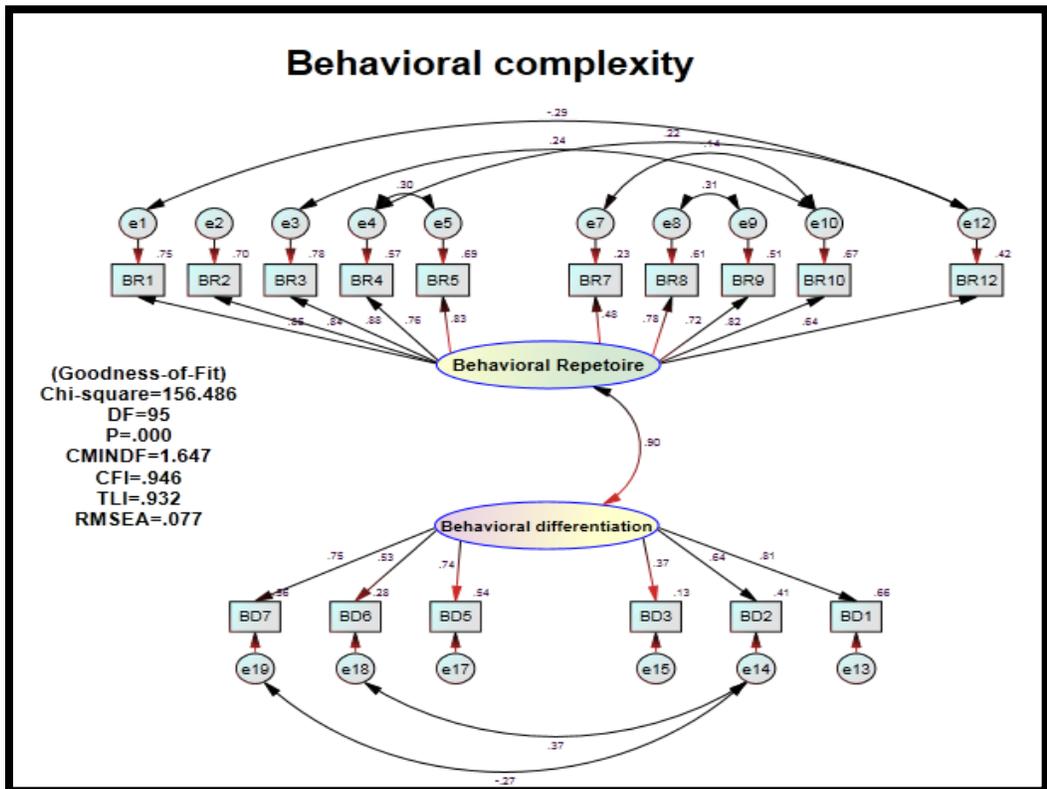

Figure (2): The constructional honesty of the variable of behavioral complexity after modification

As shown in Figure (2) and after the deletion of the paragraph "he has no clear plan to control the course of work" and the paragraph "his relations with the staff are not moral aspects" of the dimension of behavioral ammunition and the paragraph "difficult to change his methods of work and procedures" after behavioral differentiation. (4) The structural truth of the scale for

most of the variables of the behavioral complexity variable is greater than or equal to (0.50) in addition to the significance of the paragraphs as it is found that all the paragraphs are greater than the critical standard value (CR)) Of (1.96). This indicates the veracity of the statements and that the quality indicators of the extracted matches are close to the Goodness of Fit indicators.

Paragraphs	Dimensions		Estimate	S. S.W.	S.E.	C.R.	P
Table (4) shows slope weights, standard errors, critical values, and significance level for the removal of behavioral complexity							
BR1	<---		1.000	.864			
BR2	<---		.947	.838	.083	11.447	***
BR3	<---		1.039	.881	.083	12.539	***
BR4	<---		.738	.757	.077	9.616	***
BR5	<---	**Behavioral repertoire**	.956	.831	.085	11.200	***
BR7	<---		.480	.480	.091	5.243	***
BR8	<---		.778	.781	.077	10.061	***
BR9	<---		.736	.716	.084	8.763	***
BR10	<---		.914	.820	.084	10.861	***
BR12	<---		.546	.645	.080	6.846	***
BD1	<---		1.000	.811			
BD2	<---		.782	.638	.115	6.783	***
BD3	<---	**Behavioral differentiation**	.357	.365	.098	3.653	***
BD5	<---		.840	.736	.103	8.170	***
BD6	<---		.616	.532	.113	5.442	***
BD7	<---		1.104	.749	.134	8.254	***

CONCLUSIONS AND RECOMMENDATIONS

First: Conclusions

1. The results showed that the senior management in the body investigated has a clear behavioral

differentiation with the employees, especially in terms of change according to the employees' behavior according to the organizational situation and according to the employees and their different personalities. However, there is some decline by senior management in the

practice of behavior (router, negotiator and coordinator).

2. The results showed that there is a good interest by the senior management in the Geological Survey to encourage the employees and motivate them to work in order to improve the general level of the inspected body as well as in order to raise the performance levels of the employees. But at the same time there is some decline in accepting or adopting new methods in motivating employees and there is much emphasis on the traditional methods that have been implemented in previous years.

Second: Recommendations

1. The need for all leaders to adopt the concept of behavioral complexity through the performance of a wide range of leadership roles that help to achieve the objectives and achieve a more effective performance compared to traditional management methods.

2. The need to distinguish the leadership behavior of senior management through the transition from the administrative approach, which focuses only on the formal aspects and routine and the implementation of written plans only to the leadership style that inspires the feelings of employees and be involved and authorized and coordinated with the workers.

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