



# VALIDITY SELECTION FOR BUILDING A PROPOSED MODEL ORGANIZATIONAL PERFORMANCE AT THE GENERAL ELECTRICITY COMPANY OF LIBYA USING CONFIRMATORY FACTOR ANALYSIS

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## Abstract:

The study aims to set a conceptual framework to measure organizational performance at the general electricity company in Libya by adopting proper dimensions to measure it through (wages arrangement , personnel data arrangement, fast information restore, monitoring attendance), and to achieve this goal we used confirmatory factor analysis (CFA) by using Amos program. And based on these results, the study found out that this model is the proper and most credible one to measure organizational performances in industrial organizations in Libya.

**Keywords:** personnel satisfaction, organizational commitment, thinking and creativity skills

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**1. Introduction:** general electricity company is one of the sectors which focus on developing its organizational performance as its importance becomes very clear in large and medium organizations because it is considered the basic axis for success or failure of the organization. Also to know the position of the organization and its potential in comparison with other organizations as the efficient performance of the organization may be achieved through its ability to manage its internal capabilities and elements to adjust to and accommodate the surrounding environmental changes

Performance is closely linked to the science of management as it is one of the main branches which gets large attention because it is an essential element for all branches of management knowledge in addition to being the most important in the organizations which concerns the existence of vanishing of the organization (Elktb 2002,p16). (Bajabar 2011) defined performance as the outcome of interaction of employee's behavior and that behavior is decided by interaction of his effort and ability in serving the objectives of the organization. (Elmadi 2010) added that performance is the outcome of the production of the employee during performing any work inside the organization. Whereas (Elshari 2001, 231) defined performance as the final outcome decided by the organization as a result of doing its activities. (Elkhatib 2002,p79) defined it as the ideal exploitation of resources of the organization to achieve its objective efficiently and effectively. (Dura 2008,p15) says that performance is the result of behavior inside the organization. It is merely a mechanism including a group of



organized techniques and procedures. (Elmeshhadani 2004, p24) defined it as the ability of the organization to deal with inputs and transforming them into outputs. (Elmana 2006, p71) sees performance as the objective job behavior of the employees to achieve their tasks inside the organization.

Some studies stressed that organizational performance is a comprehensive concept and multi-facet and complete system. Based upon this view, organizational performance shall be on many levels which may be summarized into three levels which include: individual performance level (human element) and organizational units performance level (management) and the overall performance level (organizational performance) (Thabet 2001) (Elali 2006)(Eladluni 2002) (Mustafa 2002).

Many studies took the approach of setting the dimensions of organizational performance and define nature of its effect on organizational variables. Some of these studies included (Roy 2013) and (Haburi 2009) as they showed that there are dimensions for organizational performance. And this study has approved them as main measurement dimensions to interpret them accurately which included the following:

### **1.1 Personnel satisfaction:**

(Mohamed 2004) defines personnel satisfaction as the feeling of happiness by the individual and satisfaction for performing his work and this is achieved by accommodating the expectations of the individual our his work and what he actually gains in this work. Personnel satisfaction includes the elements which push the individual. (Awad Allah 2012) sees that satisfaction is satisfying which the second criterion is and that satisfaction is attached with reaching the individual an objective followed by wish fulfillment. Satisfaction is an emotional feeling in life and what the individual will achieve in the future accompanied by personal persuasion of what the individual can achieve in any field.

### **1.2 Organizational commitment :**

(Porter 1990) defined organizational commitment as the continuous drive to get involved in certain activities inside the organization as a result of investing the individual in it and which is feared to be lost if abandoned by him. (Rebecca 2013) sees it as a strong association with organization goals and values and acceptance of the goals and values and the will to extend the effort on behalf of the organization and staying with it as a member. (Qaisar et al, 2012) define it from a psychological view as the psychological association which link the individual with the organization which drives him to integrate with the work and adopting values of the organization which affects organization efficiency and productivity.

Some studies have stressed that organizational commitment contributes largely to achieving organization goals and performing the works with least time and effort and lowest cost by integrating them in the work. In addition, the more the employees stay with the organization, they would get more experience and become more efficient and that in turn shall increase their productivity and hence the organization activity. (Yeh et al.2010) (Salleh et al.2013) (Sutanto.2011)

## **2. Thinking and creativity skills:**

Transformation from failure to success requires human expertise and minds capable of being creative and innovative and think creatively and is the distinctive human capital and the first resource for creativity and innovation based upon his distinguished skills capable of finding many benefits and revenues for the organization through the continuous improvement of productivity and providing creative products and services to fulfill the changing needs of the clients (Elrab 2005). Many researchers stress the clear difference between innovation and creativity as innovation refers to generating new ideas beneficial or valuable to the products, operations or procedures through the individuals or groups in a certain organized form whereas creativity means



successful application of these innovative ideas on (Wilson and Stokes 2005, Zhou and George,2001) (Jamrong et al 2006) (Martines andn Terblanche,2003).

### **3. Objectives of the study:**

The study aims basically to verify the validity of the organizational commitment factor as latent factor by convergent validity testing known as average variance extract (AVE) for each dimension of the basic scale including (emotional commitment, continuous commitment, standard commitment) and the paragraphs which they represent , and to also verify the validity of variance known as covariance (SV) between the dimension to be depended upon in making the association and affecting tests with other latent factors.

### **4. Methodology:**

#### **4.1 Study society and sample:**

The study society is made of the decision makers (division chief, unit manager, department manager) in the general electricity company of Libya and its branches in Libya who are about (1100) employees as (590) individual were defined as primary sample for analysis, whereas the sample fit for analysis was (565) questionnaire all of which fulfilled analysis conditions.

#### **4.2 Tool of the research;**

The researchers designed a questionnaire to test the construct validity of the organizational commitment factor by depending on previous studies like (Roy 2013) (Abuzaid 2011) (Habori 2009)), as the first dimension (monitoring jobs and wages) included (8) paragraphs and like the second dimension (commitment) included (8) paragraphs. The third dimension (innovative thinking skills) had (8) paragraphs making for the total of (24) paragraphs, for organizational performance scale after verifying its external validity (arbitration) through presentation to specialized professors in this field and to verify validity of reliability coefficient by Alpha Cronbach test.

#### **4.3 Confirmatory factor analysis-CFA:**

The researchers used confirmatory factor analysis for all parts and components of the measurement tool to verify the construct validity of the study questionnaire according to its main dimensions (monitoring jobs and wages, organizing personnel data, fast information restore, monitoring and evaluating attendance) by depending on Fornell –Larcker criterion in addition to four main indicators to test its credibility like: 1) Chi-square and degrees of freedom,2) (  $C_{min}/df$ ) so that it shall be ( $5 \leq df/2x \geq 2$ ) (marsh and hocevar ,1985), and 3) (CFI) indicator higher than 0.90 (Mackdonald and Marsh,1990) 4) (RMSEA) less than 0.08 (Browne and Cudeck 1993).

### **5. The results:**

#### **5.1 results of indicators test for conformity and suitability of the scale of organizational performances (before modification):**

The confirmatory factor analysis results as in figure (1) for organizational performance scale and its three dimensions showed that it is free of any (illogical correlation) which reaches or exceeds the number (1) , and that confirms to us that there is no problem in the confirmatory analysis of organizational performance scale with three main dimensions: (personnel satisfaction, organizational commitment, innovative thinking skills). And even though the scale is free of any illegal correlation, however, some of its main indicators do have some nonconformance and that is clear from figure (1) and also table (1). And by looking into the value of Chi square, the result was ( $cmn/df=6.622$ ) which is a value higher than the criterion (5) in addition to Rmse indicator



whose result was also higher than the intended one and it exceeded the set standard value and reached (Rmse=0.103) which is higher than (0.080 in addition to Chi square indicator criterion, its value exceeded its standard set value also (5) by (Cmin/df=6.927 to re-describe the scale according to what was proposed by Amos program, it was required to connect some of its paragraphs and delete some as shown in figure (2).

Figure (1) confirmatory factor analysis (Amos program) for organizational performance scale (model before modification)

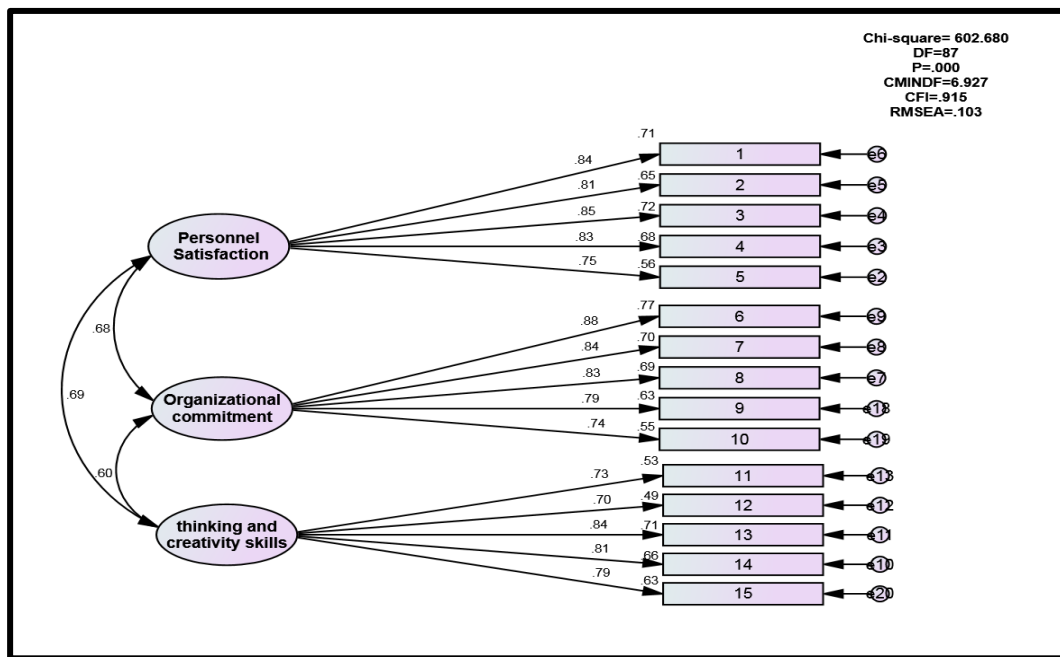


Table (1) suitability and conformance values for organizational performance scale before and after modification

s.n	Conformant indicators and matching model with data collected from study environment	Indicators value before change	Indicators value after change	Value indicating quality of matching
1	chi square (Cmin)	602	305.998	
2	Temprature (Df)	87	83	
3	significance level (p)	0.000	0.000	non indicated
4	value of chi square (Cmin/df)	6.927	3.687	Less than (5)
5	differential matching indicator (Cfi)	0.915	0.963	More than (.900)
6	(Rmse)	0.103	0.069	Less than (.080)

**5.2: results of standard and nonstandard perimeters and transactions of human resources information systems scale (after modification):**

After connecting some paragraphs and deleting other organizational performance scale proposed by Amos, and by looking into table (2) for the modified form, the standard and nonstandard perimeters and transactions showed that matching indicators of the model with the data were perfect with the set standards as the values of



these indicators to the Chi square were (Cmin+305.899) and the freedom was (df+83) and the significance level for statistical significance (p=0.00) and value of chi square (cmin/df=3.687) and did not exceed the criterion (5) in addition to the value of the differential matching indicator was (cfi=0.963) which is higher than the criterion (0.90). The results also showed the suitability of the value of indicator of root mean square rounding error (Rmse) which was (Rmse=0.069) and less than the criterion (.080). all of those indicators prove that the human resources information system model conforms with environment of the study from which the information were collected.

And by looking into the correlations between the dimension of the organizational performance scale as shown in figure (2) and table (2), the correlations (relations) between the dimensions of the model all had significance level as the (t)statistical value was higher than (1.964) and significance level (probability value) is equal to (p=0.000) and was less than criterion (0.05).

Also , the correlation ratios between the dimensions in the model ranged between (0.57) as least correlation ratio and was after dimension of organizational commitment and creativity and thinking skills. Whereas after the highest correlation ratio between the dimension of personnel satisfaction and dimension of thinking and creativity was (0.67). This also indicates that the dimensions had (discriminant validity) as all correlation went away from total melting between them and declined in its correlation from the total melting set at (0.90). The next table shows the standard and nonstandard perimeters and transactions and correlations and common variance between the dimensions of the modified organizational performance model.

Figure (2) Confirmatory factor analysis (Amos program) for organizational performance scale (Model after modification)

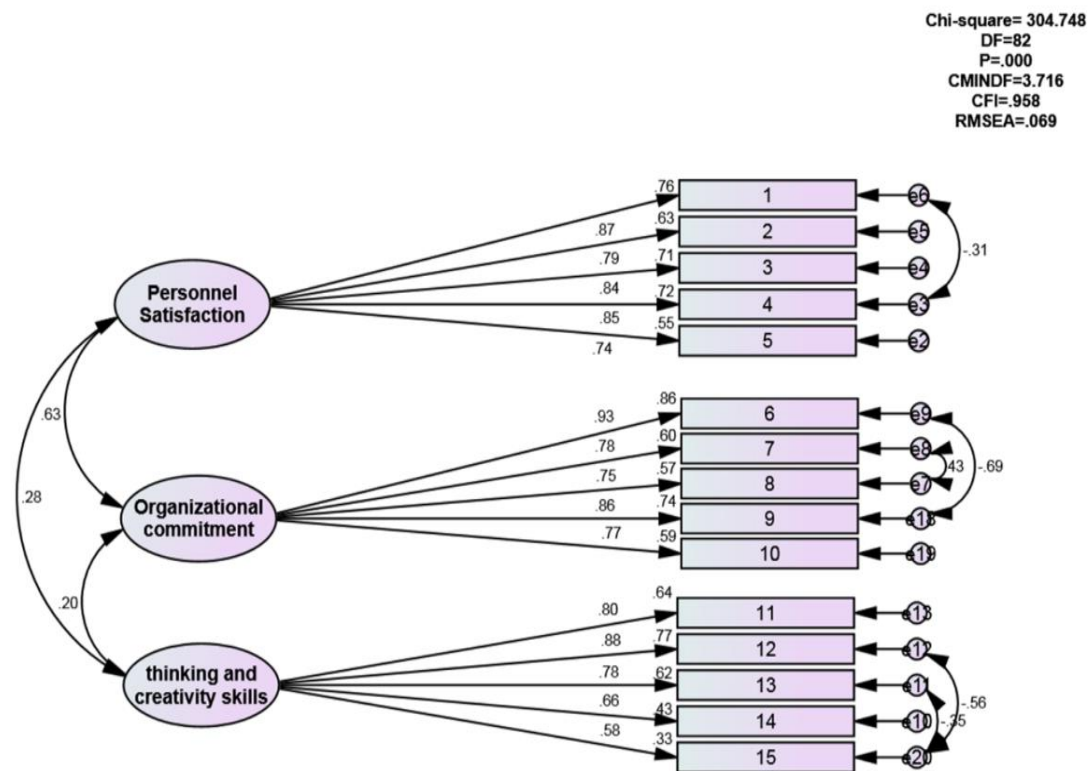




Table (2) Unrated values and (T) value and significance level and correlation values between dimensions of organizational performance.

s.n	Latent factor	correlation	Latent factor	Estimate	Se	C R	P	R	SV
				Unrated Estimates	Scale error	Critical ratio (T)	Function level	correlation	Common variance
1	Personnel satisfaction	↔	Organizational commitment	0.804	0.071	11.354	0.000	0.63	0.40
2	Personnel satisfaction	↔	Innovative thinking skills	0.827	0.072	11.488	0.000	0.67	0.45
3	Organizational commitment	↔	Innovative thinking skills	0.746	0.071	10.481	0.000	0.57	0.32

### 5.2.1 Results of construct validity test for first dimension (monitoring job and salary) for organizational performance scale:

By looking at figure (2) and table (3) we clearly find that saturation or correlation between first dimension (personnel satisfaction) and its representing five paragraphs had statistical significance level as the (T) statistical value for each paragraph was higher than (1.964) and the significance level (probability value) less than (0.001). The saturation ratio was high and excellent and higher than the intended value (0.50) as it ranged from (0.75) paragraph (5) and (0.87) in paragraph (1). Also, the multiple correlation square (MCS) ratios ranged between (0.56) to (0.75). the mean for MCS called (AVE) which must be at least (0.50) as one of the basic criterion for convergent validity. And from the same table (3) we find that the mean variance extracted was (0.67). All of these indicators show that the dimension with convergent validity proofs and as a one dimension of organizational performance.

Table (3): estimate unrated and (T) value, significance level and saturation and correlation ratio and mean variance extracted for the dimension of monitoring Personnel satisfaction.

s.n	Para. No	Latent factor	Estimate	S.E	C.R	P	Loading	SMC	AVE
			Unrated estimates	Scale error	(T) value	Function level	saturation	Square correlation	Extracted variance
1	Para.1	Personnel satisfaction	1.000				0.87	0.75	0.67
2	Para.2	Personnel satisfaction	0.861	0.37	23.078	0.000	0.8	0.64	
3	Para.3	Personnel satisfaction	0.935	0.37	24.974	0.000	0.84	0.70	
4	Para.4	Personnel satisfaction	0.940	0.41	23.008	0.000	52.00	0.72	
5	Para.5	Personnel satisfaction	0.848	0.40	21.014	0.000	0.75	0.56	

### 5.2.2 Results of construct validity test for second dimension (organizational commitment) for organizational performance scale:

By looking at figure (2) and table (4) we clearly that saturation or correlation between second dimension (organizational commitment) and its representing five paragraphs had statistical significance level as the (T) statistical value for each paragraph was higher than (1.964) and the significance level (probability value) less than (0.001). The saturation ratio was high and excellent and higher than the intended value (0.50) as it ranged



from (0.93) paragraph (6) and (0.75) in paragraph (8) which confirms the convergent validity (sv) for the dimension of organizing personnel data. Also, the multiple correlation square (MCS) ratios ranged between (0.87) to (0.57). the mean for MCS called (AVE) which must be at least (0.50) as one of the basic criterion for convergent validity. And from the same table (4) we find that the mean variance extracted was (0.67). All of these indicators show that the dimension with convergent validity proofs and as a one dimension of the organizational commitment.

Table (4) unrated values and (T) value and significance level and saturation and square correlation ratio and mean variance extracted for the dimension of organization commitment.

s.n	Para. No	Latent factor	Estimate	S.E	C.R	P	Loading	SMC	AVE
			Unrated estimates	Scale error	(T) value	Function level	saturation	Square correlation	Extracted variance
1	Para.6	Organization commitment	1.000				0.93	0.87	0.67
2	Para.7	Organization commitment	0.804	0.0.5	23.106	0.000	0.78	0.60	
3	Para.8	Organization commitment	0.817	0.037	22.034	0.000	0.75	0.57	
4	Para.9	Organization commitment	0.896	0.038	23.427	0.000	0.86	0.74	
5	Para. 10	Organization commitment	0.880	0.039	22.667	0.000	0.77	0.59	

### 5.2.3 Results of construct validity test for third dimension (thinking and innovation skills) for organizational commitment:

By looking at figure (2) and table (5) we clearly that saturation or correlation between first dimension (monitoring job and salary) and it representing six paragraphs had statistical significance level as the (T) statistical value for each paragraph was higher than (1.964) and the significance level (probability value) less than (0.001). The saturation ratio was high and excellent and higher than the intended value (0.50) as it ranged from (0.86) paragraph (13) and (0.64) in paragraph (12) which confirms the convergent validity (cv) for the dimension of standard commitment dimension. which confirms the convergent validity (cv) for the dimension of organizing personnel data. Also, the multiple correlation square (MCS) ratios ranged between (0.75) to (0.41). the mean for MCS called (AVE) which must be at least (0.50) as one of the basic criterion for convergent validity. And from the same table (5) we find that the mean variance extracted was (0.59). All of these indicators show that the dimension with convergent validity proofs and as a one dimension of the organizational performance.

Table (5) Unrated values and (T) value and significance level and saturation and square correlation ratio and mean variance extracted for the dimension of evaluating the alternatives.

s.n	Para. No	Latent factor	Estimate	S.E	C.R	P	Loading	SMC	AVE
			Unrated estimates	Scale error	(T) value	Function level	saturation	Square correlation	Extracted variance
1	Para.11	Innovative thinking skills	0.759	0.045	16.884	0.000	0.67	0.45	0.59
2	Para.12	Innovative thinking skills	0.741	0.047	15.880	0.000	0.64	0.41	
3	Para.13	Innovative thinking skills.	0.988	0.042	23.559	0.000	0.86	0.75	
4	Para.14	Innovative thinking skills	1.000			0.000	0.83	0.68	
5	Para.15	Innovative thinking skills	0.943	0.044	21.575	0.000	0.81	0.65	



### 5.3 results of Fornell-Larcker Criterion for organizational performance:

To verify predictive validity (variance) between the dimensions of organizational performance scale, the researchers applied Fornel-Larcker criterion so that the average variance (AVE) extracted for each dimension in the criterion shall be higher that the common variance (cv) for all relations and correlations. Table (7) shows correlations between the four dimensions of organizational performance scale.

Table (6) Correlation matrix between the four dimensions for organizational performance scale.

S.n	Latent variables	Personnel satisfaction	Organizational commitment	Innovative thinking skills
1	Personnel satisfaction	1		
2	Organizational commitment	0.63	1	
3	Innovative thinking skills	0.67	0.57	1

We see from table (7) which shows the common variance between the four dimensions which is the outcome of multiplying the correlation by itself. And from the same table which shows the average variance extracted (ave) which was higher than the common variance (sv) between all dimensions and that indicates that the organizational performance model has fulfilled the Fornell –Larcker criterion and was characterized by variance validity between its four dimension.

Table (7) Common variance matrix and variance extracted between the three dimensions of organizational performance scale.

S.n	Latent variables	Personnel satisfaction	Organizational commitment	Innovative thinking skills
1	Personnel satisfaction	0.67		
2	Organizational commitment	0.40	0.67	
3	Innovative thinking skills	0.45	0.32	0.59

### 6. Conclusion and discussion of results:

This scientific paper has achieved its main goal of study which is verification of validity of building organizational performance scale at the general electricity company of Libya through the use of confirmatory factor analysis (CFA) as one of the modeling techniques for construct equation (SEM-AMOS), as it was depended on the basic measuring dimensions for latent factor (organizational commitment) and some scientific studies such as (Roy 2013) and (Abuzaid 2011) and (Habori 2009). The results indicated the hypothetic model and the criterion set for it in addition to validity of constructing it as measuring tool which can be depended upon in measuring organizational performance inside industrial companies. The scale also was characterized with its approximate validity (AVE) between measuring dimensions and main indicators as they were all over the set criterion (0.50). The study also proved the variance validity between the main scale dimensions for





measuring organizational performance (personnel satisfaction, organizational commitment, innovative thinking skills) as the average variance extracted for all dimensions paragraphs was higher than the common variance between them (sv) and this result came out perfectly conformant with Fornell-Larcker criterion.

Therefore, we conclude that the organizational performance scale can be depended upon as a dependable measuring tool in implementing correlation studies in the future.

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