

**CHAPTER IV**  
**DATA ANALYSIS AND FINDINGS**

# DATA ANALYSIS AND FINDINGS

## 5.0 Chapter overview

This chapter presents the analyses of data collected from Sudanese industrial firms respondents. The chapter was organized into four sections. The first section concerns with data cleaning, response rate, and the profile of both firms and respondents, followed by the goodness of measures which discusses the validity and reliability of the measurement. The third section shows the descriptive analysis of the study variables. The last section focuses on the results of path analysis and hypotheses testing.

### 5.1 Data Cleaning

Data cleaning deals with detecting and removing errors and inconsistencies of data in order to improve the quality of data. The need for data cleaning is centered on improving the quality of data to make them “fit for use” by users through reducing errors in the data and improving their documentation and presentation (Chapman, 2005).

Data quality problems are present in single data collections due to misspellings during data entry, missing information or other invalid data. When multiple data sources need to be integrated, or analysis programs need to be used, the need for data cleaning increases significantly. Thus in this study data cleaning is used to manipulate missing data, unengaged responses, and outliers.

### 5.2 Missing Data

Missing data is common and always expected in the process of collecting and entering data due to lack of concentration and/or the misunderstanding among respondents, and missing information or other invalid data during the entry of data. Missing data can cause several problems. The most apparent problem is that there simply won't be enough data points to run the analysis and particularly in structural equation model (SEM).

Both exploratory and confirmatory factor analysis and path models require a certain number of data points in order to compute estimates. Additionally, missing data might represent bias issues. Some people may not have answered particular

questions in survey because of some common issue. If missing data is more than 10% of the responses on a particular variable, or from a particular respondent, that variable or respondent may cause some challenge related to the data. In this study the proportion of missing data is lower than 10% therefore there no need to remove any of responses.

### 5.3 Unengaged responses

The manufacturing companies in Khartoum state (1943) but many of manufacturing companies are closed due to different reasons as ministry of industry announced, therefor a Self administered survey was sent to 285 direct Sudanese industrial companies (a varies type of industries) in Khartoum State , 35 unfilled questionnaire were returned , fifteen questionnaire were partially filled Two hundred and fifteen companies responded with respect to 285 exchange relationships for a gross response rate of Unengaged responses means some responses giving same answer for all the questionnaire it seems to be random answers, in this case we use standard deviation to find out any unengaged response this means that any standard deviation of responses less than 0.5 when Likert’s five point scale is used just deleted. Therefore, We don’t removed any items in dataset because all items in dataset is different for other.

**Table 5.1 the Responses Rate**

Total Questionnaires	<b>285</b>
Blank questionnaires returned without participation	40
Expected respondents	245
Complete returned questionnaires	200
Partially filled	15
Questionnaires not returned	30
Total usable questionnaires	200
Over all response rate	

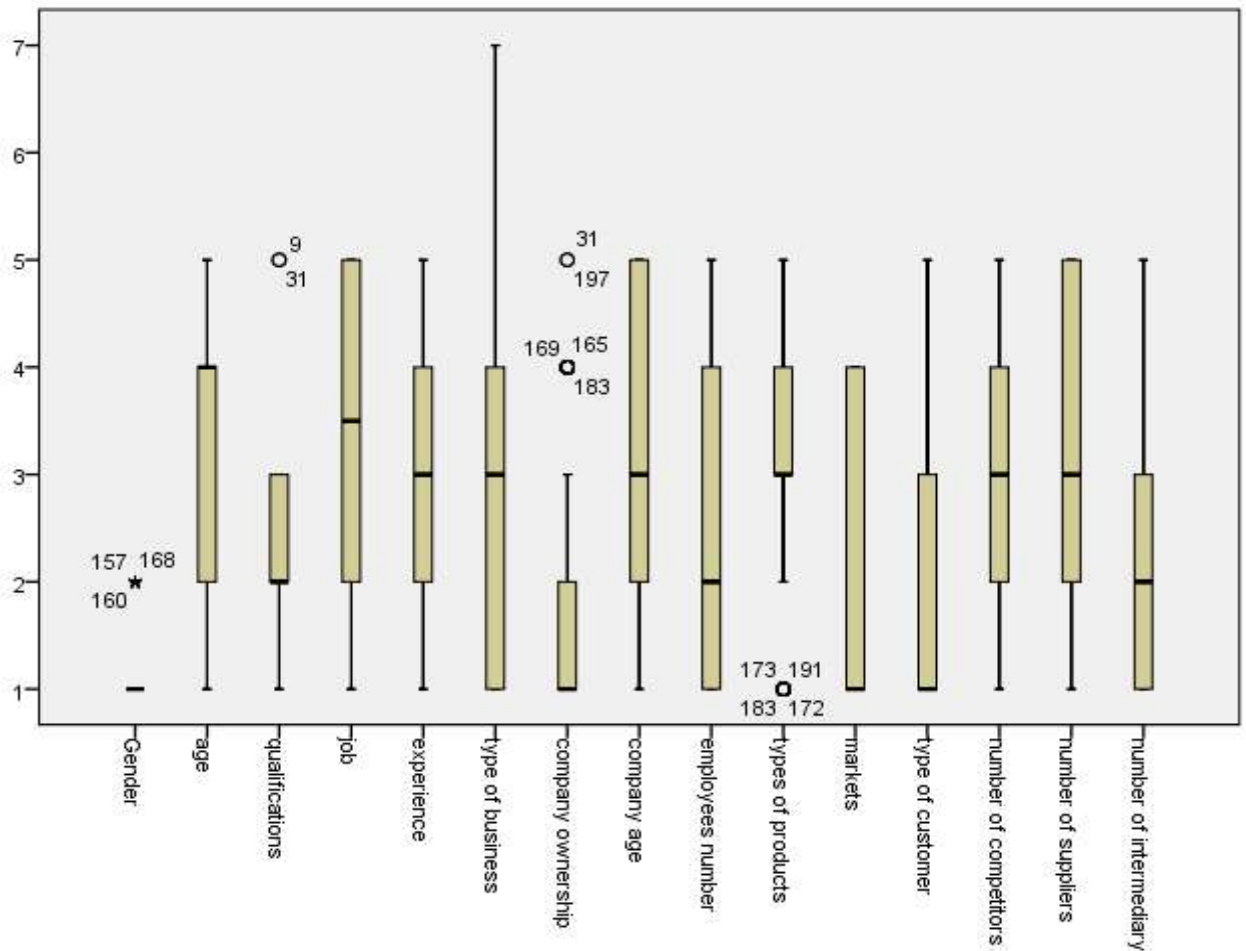
*Source: prepared by researcher 2017*

### 5.5 Outliers

A case with such an extreme value on a variable or such strange combination of scores on several variables that it distorts the statistic. outliers in the dataset can influence the results of analysis. If there is a really high sample size, the need for

removing the outliers is needed. However, in this dataset outliers were checked as showed in figure 5.1 but no change was made because There was no any outliers on dataset everything in dataset is logic

**Figure 5.1 Outliers**



## 5.6 Variable Screening

### 5.6.1. Missing data in columns

Some missing values were observed in the following variables but the biggest value in (value3) is missing (3). Therefore median value was used for respondent to impute the missing value.

### 5.6.2 Skewness & Kurtosis

Low levels of skewness and kurtosis indicated data normality. All items showed skewness and kurtosis close to |3| or less (Boomsma and Hoogland, 2001). However, the observed kurtosis of the study variables values ranged from 3. While this violates strict rules of normality, it is within more normal rules suggested by Sposito (1983) who recommends 3.3 as the upper threshold for normality.

## 5.7 Firms and Respondents profile :

Table 5.2 shows the profile of the sample firms (200) industrial companies in total) will give us information regarding their size (type of business, company ownership, company age, company size, types of products, market, type of customer, number of competitors, number of suppliers , number of intermediaries)

The results showed that most of the sampled firms presented food industry (29.5%), (18.0) were engineering, (17.5%) were classified as chemical and petro chemical, (11.0%) were constructing industry, (8.5%) were classified as print and packaging industry, while (14.0) represent other different industries. In term of ownership companies were classified as private represent (66.5%), join venture (15.0%), and public share (10%) while (10%)for other form of business ownership. Concerning the company age (27.0%) of companies were above 20 years , (22.0%) between 10- and less than 15 years, (21.0%) between 5-and less than10, (16.5%) were between 15 and less than 20, while (11.1) less than five years. Regarding to the company size (numbers of employees) (31.0%) were have less than 50employees, (28.5%) have more than 200 employees,(21.5%) have less than 100employees, finally (16.5%) of the respondent firm have between101-200employees.with regard to the types of product (49.5%) producing a finished goods, (22.5%) doing different manufacturing business (15.0%) were whole selling/retailing, (8.5%) producing row material . In term of customers (55.0%) were works with end users and (44.0%) working with business (industrial customers, intermediaries). Concerning the markets the majority of companies(54.1%) working in local markets, (45.0%) were working for regional and international.

With regard to the numbers of suppliers (29%) of responded firms deal with more than 20 suppliers, (27%) were deal with less than 10 suppliers, (17.5%) were founded deal with less than 5 suppliers, while (10.5%) deal with 10 and less than 15 suppliers and (10.5) deal with 15 and less than 20. moreover in term of intermediaries numbers were found that (40.5%) deal with less than 10itermdiaries, (18.5%) deal with above 40 intermediaries,(17.5%) were found deal with less than 20 intermediaries, (9.5%) less than 30 intermediaries. Concerning numbers of competitors (41.5%) of the firms facing more than fifteen competitors, (24%) facing less than ten competitors, (17%) competing in market with less than ten competitors and (16.5%) competing in market with less than five competitors

### **Table (5.2) firms profile**

	Particular	Frequency	percent
Company types	Food sector	59	29.5
	Engineering sector	36	18.0
	Chemical sector	35	17.5
	Contractures sector	22	11.0
	Printing & packing Leather sector	17	8.5
	Others	28	14.0%
<b>Total</b>		<b>200</b>	<b>100%</b>
company ownership	Private company	133	66.5
	Joint venture	30	15.0
	Distributorship	20	10.0
	Other	20	10
<b>Total</b>		<b>110</b>	<b>100%</b>
Company age	less than 5years	24	12.0
	5 and less than 10years	42	21.0
	10 less than 15years	44	22.0
	15 less than 20	33	16.5
	20 and above	54	27.0
<b>Total</b>		<b>200</b>	<b>100%</b>
number of employees	From (11 – 50)	62	31.0
	51 – 100	43	21.5
	101 – 200	33	16.5
	More than 200	57	28.5
<b>Total</b>		<b>110</b>	<b>100%</b>
Types of Products	Raw material extractor/ manufacturer	17	8.5
	Final product manufacturer	99	49.5
	Wholesaler, Retailer , Trading company	30	15.0
	Others	45	22.5
<b>Total</b>		<b>200</b>	<b>100%</b>
type of customer	End users	110	55.0
	Industrial users	28	14.0
	Intermediaries	57	30.0
<b>Total</b>		<b>200</b>	<b>100%</b>
	Local	<b>106</b>	<b>54.1</b>
	Regional and International	<b>90</b>	<b>45</b>
Numbers of Suppliers	Less than 5	<b>35</b>	<b>17.5</b>
	5 and less than 10	<b>54</b>	<b>27</b>
	10 and less than 15	<b>21</b>	<b>10.5</b>
	15 less than 20	<b>21</b>	<b>10.5</b>
	20 and above	<b>58</b>	<b>29.0</b>

<b>Total</b>			
<b>Numbers of intermediaries</b>	Less than 10	<b>81</b>	<b>40.5</b>
	10 less than 20	<b>35</b>	<b>17.5</b>
	20 less than 30	<b>29</b>	<b>14.5</b>
	Above 30	<b>37</b>	<b>18.5</b>
<b>Total</b>			
<b>Numbers of competitors</b>	Less than 5	<b>33</b>	<b>16.5</b>
	5 less than 10	<b>48</b>	<b>24.0</b>
	10 less than 15	<b>34</b>	<b>17.0</b>
	15 and above	<b>83</b>	<b>41.5</b>

Source: prepared by researcher, (2017).

The table (5.3) show The respondents characteristics ' in term of Gender **most of the respondents were** Male 89.0% and the female were found (9.5%) , with regard to respondents' ages (25.5%) were found between 40- 45, (25%) their ages less than35 year's (24.0%) above 45 years, and (22.0%) theirs age between 35-40years. Concerning the respondents qualification (59.5%) of the have a university degree, while (40%) have postgraduate degree , regarding The respondents' Experience (30.5%) have less than 10 years of experience, followed by (30%) have experience between 10-15, (20%) their experience between 15-20, (18%) have more than 20years of experience. In term of job title (35%) of respondents were marketing, distribution managers,(19%) were operations managers,(17%) CEO,and (12.5%) GM, (11.5) Supply chain managers.

### Respondents Profile of (5.3)

Variable	Categories	Frequency	%
Gender	Male	178	%89.0
	Female	19	%9.5
Total		200	%100
Age	less than35	50	%25.0
	35 to 40	44	%22.0
	40 to 45	51	%25.5
	45 and more	48	%24.0
<b>Total</b>		200	%100
<b>Academic Qualification</b>	University	119	%59.5
	Postgraduate	80	%40.0
<b>Total</b>	Total	200	%100
<b>Years of Experience</b>	less than10	61	%30.5
	10 to 15	60	%30.0

	15 to 20	40	%20.0
	20 and more	36	%18
<b>Total</b>		474	%100
<b>Job title</b>	CEO	34	%17
	GM	25	%12.5
	Operations managers	38	%19
	Supply chain managers	22	%11.0
	logistic / Marketing and distribution	75	%35.0
Total		200	%100

*Source: prepared by researcher, (2017).*

## **5.8 Goodness of measures**

This section, reports the results of validity and reliability tests as a means to assess the goodness of measure in this study constructs (Sekaran, 2003). The study used exploratory factor analysis (EFA) and (CFA) confirmatory factor analysis. The following are the detailed information of each

### **4.8.1 Exploratory factor analysis for independent variable (EFA)**

Exploratory Factor Analysis (EFA) is a statistical approach for determining the correlation among the variables in a dataset. This type of analysis provides a factor structure (a grouping of variables based on strong correlations). In general, an (EFA) prepares the variables to be used for cleaner structural equation modeling (SEM). This means the (EFA) will be able to spot problematic variables much more easily than the (CFA). Therefore, this study used exploratory factor analysis for testing the validity and uni-dimensionality of variables measurements, as (Lowry & Gaskin, 2014) assumptions as follow:

- There must be a clean pattern matrix.
- Adequacy.
- Convergent validity.
- Discriminant validity.
- Reliability.

Maximum Likelihood was used, the summary of results was showed in Table (5.4) and the SPSS output attached in appendix. As shown in Table (5.4) below all the remaining items has more than recommended value of at least 0.5 in measure of sample adequacy (MSA) with (KMO) (above the recommended minimum level of 0.60), and Bartlett's test of sphericity is significant ( $p < .01$ ). Thus, the items are appropriate for factor analysis.

### **5.8.2 Convergent validity**



Convergent validity means that the variables within a single factor are highly correlated. This is evident by the factor loadings. Sufficient/significant loadings depend on the sample size of dataset.

### **5.8.3 Discriminant validity**

Discriminant validity refers to the extent to which factors are distinct and uncorrelated. The rule is that variables should relate more strongly to their own factor than to another factor. Two primary methods exist for determining discriminant validity during an (EFA). The first method is to examine the rotated component matrix instead of pattern matrix when principle component used. Variables should load significantly only on one factor. If cross loading exist (variable loads on multiple factors) then the cross loading should differ by more than 0.2. The second method is to examine the factor correlation matrix. The correlation between factors should not exceed 0.7. The following Table (5.8) shows the Discriminant validity.

### **5.8.4 Exploratory factor analysis for independent variable (EFA)**

Exploratory Factor Analysis (EFA) is a multivariate technique for analyzing the structure of interrelationships among a large number of variables by defining sets of variables that are highly interrelated (Hair et al., 2009). These groups of variables are known as factors and are assumed to represent dimensions within the data. In this way EFA is able to determine whether the information derived from the dataset could be summarized in a smaller set of components (factors). EFA has an exploratory character because the researcher has little control over the specification of the structure (Hair et al., 2009). EFA is primarily used when the relationships between the observed and the latent variables (factors) are unknown or uncertain (Gounaris et al., 2004). In this section of our study, EFA will be used twofold. First, our aim is to derive a preliminary factorial structure of Supply chain orientation. Secondly, as previously saw in the Methodology (chapter 3), the variables scales of questions were adapted from previous studies. EFA will be applied in order to refine the latent constructs of the variables examined and guarantee convergent and discriminant validity. The EFA results will be confirmed through Confirmatory Factor Analysis (CFA) in the next section of the study and then the derived factors will be included in the structural model for the examination of the relationships between the Variables.

We using Maximum Likelihood., the summary of results was showed in Table (5.4) and the SPSS output attached in appendix. As shown in Table (5.4) below all the remaining items has more than recommended value of at least 0.45 in measure of sample adequacy (MSA) with (KMO) (above the recommended minimum level of 0.60), and Bartlett's test of sphericity is significant ( $p < .01$ ). Thus, the items are appropriate for factor analysis.

**Table (5.4): Exploratory factor analysis for independent variables (Strategic SCO)**

<b>Items names:</b>	<b>F1</b>	<b>F2</b>	<b>F3</b>
<b>Commitment</b>			
We work hard to preserve relationships with key supply chain members	.902		
The continuity of our relationships with key supply chain members is very important to us	.930		
We expect our relationships with key supply chain members to last for a long time	.892		
It is important to maintain strong relationships with key supply chain members			
<b>Top Management</b>			
Top managers repeatedly tell employees that this business unit's survival depends on its adapting to supply chain management		.801	
Top managers repeatedly tell employees that building, maintaining, and enhancing long-term relationships with our supply chain members are critical to this business unit's success		.776	
Top managers repeatedly tell employees that sharing valuable strategic /tactical information with our supply chain members is critical to this business unit's success		.838	
Top management offers various education opportunities about supply chain management to line employees		.793	
<b>Compatibility</b>			
Our business unit's goals and objectives are consistent with those of our supply chain members.			.849
Our CEO and the CEOs of our supply chain members have similar operating philosophies			.927
Our executives have a management style similar to that of key supply chain members			.709
<b>Total Variance Explained (%)</b>	71.10		
<b>Kaiser-Meyer-Olkin (KMO)</b>	0.857		
<b>Bartlett's Test of Sphercity</b>	1385.15		

### **5.8.5 Discriminant validity**

Discriminant validity refers to the extent to which factors are distinct and uncorrelated. The rule is that variables should relate more strongly to their own factor than to another factor. Two primary methods exist for determining discriminant validity during an (EFA). The first method is to examine the rotated component matrix instate of pattern matrix when principle component used. Variables should load significantly only on one factor. If cross loading do exist (variable loads on multiple factors) then the cross loading should differ by more than 0.2. The second

method is to examine the factor correlation matrix. The correlation between factors should not exceed 0.7. The following Table (4.7) shows the Discriminant validity.

#### 4.8.6 Exploratory factor analysis for mediating Structural SCO variable (EFA)

We using Maximum Likelihood., the summary of results was showed in Table (5.5) and the SPSS output attached in appendix. As shown in Table (5.5) below all the remaining items has more than recommended value of at least 0.45 in measure of sample adequacy (MSA) with (KMO) (above the recommended minimum level of 0.60), and Bartlett's test of sphericity is significant ( $p < .01$ ). Thus, the items are appropriate for factor analysis.

**Table (5.5): Exploratory factor analysis for Mediator variables Structural SCO**

<b>Items names:</b>	<b>F1</b>	<b>F2</b>	<b>F3</b>
<b>Credibility</b>			
Promises made to our supply chain members by our business unit are reliable.	.663		
Our business unit is knowledgeable regarding out products and/or services when we are doing business with our supply chain members	.932		
Our business unit does not make false claims to our supply chain members.	.885		
Our business unit is open in dealing with our supply chain members.	.737		
<b>Cooperative Norms</b>			
Our business unit is willing to make cooperative changes with our supply chain members.		.958	
We believe our supply chain members must work together to be successful.		.856	
We view our supply chain as a value added piece of our business		.617	
<b>Benevolence</b>			
When making important decisions, our supply chain members are concerned about our welfare.			.886
When we share our problems with our supply chain members, we know they will respond with understanding.			.578
In the future we can count on our supply chain members to consider how their decisions and actions will affect us.			.451
Total Variance Explained (%)		68.09	
Kaiser-Meyer-Olkin (KMO)		0.872	
Bartlett's Test of Sphercity		1028.31	

#### 5.8.7 Exploratory factor analysis for dependent variable (EFA)

The study employed Maximum Likelihood., the summary of results was showed in Table (5.6) and the SPSS output attached in appendix. As shown in Table (5.6) below all the remaining items has more than recommended value of at least 0.45 in measure of sample adequacy (MSA) with (KMO) (above the recommended minimum level of 0.60), and Bartlett's test of sphericity is significant ( $p < .01$ ). Thus, the items are appropriate for factor analysis.

**Table (5.6) : Exploratory factor analysis for dependent variables (Business adaptiveness.)**

Items names:	F1	F2	F3
<b>Marketing adaptiveness</b>			
Adapting your marketing strategy adequately to changes in the business environment of your business unit	.545		
Adapting your marketing strategy adequately to changes in competitors' marketing strategies	.914		
Adapting your products quickly to the changing needs of customers	.937		
We react quickly to market threats	.859		
<b>Strategic adaptiveness</b>			
Adapting to changes in the business environment of your company		.859	
Exploiting quickly the new opportunities		.718	
Firm strategies cannot be predicted based on past actions		.928	
Constantly work to create options for growth in multiple technological areas.		.735	
<b>Operational adaptiveness</b>			
Adapting your operation to Reduce manufacturing lead-times			.883
Adapting your operation to Reduce product development cycle time			.891
Total Variance Explained (%)	74.26		
Kaiser-Meyer-Olkin (KMO)	0.90		
Bartlett's Test of Sphericity	1076.09		

#### 5.8.8 Exploratory factor analysis (EFA) for mediating variable Value Co-creation

We using Maximum Likelihood., the summary of results were showed in Table (5.7) and the SPSS output attached in appendix. As shown in Table (5.7) below all the remaining items has more than recommended value of at least 0.45 in measure of sample adequacy (MSA) with (KMO) (above the recommended minimum level of 0.60), and Bartlett's test of sphericity is significant ( $p < .01$ ). Thus, the items are appropriate for factor analysis.

**Table (5.7): Exploratory factor analysis for Mediator variables (value co-creation)**

Items names:	F1
<b>Value co-creation</b>	
We interact with key customers to serve them better	.878
We work together with key customer to produce offers that mobilize them	.909
We interact with key customers to design offers that meet their needs	.902
We provide products for and in conjunction with key customers	.857
Total Variance Explained (%)	78.65
Kaiser-Meyer-Olkin (KMO)	.826
Bartlett's Test of Sphericity	509.61

**5.8.9**

#### Exploratory factor analysis for moderator variable Locus of interaction (EFA)

The Maximum Likelihood was employed, the summary of results was showed in Table (5.8) and the SPSS output attached in appendix. As shown in Table (5.8) below all the remaining items has more than recommended value of at least 0.45 in measure of sample

adequacy (MSA) with (KMO) (above the recommended minimum level of 0.60), and Bartlett's test of sphericity is significant ( $p < .01$ ). Thus, the items are appropriate for factor analysis.

**Table (5.8): Exploratory factor analysis for Moderator variables Locus of interaction**

<b>Items names:</b>	<b>F1</b>
<b>Locus of interaction</b>	
They have more useful information than us.	.839
The partner convinced us that it made sense to follow their suggestions	.918
The partner's business expertise enabled them to give us proper suggestions	.895
We usually got good advice from this partner.	.824
Total Variance Explained (%)	75.64
Kaiser-Meyer-Olkin (KMO)	.802
Bartlett's Test of Sphericity	463.75

### 5.9 Reliability Analysis

This study used Cronbach's alpha as diagnostic tool to assess the degree of internal consistency between multiple measurements of variables. (Hair et al, 2010) stated that the lower limit for Cronbach's alpha is 0.70, although it may decrease to 0.60 in exploratory research. While Nunnally (1978) considered Cronbach's alpha values greater than 0.60 are taken as reliable. Given that Cronbach's alpha has been the most widely used measure (Sharma, 2000).

Table (5.9) presents the summary of the results for reliability analysis. Confirmed that all the scales display the satisfactory level of reliability (Cronbach's alpha exceed the minimum value of 0.60). Therefore, it can be concluded that the measures have acceptable level of reliability. The full SPSS output showed in Appendix.

**Table (4.9) Reliability for study variables after EFA**

<b>Variable</b>	<b>No of items</b>	<b>Cronbach's alpha</b>
Top management support	5	.818
Compatibility	3	.799
Commitment	4	.919
Cooperative Norms	3	.817
Benevolence	3	.667
Creditability	5	.805
Value Co-creation	4	.909
Locus of interaction	4	.889
Strategic adaptiveness	4	.851
Operational adaptiveness	2	.737
marketing adaptiveness	4	.884

### 5.10 Confirmatory factor analysis for independent variables

CFA is a multivariate data analysis technique that examines and confirms how well the observed variables estimate or reflect fewer factors (latent constructs) that can't be estimated directly (Hair *et al.*, 2009). Contrary to EFA, CFA is a technique

with a confirmatory character and addresses the situation when a researcher specifies a model a priori, and tests the conjecture that a relationship between the observed and the latent variables does in fact exist. In the case of CFA, the researcher has a good knowledge about the number of factors that explains the inter-correlations between observed variables. EFA examine the validity of the measurement model which is the operationalization of latent constructs by sets of measured variables. Assessing measurement model validity includes the following steps which are commonly used in literature (e.g., Hair *et al.*, 2009; Liu *et al.*, 2009; Rokkan *et al.*, 2003).

- Examination of the measurement model's overall fit (whether our data fit the hypothesized model well).
- Examinations of the measurement model's construct validity. Construct validity is assessed through:
  - Convergent validity. According to convergent validity, the measured variables of a latent construct should share a high proportion of variance and is estimated through:
    - Factor loadings
    - Variance extracted
    - Construct reliability
  - Discriminant validity. It helps us examine whether latent constructs which according to the theory shouldn't be correlated, are indeed uncorrelated according to our data. Thus, with discriminant validity we examine the degree of differentiation between latent constructs.

In this section of the study we will employ CFA in two cases. Firstly, we will validate the results of the two EFAs from the previous section. The CFA of the supply chain Orientation will also test alternative models with the same number of items but with different factorial structure in order to better validate our model. Secondly we will validate our whole measurement model including both the determinants and the factors of Strategic SCO. The second case is necessary in order to test the validity of our measurement model as a whole. Once validity is achieved we could proceed to SEM and the examination of the impact of the variables.

In the (EFA) explore the factor structure (how the variables relate and group based on inter-variable correlations); in the (CFA) we confirm the factor structure we extracted in the (EFA). All the items in Table (4.5) were used to conduct confirmatory factor analysis with maximum likelihood and promax.

### 5.10.1 CFA Strategic supply chain orientation

Our first CFA model encompasses the three factors derived from the EFA: (Top management support, commitment and Organizational compitability). For a descent model eperstation every strategic SCO has been renamed with the abbreviation TOP,Com, comp

### 5.10.2 Model fit

Model fit refers to how well the proposed model accounts for the correlations between variables in the dataset. If the accounting for all the major correlations inherent in the dataset (with regards to the variables in the model), then the model will have a good fit. If not, then there is a significant “discrepancy” between the correlations proposed and the correlations observed, and thus have poor model fit. There are specific measures that can be calculated to determine goodness of fit. The thresholds listed in the table (5.10) below are simply a guideline.

**Table (5.10) measures to determine goodness of model fit**

Measure	Threshold
Chi-square/degree of freedom(cmin/df)	< 3 good; < 5 sometimes permissible
P-value for model	>.05
CFI	>.95 great; >.90 traditional; >.80 sometimes permissible
GFI	>.95
AGFI	>.80
SRMR	<.09
RMSEA	<.5 good; .05-.10 moderate;> 10 bad
P Close	>.05

*Source: Adopted from (Gaskin, 2016)*

In Figure 5.2 we can see the CFA model of the three factors of Strategic SCO. The model includes three latent variables (i.e., the three factors of Strategic SCO) and twelve observed items. Based on the thresholds listed in Table (4.10) above and Table (5.11) the confirmatory factor analysis (CFA) was run to check the validation of the measurements, and convergent validity. Table (5.10) presents the measures and of the model fit.

Figure 5.2 Path diagram for independent variables

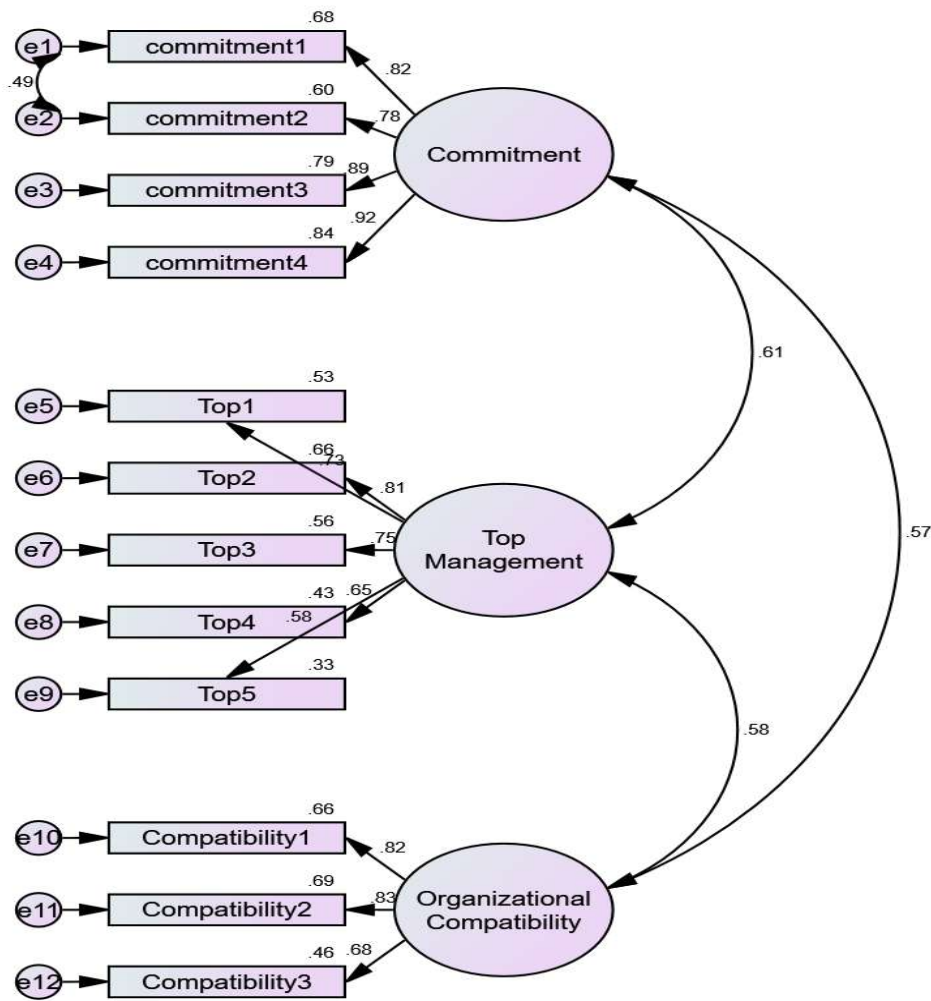


Table 4.11 shows the CFA results of EFC measurement models. The indices for overall model fit suggest good model fit: the CFI, 0.923; SRMR, 0.066; RMSEA, 0.105. The standardized regression weights were all significant at the 0.05 significance level and greater than 0.7 ranging from 0.71 to 0.97. CR and Chronbach's alpha values were all higher than 0.7 and AVE values were also higher than 0.5, indicating scale reliability.

**Table( 5.11)Model Fit Measures**

Measure	Estimate	Threshold	Interpretation
CMIN	153.814	--	--
DF	50	--	--
CMIN/DF	3.076	Between 1 and 3	Acceptable
CFI	0.923	>0.95	Acceptable
SRMR	0.066	<0.08	Excellent
RMSEA	0.105	<0.06	Terrible
PClose	0.000	>0.05	Terrible



**Table (5.12) Cutoff Criteria**

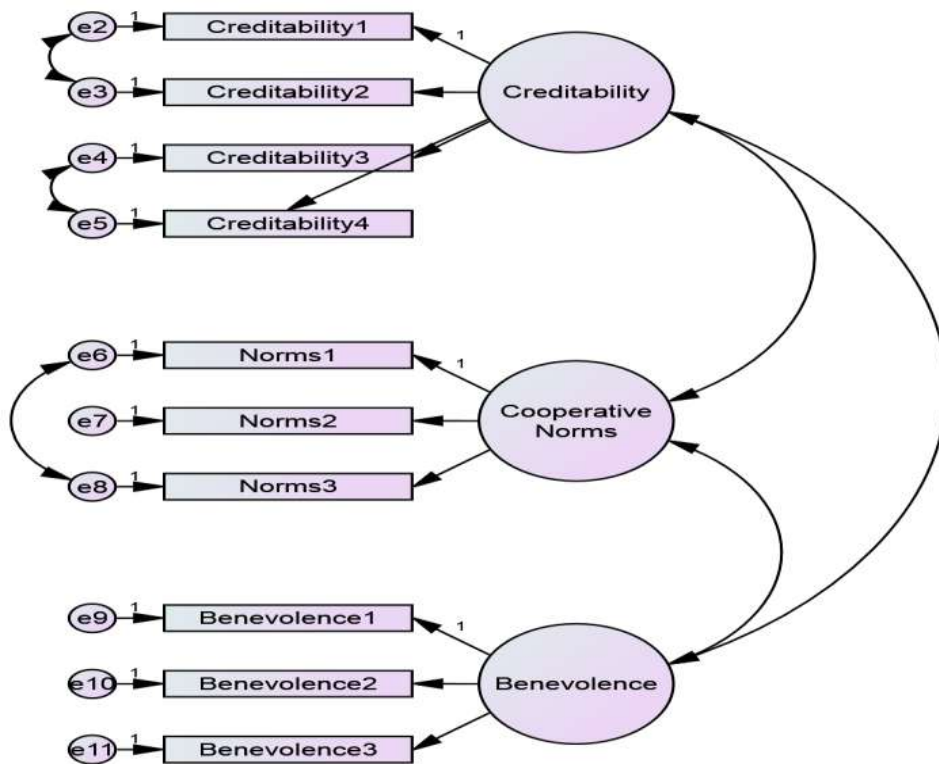
Measure	Terrible	Acceptable	Excellent
CMIN/DF	> 5	> 3	> 1
CFI	<0.90	<0.95	>0.95
SRMR	>0.10	>0.08	<0.08
RMSEA	>0.08	>0.06	<0.06
PClose	<0.01	<0.05	>0.05

*Source: prepared by researcher from data analysis (2017)*

**4.10.3 CFA of structural supply chain orientation**

CFA model encompasses the three factors derived from the EFA: credibility, cooperative norms and benevolence). For a descent model every strategic SCO dimension has been renamed with the abbreviation CR ,Nor, Ben

Figure 5.3 Path diagram for Structural SCO



**5.10.4 Reliability and Validity**

To evaluate the reliability and validity of the measurement instrument, several statistical analyses were conducted To verify scale reliability, Composite Reliability (CR) and Cronbach’s alpha were engaged. Table (5.12) shows that all CR and Cronbach’s alpha values have exceeded the minimum requirement of 0.70 Therefore,

the measurement instrument has a high level of reliability (Lee, Foo, Leong, & Ooi, 2016). In terms of convergent validity, the Average Variance Extracted (AVE) for all scales is greater than the suggested threshold 0.5 as recommended by (Fornell & Larcker, 1981) indicating sufficient convergent validity of the measurement instrument. To evaluate discriminant validity the calculation of (AVE) showed that the correlation of the construct with its measurement items is greater than its correlation with the other constructs (Lowry & Gaskin, 2014) the diagonal boldface of Table (5.12) showed that all square root of AVE is greater than their respective correlation coefficients. Hence, the measurement instrument has a high level of discriminant validity. Table (5.12) shows the details of the above mentioned. Table (5.13) validity and reliability test

**Table (5.13 ) Model Validity Measures**

	<b>CR</b>	<b>AV E</b>	<b>MS V</b>	<b>MaxR( H)</b>	<b>Compati bility</b>	<b>Top</b>	<b>commitm ent</b>	Cooperat ive	benevol ence	credibili ty	<b>value</b>	<b>operati onal</b>	<b>strate gic</b>	<b>mark eting</b>	<b>Locu s</b>
Org. Compatibilit y	0.806	0.58 4	0.39 4	0.829	<b>0.765</b>										
Top mgt	0.821	0.48 3	0.51 2	0.841	0.526***	<b>0.695</b>									
Commitment	0.919	0.73 9	0.73 9	0.920	0.554***	0.645** *	<b>0.860</b>								
Cooperative norms	0.832	0.62 4	0.73 9	0.856	0.628***	0.650** *	0.860***	<b>0.790</b>							
Benevolence	0.679	0.42 7	0.62 9	0.730	0.604***	0.716** *	0.637***	0.793***	<b>0.653</b>						
Credibility	0.857	0.54 9	0.69 6	0.880	0.553***	0.659** *	0.756***	0.717***	0.738** *	<b>0.741</b>					
Value co- creation	0.911	0.71 8	0.63 0	0.913	0.477***	0.518** *	0.667***	0.568***	0.553** *	0.677** *	<b>0.847</b>				
Operational adaptiveness	0.740	0.58 8	0.50 6	0.749	0.711***	0.656** *	0.603***	0.530***	0.549** *	0.663** *	0.692** *	<b>0.767</b>			
Strategic adaptiveness	0.850	0.58 8	0.69 6	0.866	0.438***	0.618** *	0.785***	0.676***	0.647** *	0.834** *	0.794** *	0.653** *	<b>0.767</b>		
Marketing adaptiveness	0.850	0.58 8	0.69 6	0.866	0.514***	0.711** *	0.729***	0.688***	0.681** *	0.725** *	0.786** *	0.711** *	0.804 ***	<b>0.815</b>	
Locus of interaction	0.895	0.68 2	0.41 9	0.909	0.438***	0.465** *	0.630***	0.511***	0.531** *	0.610** *	0.647** *	0.551** *	0.610 ***	0.540 ***	<b>0.826</b>

Table 5.13 shows the CFA results of EFC measurement models. The indices for overall model fit suggest good model fit: the CFI, 0.973; SRMR, 0.046; RMSEA, 0.066. The standardised regression weights were all significant at the 0.05 significance level and greater than 0.7 ranging from 0.71 to 0.97. CR and Chronbach's alpha values were all higher than 0.7 and AVE values were also higher than 0.5, indicating scale reliability

**Table(5.14) Model Fit Measures**

Measure	Estimate	Threshold	Interpretation
CMIN	52.956	--	--
DF	29	--	--
CMIN/DF	1.826	Between 1 and 3	Excellent
CFI	0.973	>0.95	Excellent
SRMR	0.046	<0.08	Excellent
RMSEA	0.066	<0.06	Acceptable
PClose	0.163	>0.05	Excellent

### **5.10.5 CFA of business adaptiveness**

The CFA of the business adaptiveness encompasses Three factors : strategic adaptiveness, operational adaptiveness, and marketing adaptiveness. For a descent model presentation the variables of the three dimensions will be renamed.

### **4.10.6 Reliability and Validity**

To evaluate the reliability and validity of the measurement instrument, several statistical analyses were conducted. To verify scale reliability, Composite Reliability (CR) and Cronbach's alpha were engaged. Table (5.13) shows that all CR and Cronbach's alpha values have exceeded the minimum requirement of 0.70 Therefore, the measurement instrument has a high level of reliability (Lee, Foo, Leong, & Ooi, 2016). In terms of convergent validity, the Average Variance Extracted (AVE) for all scales is greater than the suggested threshold 0.5 as recommended by (Fornell & Larcker, 1981) indicating sufficient convergent validity of the measurement instrument. To evaluate discriminant validity the calculation of (AVE) showed that the correlation of the construct with its measurement items is greater than its

correlation with the other constructs (Lowry & Gaskin, 2014) the diagonal boldface of Table (5.13) showed that all square root of AVE is greater than their respective correlation coefficients. Hence, the measurement instrument has a high level of discriminant validity. Table (5.12) shows the details of the above mentioned.

**Figure 5.4** Path diagram for business adaptiveness

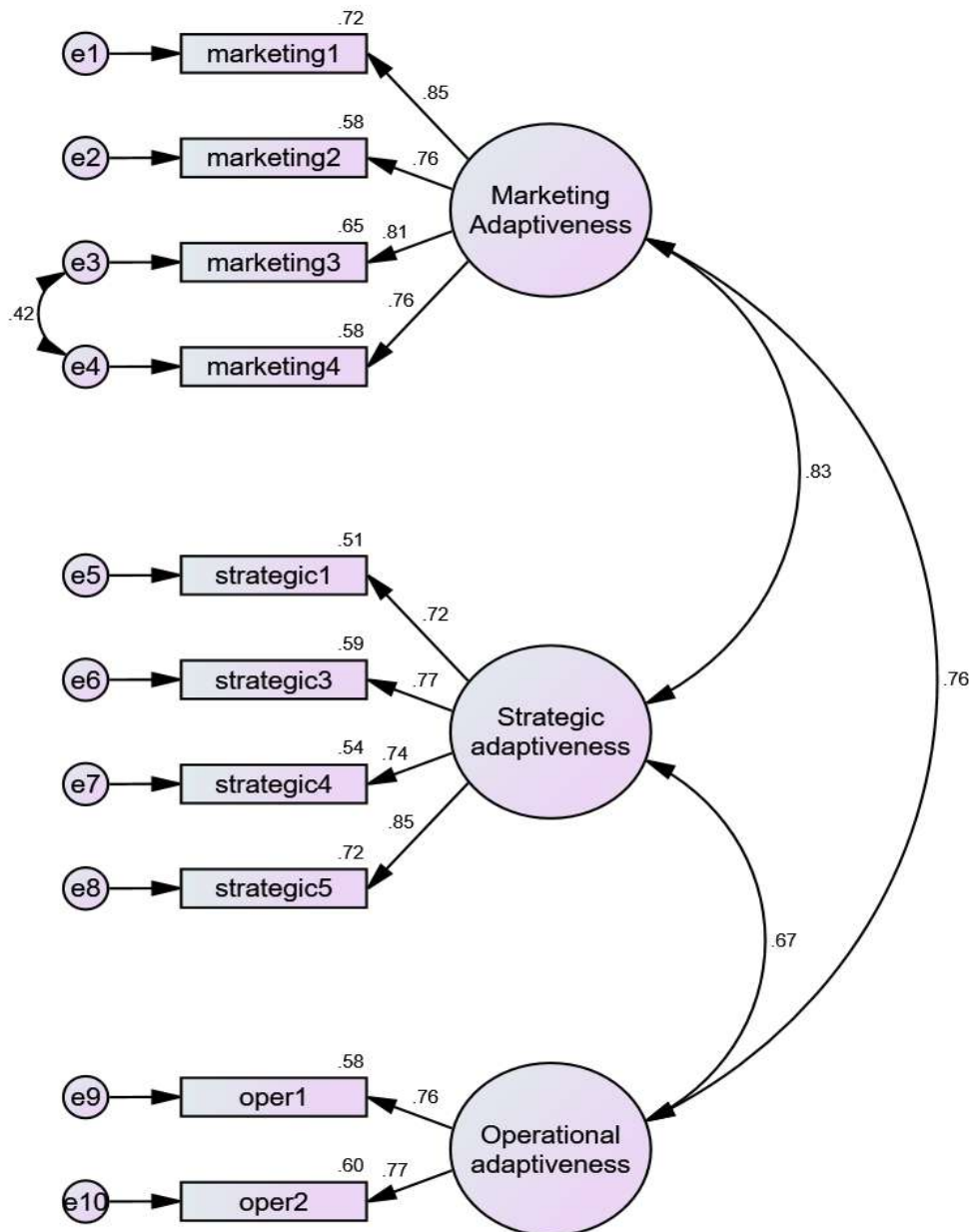


Table 5.15 shows the CFA results of EFC measurement models. The indices for overall model fit suggest good model fit: the CFI, 0.982; SRMR, 0.036; RMSEA, 0.058. The standardised regression weights were all significant at the 0.05 significance level and greater than 0.7 ranging from 0.71 to 0.97. CR and

Chronbach's alpha values were all higher than 0.7 and AVE values were also higher than 0.5, indicating scale reliability

**Table (4.15) Model Fit Measures**

Measure	Estimate	Threshold	Interpretation
CMIN	50.311	--	--
DF	31	--	--
CMIN/DF	1.623	Between 1 and 3	Excellent
CFI	0.982	>0.95	Excellent
SRMR	0.036	<0.08	Excellent
RMSEA	0.058	<0.06	Excellent
PClose	0.311	>0.05	Excellent

### **5.10.7 Reliability and Validity**

To evaluate the reliability and validity of the measurement instrument, several statistical analyses were conducted. To verify scale reliability, Composite Reliability (CR) and Cronbach's alpha were engaged. Table (5.13) shows that all CR and Cronbach's alpha values have exceeded the minimum requirement of 0.70. Therefore, the measurement instrument has a high level of reliability (Lee, Foo, Leong, & Ooi, 2016). In terms of convergent validity, the Average Variance Extracted (AVE) for all scales is greater than the suggested threshold 0.5 as recommended by (Fornell & Larcker, 1981) indicating sufficient convergent validity of the measurement instrument. To evaluate discriminant validity the calculation of (AVE) showed that the correlation of the construct with its measurement items is greater than its correlation with the other constructs (Lowry & Gaskin, 2014) the diagonal boldface of Table (5.13) showed that all square root of AVE is greater than their respective correlation coefficients. Hence, the measurement instrument has a high level of discriminant validity. Table (5.13) shows the details of the above mentioned. Table (5.12) validity and reliability test.

Figure 5.5 Path diagram for value co-creation

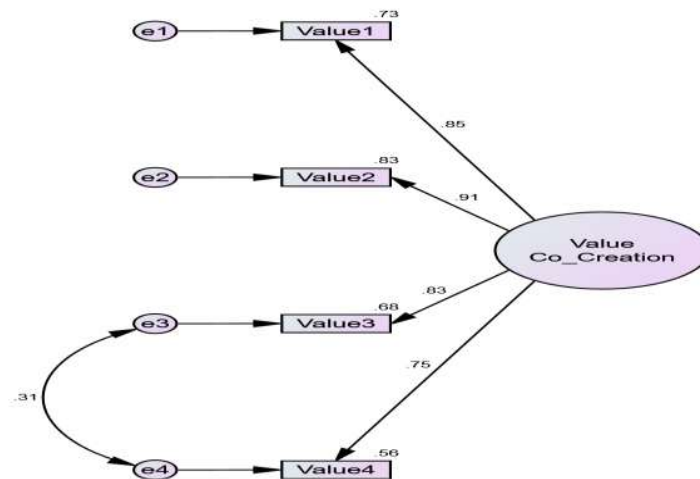


Table 4.16 shows the CFA results of EFC measurement models. The indices for overall model fit suggest good model fit: the CFI, 0.997; SRMR, 0.012; RMSEA, 0.084. The standardised regression weights were all significant at the 0.05 significance level and greater than 0.7 ranging from 0.71 to 0.97. CR and Chronbach's alpha values were all higher than 0.7 and AVE values were also higher than 0.5, indicating scale reliability

**Table(4.16) Model Fit Measures**

Measure	Estimate	Threshold	Interpretation
CMIN	2.329	--	--
DF	1	--	--
CMIN/DF	2.329	Between 1 and 3	Excellent
CFI	0.997	>0.95	Excellent
SRMR	0.012	<0.08	Excellent
RMSEA	0.084	<0.06	Terrible
PClose	0.214	>0.05	Excellent

### 5.10.8 Reliability and Validity

To evaluate the reliability and validity of the measurement instrument, several statistical analyses were conducted. To verify scale reliability, Composite Reliability (CR) and Cronbach's alpha were engaged. Table (5.12) shows that all CR and

Cronbach's alpha values have exceeded the minimum requirement of 0.70. Therefore, the measurement instrument has a high level of reliability (Lee, Foo, Leong, & Ooi, 2016). In terms of convergent validity, the Average Variance Extracted (AVE) for all scales is greater than the suggested threshold 0.5 as recommended by (Fornell & Larcker, 1981) indicating sufficient convergent validity of the measurement instrument. To evaluate discriminant validity the calculation of (AVE) showed that the correlation of the construct with its measurement items is greater than its correlation with the other constructs (Lowry & Gaskin, 2014) the diagonal boldface of Table (5.13) showed that all square root of AVE is greater than their respective correlation coefficients. Hence, the measurement instrument has a high level of discriminant validity. Table (5.12) shows the details of the above mentioned. Table (5.13) validity and reliability test

Table 4.13 shows the CFA results of EFC measurement models. The indices for overall model fit suggest good model fit: the CFI, 0.923; SRMR, 0.066; RMSEA, 0.105. The standardised regression weights were all significant at the 0.05 significance level and greater than 0.7 ranging from 0.71 to 0.97. CR and Chronbach's alpha values were all higher than 0.7 and AVE values were also higher than 0.5, indicating scale reliability.

Figure 5.6 *Path diagram for locus of interaction*

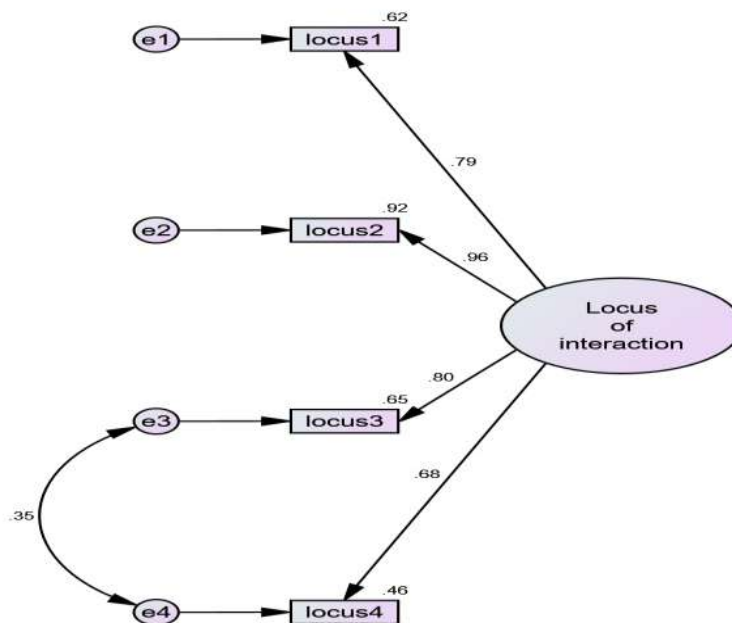




Table 5.13 shows the CFA results of EFC measurement models. The indices for overall model fit suggest good model fit: the CFI, 1.00; SRMR, 0.002; RMSEA, 0.000. The standardised regression weights were all significant at the 0.05 significance level and greater than 0.7 ranging from 0.71 to 0.97. CR and Chronbach's alpha values were all higher than 0.7 and AVE values were also higher than 0.5, indicating scale reliability

**Table (5.17) Model Fit Measures**

Measure	Estimate	Threshold	Interpretation
CMIN	0.036	--	--
DF	1	--	--
CMIN/DF	0.036	Between 1 and 3	Excellent
CFI	1.000	>0.95	Excellent
SRMR	0.002	<0.08	Excellent
RMSEA	0.000	<0.06	Excellent
PClose	0.881	>0.05	Excellent

### 5.10.9 Reliability and Validity

To evaluate the reliability and validity of the measurement instrument, several statistical analyses were conducted. To verify scale reliability, Composite Reliability (CR) and Cronbach's alpha were engaged. Table (5.13) shows that all CR and Cronbach's alpha values have exceeded the minimum requirement of 0.70. Therefore, the measurement instrument has a high level of reliability (Lee, Foo, Leong, & Ooi, 2016). In terms of convergent validity, the Average Variance Extracted (AVE) for all scales is greater than the suggested threshold 0.5 as recommended by (Fornell & Larcker, 1981) indicating sufficient convergent validity of the measurement instrument. To evaluate discriminant validity the calculation of (AVE) showed that the correlation of the construct with its measurement items is greater than its correlation with the other constructs (Lowry & Gaskin, 2014) the diagonal boldface of Table (5.13) showed that all square root of AVE is greater than their respective correlation coefficients. Hence, the measurement instrument has a high level of discriminant validity. Table (5.13) shows the details of the above mentioned.

## 4.11 Structural Equation Modeling

The Structural Equation Modeling (SEM) methodology provides a reliable way of testing the theory (Hair *et al.*, 2009; Byrne, 2001). The researcher may express theory in the form of relationships (structural model) between measured variables and non-observable latent constructs and then SEM can assess whether the observed data confirm the theoretical assumptions. In this section SEM will apply for examining the relationships between the independent Variables , dependent variables, and Mediator. in the structural model, the impact of the dependent and mediator variables will examine

### 4.11.1 Multivariate Assumptions

#### 1- Outliers and Influentials

a cooks distance analysis was run to determine if any (**Multivariate**) influential Outliers existed. And three cases removed according to cooks distance greater than 0.100.is (98,174)

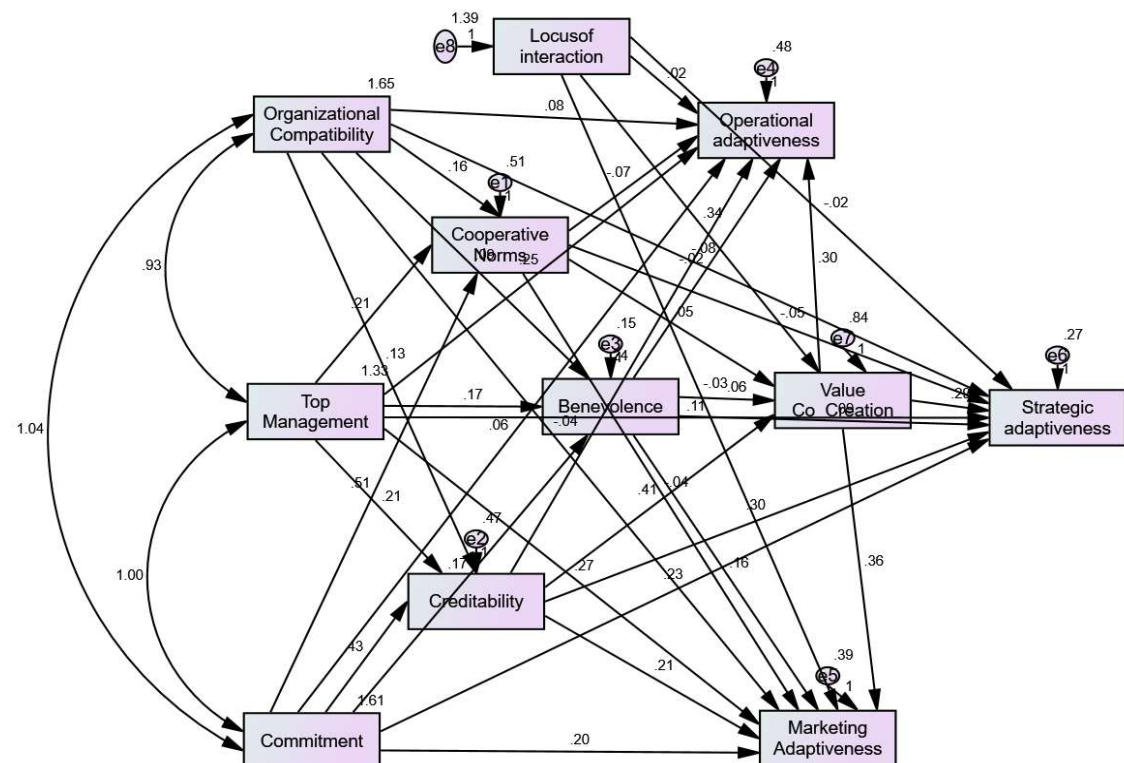
### 5.11.2 Multicollinearity

The variable inflation factors for all predictor on dependent variable was examined and observed no VIFs greater than 2.3, which is far less than the threshold of 10.

## Conceptual Framework and Hypotheses

As a result of factor analysis the proposed Framework of this study had been as its in figure (5.3)

*Figure (5.7): The Conceptual Framework.*



## 5.12 Descriptive Analysis of model

The following Table (5.18) presents the level or perceptions of the sampled Sudanese industrial companies of Supply chain orientation, value co-creation and the level of business adaptiveness (Likert-type scale: 1 indicates “Strongly disagree” and 7 strongly agree).

Thus, for each level or perceptions Table 5.18 presents the mean, standard deviation, of the industrial firms that answered the statements of the variables measures.

Table 4.18 shows the means and standard deviations that the scale used a 7-point scale (7=strongly disagree, 7=strongly agree).

**Table 4.18 Descriptive Analysis of the model**

	Mean	Std. Deviation
Organizational Compatibility	4.76	1.28
Top Management support	4.81	1.15
Commitment	5.28	1.27
Benevolence	2.86	.60
Cooperative Norms	5.33	1.21
Creditability	5.00	1.10
Operational adaptiveness	4.62	1.11
Strategic adaptiveness	4.68	1.01
Marketing Adaptiveness	5.26	1.21
Locus of interaction	4.22	1.18
Value Co-Creation	4.84	1.2467

*Note: All variables used a 7-point likert scale (1= strongly disagree, 7= strongly agree)*

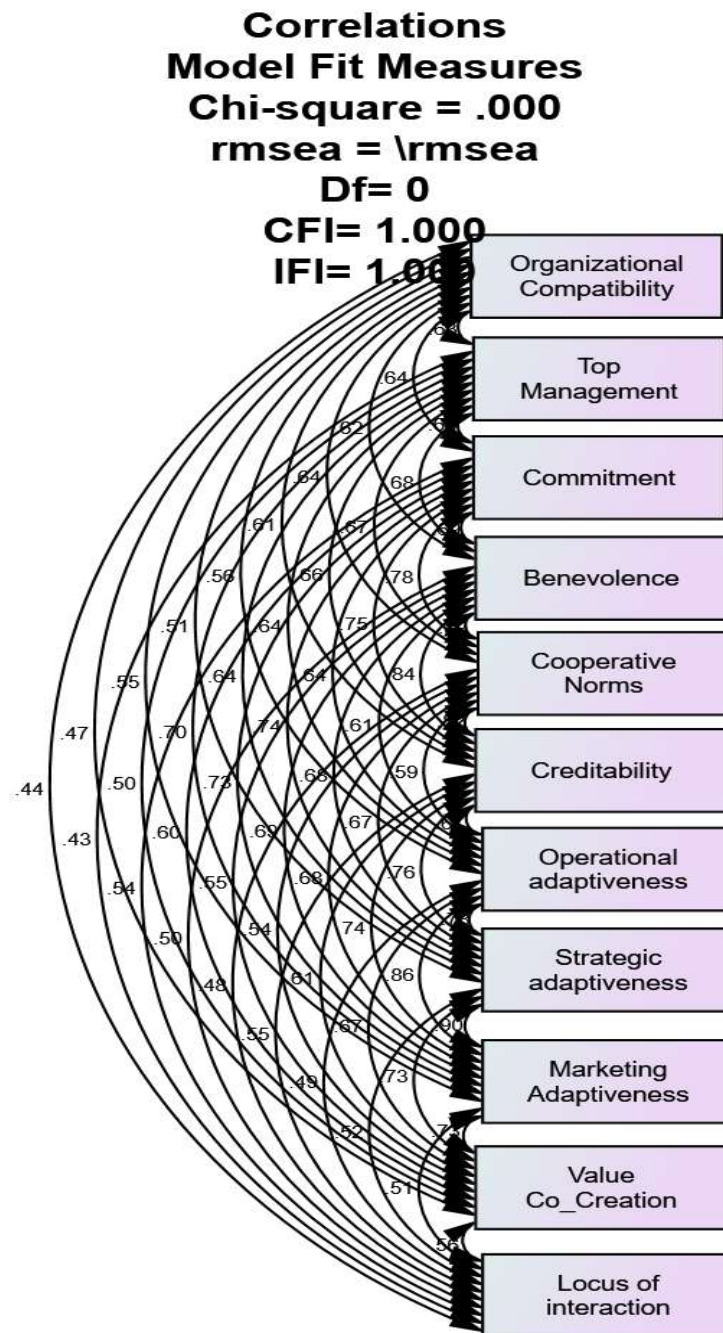
## 5.13 Correlation Analysis

The zero-order correlation was conducted for all dimensions of the constructs operationalized in this study using bivariate correlations. These bivariate correlations allow for preliminary inspection of hypothesized relationships.

Table 4-18 presents that all the hypothesized relationships are in positive correlations.. Based on the bivariate correlations there was some expectation that these coefficients would be significant. The full AMOS output in attached in Appendix ().

**Table (5.4 ) Person’s correlation coefficient for all variables.**

Figure 5.8 The correlation diagram



### Correlation Analysis

SEM is capable of explaining both direct and indirect effects between latent variables (Jöreskog & Sörbom, 2001). Therefore, we will also examine possible indirect correlation of the variables to each other as well. Table 5.19 displays the correlations between the study's constructs to provide a general picture of inter-correlations.

Correlations: (Group number 1 - Default model)

**Table (5.19) Coefficient for All variables**

<b>Variable</b>	compatibility	Top Mgt support	Commitment	Cooperative norms	benevolence	credibility	Value co-creation	Operational adaptiveness	Strategic adaptiveness	Marketing adaptiveness	Locus
Organizational Compatibility	1										
Top Mgt support	.630	1									
Commitment	.638	.682	1								
Cooperative norms	.635	.669	.777	1							
benevolence	.623	.684	.694	.890	1						
credibility	.465	.498	.749	.819	.543	1					
Value co-creation	.612	.658	.604	.536	.843	.612	1				
Op.adaptiveness	.563	.645	.639	.593	.607	.670	.667	1			
St.adaptiveness	.507	.635	.742	.673	.678	.760	.730	.778	1		
Mar. adaptiveness	.553	.698	.733	.681	.690	.738	.730	.857	.897	1	
Locus of interaction	.441	.427	.543	.485	.504	.548	.563	.493	.521	.511	1

As shown in table (5.19) above the correlation analysis provides strong indicators of associations, thus for more examination of the proposed relationships path analysis through structural equation model (SEM) was conducted to give the best predictive model of the relationship between the variables. In the following the hypotheses testing which is represent last part of data analysis and findings.

#### **5.14 Hypotheses Testing**

This section discusses the results of hypotheses of the study. The hypotheses were tested with the path analysis that discloses the effect of independent variables on dependent variables and the effect of mediator and moderator in relationships between variables through the structural equation modeling (SEM) that grows out of and serves purposes similar to multiple regression, but in more powerful way which takes in account the modeling of interactions between variables, nonlinearities, correlated independents, measurement error, correlated error terms, multiple latent independents each measured by multiple indicators, and one or more latent dependents also each with multiple indicators (Gaskin, 2016). SEM may be used as a more powerful alternative to multiple regression, path analysis, factor analysis, time series analysis, and analysis of covariance. these procedures may be seen as special cases of SEM, or, to put it another way, SEM is an extension of the general linear model (GLM) of which multiple regression is a part. Given that the variables appeared in confirmatory factor analysis encompasses 80 hypotheses in this study. The main effects as well as the mediating and moderating effect were examined using path analysis, the statistical procedures of which had been explained in chapter

In order to perform path analysis, it is generally agreed that there are at least the assumptions of model fit should be met. It's given that the model fit was done in (CFA), however the need to do it again in structural model is important in order to demonstrate sufficient exploration of alternative models (Gaskin, 2016). Every time the model changes and a hypothesis are tested, model fit must be assessed. Thus the Absolute fit indices and Incremental fit indices assumptions are provided below:

##### **5.8.1 Absolute fit indices**

Absolute fit indices provide the most fundamental indication of how well the proposed theory fits the data, it includes indices like the Chi-Squared test, RMSEA, GFI, AGFI, the RMR and the SRMR the information about each are in the following sub sections.

##### **5.14.1 The relative/normed chi-square/df ( $\chi^2/df$ )**

Due to the restrictiveness of the Model Chi-Square (Hooper, Coughlan, & Mullen, 2008) indicates that researchers have sought alternative indices the relative/normed chi-square ( $\chi^2/df$ ) which means (the model calculated value of chi-square divided by the degree of freedom), as one example of statistic that minimizes the impact of sample size on the Model Chi-Square. The recommendations regarding an acceptable ratio for this statistic range from as high as 5.0 to as low as 2.0 (Hooper et al, 2008).

#### **5.14.2 Root Mean Square Error of Approximation (RMSEA)**

Representing how well the fitted model approximates per degree of freedom are also frequently applied with their large values indicating high residual variance that reflects a poorly fitting model (Hooper et al, 2008). In recent years it has become regarded as one of the most informative fit indices due to its sensitivity to the number of estimated parameters in the model. In other words, the RMSEA favours parsimony in that it will choose the model with the lesser number of parameters. Recommendations for RMSEA cut-off points have been reduced considerably in the last fifteen years. until the early nineties, an RMSEA in the range of 0.05 to 0.10 was considered an indication of fair fit and values above 0.10 indicated poor fit, and then it was thought that an RMSEA of between 0.08 to 0.10 provides average fit and below 0.08 shows a good fit (MacCallum et al, 1996, cited in Hooper et al, 2008). However, more recently, a cut-off value close to .06 (Hu and Bentler, 1999) or a stringent upper limit of 0.07 (Steiger, 2007) seems to be the general consensus amongst authorities in this area (Hooper et al, 2008). Finally it is generally reported in conjunction with the RMSEA and in a well-fitting model the lower limit is close to 0 while the upper limit should be less than 0.08.

#### **5.14.3 Goodness-of-fit statistic (GFI) and the adjusted goodness-of-fit statistic (AGFI)**

fall into two classes: absolute and incremental fit indices. Absolute fit indices directly measure how well the observed data fit with the model specification, while incremental fit indices assess how well the model specification fits compared to a null or baseline model. According to Hooper et al, (2008) the (GFI) was created as an alternative to the Chi-Square test and calculates the proportion of variance that is accounted for by the estimated population covariance, this statistic ranges from 0 to 1 and with larger samples increasing its value and the cut-off point of 0.90 has been recommended for the GFI however, simulation studies have shown that when factor loadings and sample sizes are low a higher cut-off of 0.95 is more appropriate. On the other hand the value of AGFI which adjusts the GFI based upon degrees of freedom also ranges between 0 and 1 and it is generally accepted that values of 0.90 or greater indicate well fitting models.

#### **5.14.4 Root mean square residual (RMR) and standardized root mean square residual (SRMR)**

The RMR and the SRMR are the square root of the difference between the residuals of the sample covariance matrix and the hypothesized covariance model. Values for the SRMR range from zero to 1.0 with well-fitting models obtaining values less than .05, however values as high as 0.08 are deemed acceptable (Hooper et al, 2008). An SRMR of 0 indicates perfect fit but it must be noted that SRMR will be lower when there is a high number of parameters in the model and in models based on large sample sizes (Hooper et al, 2008).

#### **5.14.5 Incremental fit indices**

Incremental fit indices are a group of indices that do not use the chi-square in its raw form but compare the chi-square value to a baseline model this means it use to measure how well the model fits in comparison to no model at all. This category includes Normed-fit index (NFI), Non-Normed Fit Index (NNFI) and Comparative fit index (CFI) (Hooper et al, 2008). The following sub sections will discuss these indices.

#### **5.14.6 Normed-fit index (NFI)**

This statistic assesses the model by comparing the  $\chi^2$  value of the model to the  $\chi^2$  of the null model. Values for this statistic range between 0 and 1 referring to Bentler and Bonnet (1980) recommending values greater than 0.90 indicating a good fit. More recent suggestions state that the cut-off criteria should be  $NFI \geq .95$  (Hu and Bentler, 1999).

#### **4.14.7 Non-Normed Fit Index (NNFI)**

Non-Normed Fit Index (NNFI), also known as the Tucker-Lewis index (TLI), is an index that prefers simpler models. Recommendations as low as 0.80 as a cutoff have been preferred however Bentler and Hu (1999) have suggested  $NNFI \geq 0.95$  as the threshold.

#### **4.14.8 Comparative fit index (CFI)**

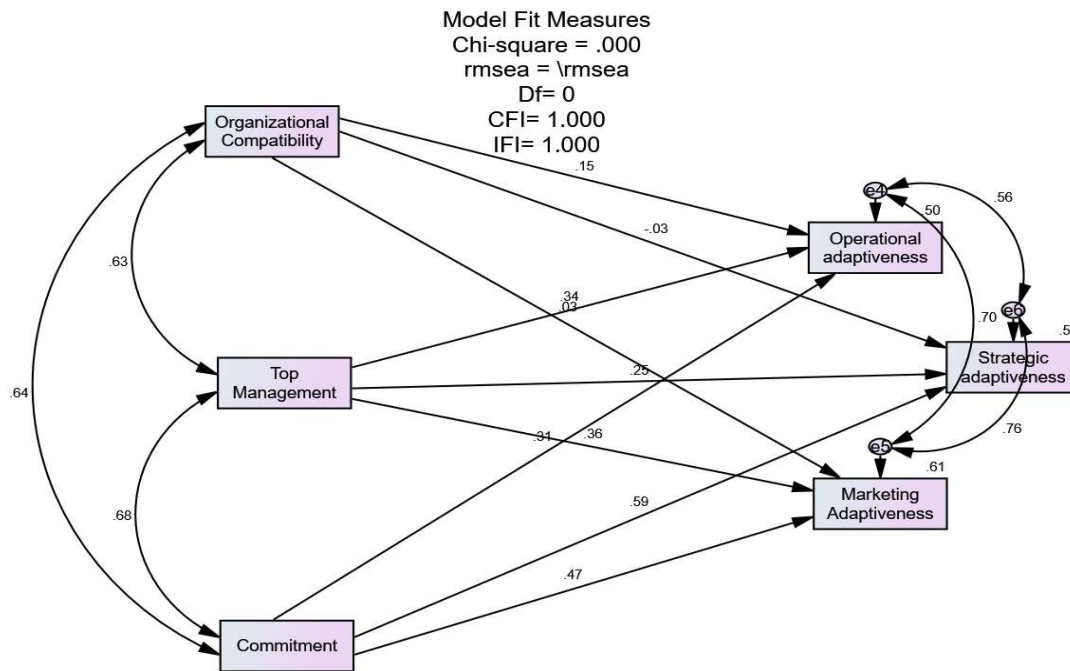
This statistic assumes that all latent variables are uncorrelated (null/independence model) and compares the sample covariance matrix with this null model. The values for this statistic range between 0.0 and 1.0 with values closer to 1.0 indicating good fit. A cut-off criterion of  $CFI \geq 0.90$  was initially advanced however, recent studies have shown that a value greater than 0.90 is needed in order to ensure that miss-specified models are not accepted (Hu & Bentler, 1999). From this, a value of  $CFI \geq 0.95$  is presently recognized as indicative of good fit (Hu & Bentler, 1999). Today this index is included in all SEM programs and is one of the most popularly reported fit indices due to being one of the measures least affected by sample size (Fan, Thompson, & Wang, 1999).

#### **4.14.9 The relationship between strategic SCO and Business adaptive ness.**

This section aims to investigate the effect of strategic SCO dimensions on the business adaptive ness shown in Figure (5.9) below.



### H1.1. strategic SCO has a positive effect on strategic adaptive ness



From the above figure same hypotheses were developed to be tested. In order to test these hypotheses, path analysis in (SEM) using AMOS to test the impacts of Strategic SCO dimensions on Business adaptiveness (strategic adaptiveness). The results of path analyses showing Model fit parameters consistent with recommendation for  $CMIN/DF < 2$ ,  $0 < RMSEA < 1$ ,  $0 < GFI < 1$ ,  $0 < AGFI < 1$ ,  $0 < RMR < 1$ ,  $0 < NFI < 1$ ,  $0 < CFI < 1$ , and  $PCLOSE > 0.05$ . The full AMOS output (Regression Weights) is displayed in table (5.20).

Table (5.20) the relationship between Strategic SCO and strategic adaptiveness

			Estimate	S.E.	C.R.	P	
Organizational Compatibility	→	Strategic adaptiveness	-.026	.052	-3.99	.690	Not Supported
Top Management	→	Strategic adaptiveness	.251	.060	3.630	***	Supported
Commitment	→	Strategic adaptiveness	.587	.056	8.428	***	Supported
<b>H1.2 The relationship between Strategic SCO and operational adaptiveness</b>							
			Estimate	S.E.	C.R.	P	
Organizational Compatibility	→	Operational adaptiveness	.151	.062	2.107	.035	Supported
Top Management	→	Operational adaptiveness	.336	.073	4.452	***	Supported
Commitment	→	Operational adaptiveness	.314	.067	4.123	***	Supported
<b>H1.3 The relationship between Strategic SCO and marketing adaptiveness</b>							
			Estimate	S.E.	C.R.	P	
Organizational Compatibility	→	marketing adaptiveness	.026	.060	.404	.686	Not Supported
Top Management	→	marketing adaptiveness	.361	.070	5.420	***	Supported

	Commitment	→	marketing adaptiveness	.471	.064	7.008	***	Supported
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Table (5.21) summarizes the Findings of testing hypotheses concerning the relationships between Strategic SCO and Business adaptiveness.

The table showed that one of the main hypotheses fully supported (Organizational Compatibility, top management support and commitment) with operational adaptiveness and two were partially supported. These findings signify that top management and commitment show significant positive relationship on the two dimension of business adaptiveness strategic and marketing adaptiveness. while, the results show that Organizational Compatibility has no significant positive relationship with tow dimension of business adaptiveness. Thus, over all hypotheses are partially supported.

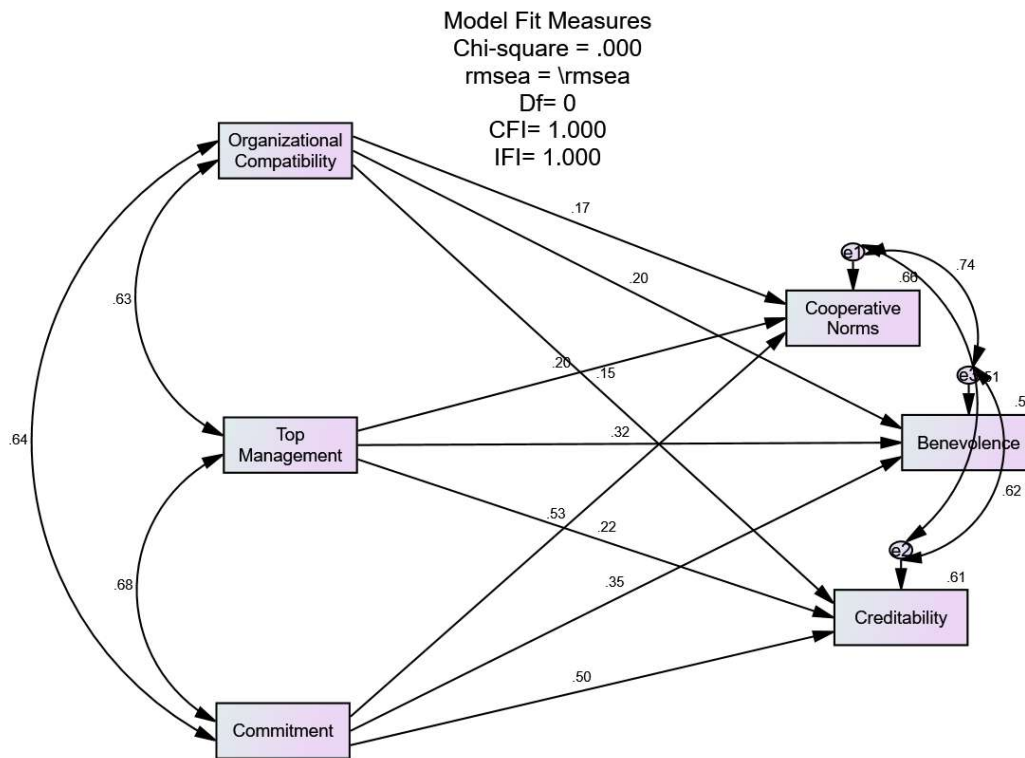
**Table (5.21 )  
Summary of Hypotheses Testing Results for the Relationship between Strategic SCO and Business adaptiveness**

Item		Statement of Hypothesis: There is a positive relationship between,	Remark
H1		Strategic SCO and Business adaptiveness	Partially Supported
H11		Strategic SCO and operational adaptiveness	Fully Supported
	H1.1a	Organizational Compatibility and operational adaptiveness	Supported
	H1.1b	Top management support and operational adaptiveness	Supported
	H1.1c	Commitment and operational adaptiveness	Supported
H1.2		Strategic SCO and strategic adaptiveness	Partially Supported
	H1.2a	Organizational Compatibility and strategic adaptiveness	Not Supported
	H1.2b	Top management support and strategic adaptiveness	Supported
	H1.2c	Commitment and strategic adaptiveness	Supported
H1.3		Strategic SCO and marketing adaptiveness	Partially Supported
	H1.3a	Organizational Compatibility and marketing adaptiveness	Not Supported
	H1.3b	Top management support and marketing adaptiveness	Supported
	H1.3c	Commitment and marketing adaptiveness	Supported

#### **4.14.9 The relationship between Strategic SCO and Structural SCO**

This section aims to investigate the effect of Strategic SCO dimensions on the Structural SCO dimensions shown in figure (5.10) below.

**H2.1.** Strategic SCO dimensions has a positive effect on Cooperative norms



From the above figure some hypotheses were developed to be tested. In order to test these hypotheses, path analysis in (SEM) using AMOS to test the impacts of Strategic SCO and Cooperative norms. The results of path analyses showing Model fit parameters consistent with recommendation for  $CMIN/DF < 2$ ,  $0 < RMSEA < 1$ ,  $0 < GFI < 1$ ,  $0 < AGFI < 1$ ,  $0 < RMR < 1$ ,  $0 < NFI < 1$ ,  $0 < CFI < 1$ , and  $PCLOSE > 0.05$ . The full AMOS output (Regression Weights) is displayed in table (5.22)

Table (5.22 ) the relationship between Strategic SCO and Structural SCO

H2.1 the relationship between Strategic SCO and Cooperative norms								
				Estimate	S.E.	C.R.	P	
Organizational Compatibility	→	Cooperative norms		.171	.056	2.864	.004	Supported
Top Management	→	Cooperative norms		.196	.066	3.129	.002	Supported
Commitment	→	Cooperative norms		.534	.061	8.440	***	Supported
H2.2 The relationship between Strategic SCO and Benevolence								
				Estimate	S.E.	C.R.	P	
Organizational Compatibility	→	Benevolence		.198	.031	3.036	.002	Supported
Top Management	→	Benevolence		.321	.036	4.666	***	Supported
Commitment	→	Benevolence		.348	.033	5.020	***	Supported
H2.3 The relationship between Strategic SCO and Credibility								
				Estimate	S.E.	C.R.	P	

Organizational Compatibility	→	Credibility	.154	.054	2.440	.015	Supported
Top Management	→	Credibility	.219	.063	3.301	***	Supported
Commitment	→	Credibility	.501	.058	7.480	***	Supported

Table (5.23) summarizes the Findings of testing hypotheses concerning the relationships between Strategic SCO and Business adaptiveness.

The table showed that the three dimensions of the main hypotheses fully supported (Organizational Compatibility, top management support and commitment) with the three dimensions of business adaptiveness (Cooperative norms ,benevolence and Crdibility). These findings signify indicates that strategic SCO(Organizational Compatibility, top management support and commitment) have positive relationship with business adaptiveness (Cooperative norms ,benevolence and Crdibility).Thus, over all hypotheses are fully supported.

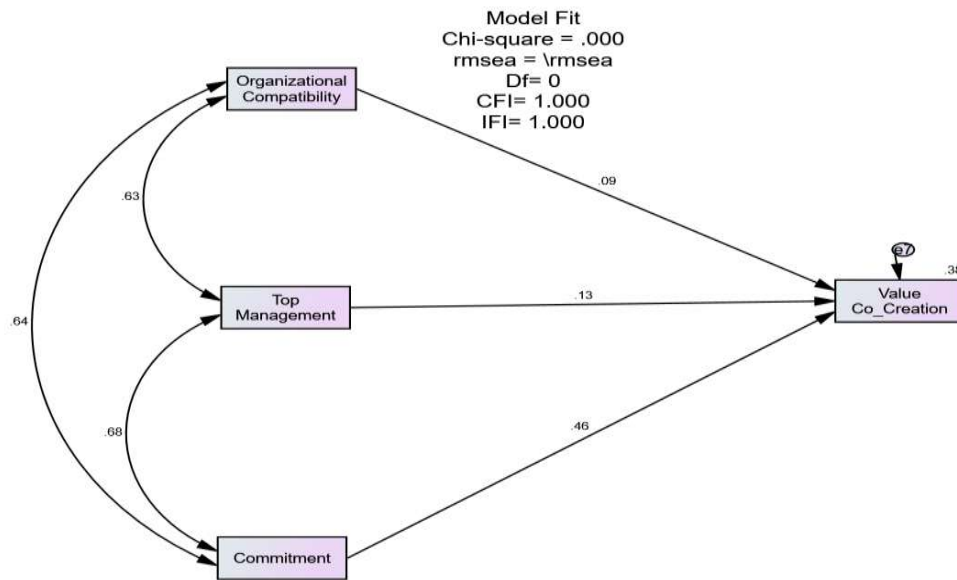
**Table (5.23) Summary of Hypotheses Testing Results for the Relationship between Strategic SCO and Structural SCO**

Item		Statement of Hypothesis: There is a positive relationship between,	Remark
H2		Strategic SCO and <b>Structural SCO</b>	Fully Supported
H21		Strategic SCO and Cooperative norms	Fully Supported
	H2.1a	Organizational Compatibility and Cooperative norms	Supported
	H2.1b	Top management support Cooperative norms	Supported
	H2.1c	Commitment and Cooperative norms	Supported
H2.2		Strategic SCO and Benevolence	Fully Supported
	H2.2a	Organizational Compatibility and Benevolence	Supported
	H2.2b	Top management support and Benevolence	Supported
	H2.2c	Commitment and Benevolence	Supported
H2.3		Strategic SCO and Credibility	Fully Supported
	H1.3a	Organizational Compatibility and Credibility	Supported
	H1.3b	Top management support and Credibility	Supported
	H1.3c	Commitment and Credibility	Supported

#### **5.14.9.1 The relationship between Strategic SCO and Value Co-creation.**

This section aims to investigate the effect of Strategic SCO dimensions on the Value Co-creation uni dimensions shown in Figure (5.11) below.

H3. Strategic SCO have a positive effect on Value Co-creation



From the above figure some hypotheses were developed to be tested. In order to test these hypotheses, path analysis in (SEM) using AMOS to test the impacts of Strategic SCO on value co-creation. The results of path analyses showing Model fit parameters consistent with recommendation for  $CMIN/DF < 2$ ,  $0 < RMSEA < 1$ ,  $0 < GFI < 1$ ,  $0 < AGFI < 1$ ,  $0 < RMR < 1$ ,  $0 < NFI < 1$ ,  $0 < CFI < 1$ , and  $PCLOSE > 0.05$ . The full AMOS output (Regression Weights) is displayed in table (5.22)

**Table (5.24)**

H3. the relationship between Strategic SCO and Value Co-creation							
			Estimate	S.E.	C.R.	P	
Organizational Compatibility	→	Value Co-creation	.093	.077	1.170	.242	Not Supported
Top Management Support	→	Value Co-creation	.128	.090	1.522	.128	Not Supported
Commitment	→	Value Co-creation	.457	.083	5.394	***	Supported

Table (5.25) summarizes the Findings of testing hypotheses concerning the relationships between Strategic SCO and Value Co-creation.

The table showed that the three dimensions of the main hypotheses fully supported (Organizational Compatibility, top management support and commitment) with dimensions of Value Co-creation. These findings signify indicates that strategic SCO(Organizational Compatibility, top management support and commitment) have positive relationship with Value Co-creation. Thus, over all hypotheses are partially supported

**Table (5.25 )**

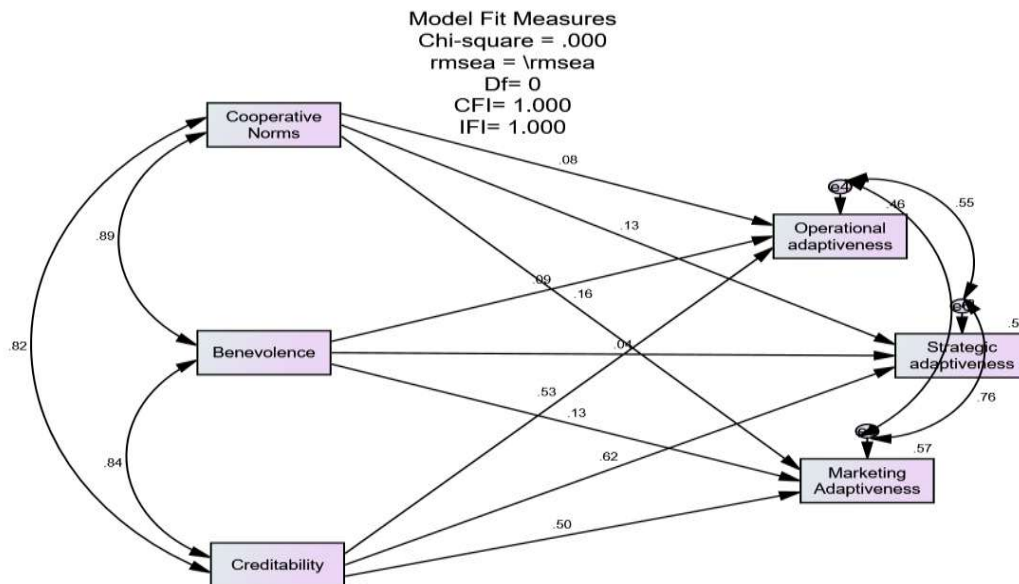
**Summary of Hypotheses Testing Results for the Relationship between Strategic SCO and value co-creation**

Item		Statement of Hypothesis: There is a positive relationship between,	Remark
H3		Strategic SCO and <b>Value Co-creation</b>	partially Supported
H31		Strategic SCO and <b>Value Co-creation</b>	partially Supported
	H3.1a	Organizational Compatibility and Value Co-creation	Not Supported
	H3.1b	Top management support and Value Co-creation	Not Supported
	H3.1c	Commitment and Value Co-creation	Supported

**4.14.9.2 The relationship between Structural SCO and Business adaptiveness.**

This section aims to investigate the effect of Structural SCO dimensions on the Business adaptiveness un dimensions shown in figure (5.12) below.

H4.1 Structural SCO has positive effect on Business adaptiveness



From the above figure same hypotheses were developed to be tested. In order to test these hypotheses, path analysis in (SEM) using AMOS to test the impacts of Structural SCO dimensions on Business adaptiveness (H4.1) . The results of path analyses showing Model fit parameters consistent with recommendation for  $CMIN/DF < 2$ ,  $0 < RMSEA < 1$ ,  $0 < GFI < 1$ ,  $0 < AGFI < 1$ ,  $0 < RMR < 1$ ,  $0 < NFI < 1$ ,  $0 < CFI < 1$ , and  $PCLOSE > 0.05$ . The full AMOS output (Regression Weights) is displayed in table (5.26)

Table ( 5.26 ) the relationship between Structural SCO and Business adaptiveness

H4.1 the relationship between Structural SCO and strategic adaptiveness							
			Estimate	S.E.	C.R.	P	
Cooperative Norms	→	Strategic	.130	.090	1.199	.231	Not

			adaptiveness					Supported
	Benevolence	→	Strategic adaptiveness	.040	.192	.344	.731	Not Supported
	Credibility	→	Strategic adaptiveness	.621	.084	6.802	***	Supported
H4.2 The relationship between Structural SCO and operational adaptiveness								
				Estimate	S.E.	C.R.	P	
	Cooperative Norms	→	Operational adaptiveness	.078	.114	.633	.527	Not Supported
	Benevolence	→	Operational adaptiveness	.092	.242	.699	.484	Not Supported
	Credibility	→	Operational adaptiveness	.529	.106	5.056	***	Supported
H4.3 The relationship between Structural SCO and marketing adaptiveness								
				Estimate	S.E.	C.R.	P	
	Cooperative Norms	→	marketing adaptiveness	.157	.110	1.420	.156	Not Supported
	Benevolence	→	marketing adaptiveness	.127	.235	1.076	.282	Not Supported
	Credibility	→	marketing adaptiveness	.502	.103	5.365	***	Supported

Table (5.27) summarizes the results of testing hypotheses concerning the relationships between **Structural SCO** and business adaptiveness .

The table shown that all of the main hypotheses are partially supported. These results signify that credibility show significant positive relationship on the all three types of business adaptiveness. However, the results show that Cooperative norms and Benevolence have no significant positive relationship with the three dimensions of business adaptiveness Thus, over all hypotheses are partially supported.

**Table (5.27 )  
Summary of Hypotheses Testing Results for the Relationship between Structural SCO and business adaptiveness**

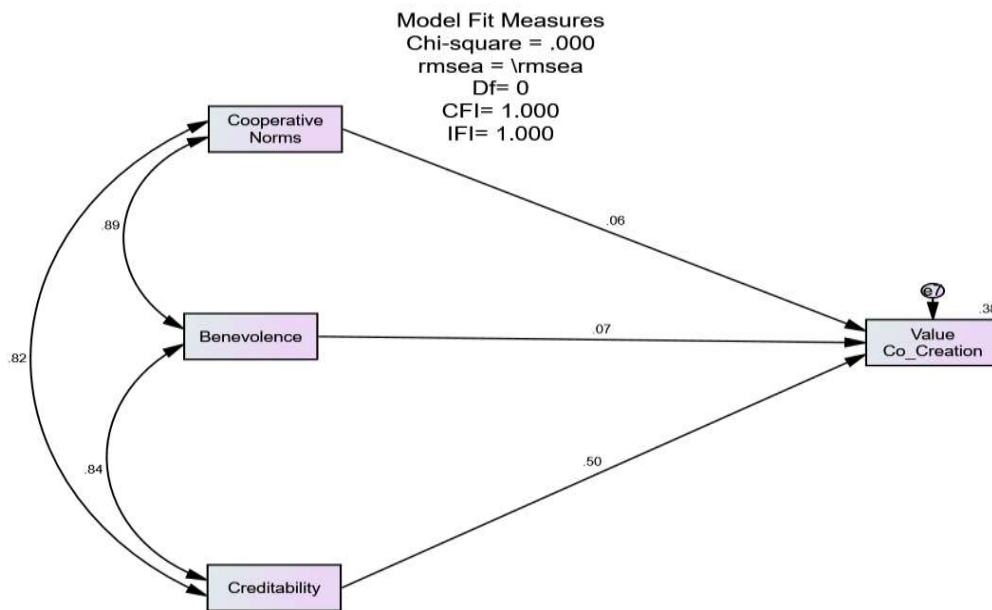
Item		Statement of Hypothesis: There is a positive relationship between,	Remark
H4		<b>Structural SCO and business adaptiveness</b>	partially Supported
H41		Structural SCO and operational adaptiveness	partially Supported
	H4.1a	Cooperative norms and operational adaptiveness	Not Supported
	H4.1b	Benevolence and operational adaptiveness	Not Supported
	H4.1c	credibility and operational adaptiveness	Supported
H4.2		Structural SCO and strategic adaptiveness	partially Supported
	H4.2a	Cooperative norms and strategic adaptiveness	Not Supported

	H4.2b	Benevolence and strategic adaptiveness	Not Supported
	H4.2c	credibility and operational adaptiveness	Supported
H4.3		<b>Structural SCO</b> and marketing adaptiveness	partially Supported
	H4.3a	Cooperative norms and marketing adaptiveness	Not Supported
	H4.3b	Benevolence and marketing adaptiveness	Not Supported
	H4.3c	credibility and marketing adaptiveness	Supported

**5.14.9.3 The relationship between Structural SCO and Value Co-creation.**

This section aims to investigate the effect of Structural SCO dimensions on the Value Co-creation, unidimensions shown in figure (5.13) below.

**H5.** Structural SCO has a positive effect on in value co-creation



From the above figure same hypotheses were developed to be tested. In order to test these hypotheses, path analysis in (SEM) using AMOS to test the impacts of Structural SCO and Value Co-creation. The results of path analyses showing Model fit parameters consistent with recommendation for  $CMIN/DF < 2$ ,  $0 < RMSEA < 1$ ,  $0 < GFI < 1$ ,  $0 < AGFI < 1$ ,  $0 < RMR < 1$ ,  $0 < NFI < 1$ ,  $0 < CFI < 1$ , and  $PCLOSE > 0.05$ . The full AMOS output (Regression Weights) is displayed in table (5.28).

Table ( 5.28 ) the relationship between Structural SCO and Value Co-creation

H5. the relationship between Structural SCO and Value Co-creation							
			Estimate	S.E.	C.R.	P	
Cooperative Norms	→	Value Co-creation	.063	.135	.473	.636	Not Supported
Benevolence	→	Value Co-creation	.070	.287	.498	.618	Not Supported



Credibility	→	Value Co-creation	.502	.126	4.490	***	Supported
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Table (5.29) summarizes the results of testing hypotheses concerning the relationships between Structural SCO and value co-creation .

The table shown that the hypothesis partially supported. These results signify that only credibility show significant positive relationship on value co-creation. However, the results show that Cooperative norms and Benevolence have no significant positive relationship with the value co-creation. Thus, over all hypotheses are partially supported.

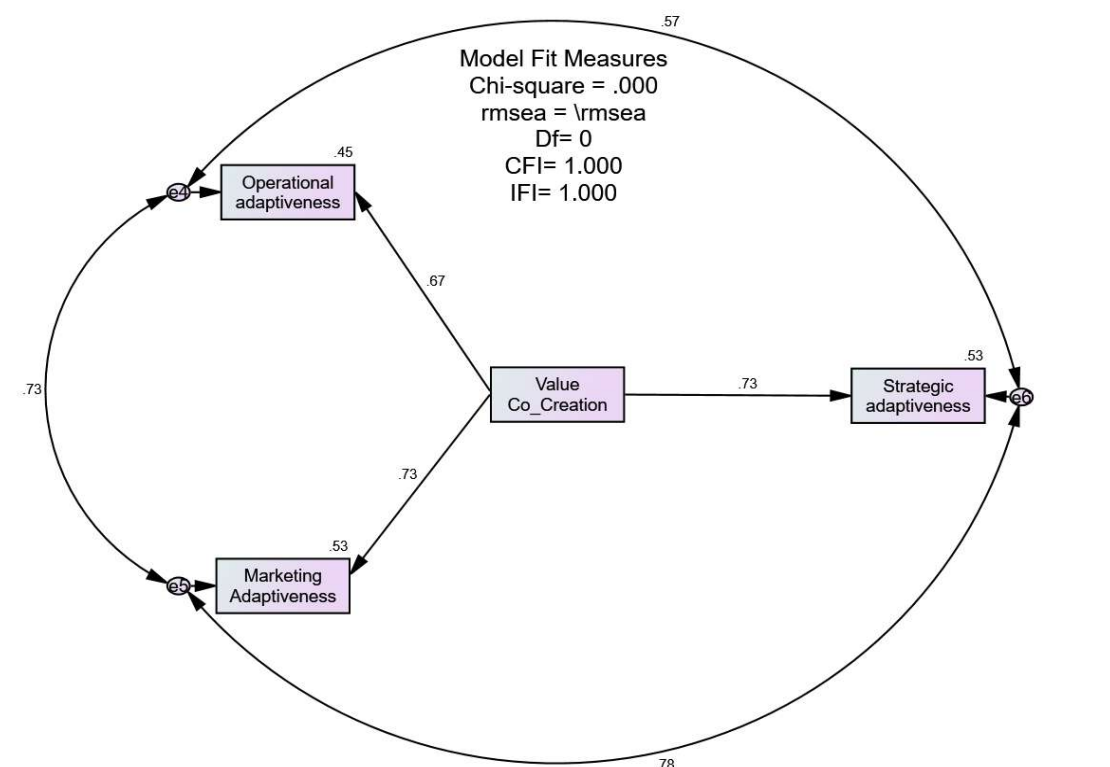
**Table (5.29)**  
**Summary of Hypotheses Testing Results for the Relationship between Structural SCO and value co-creation**

Item		Statement of Hypothesis: There is a positive relationship between,	Remark
H5		Structural SCO and value co-creation	partially Supported
H51		Structural SCO and value co-creation	partially Supported
	H5.1a	Cooperative norms and value co-creation	Not Supported
	H5.1b	Benevolence and value co-creation	Not Supported
	H5.1c	credibility and value co-creation	Supported

**5.14.9.4** The relationship between Value Co-creation and business adaptiveness.

This section aims to investigate the effect of Value Co-creation on the strategic adaptiveness uni dimensions shown in figure (5.14) below.

**H6.1** Value Co-creation has a positive effect on in business adaptiveness



From the above figure same hypotheses were developed to be tested. In order to test these hypotheses, path analysis in (SEM) using AMOS to test the impacts of Value Co-creation dimensions on the business adaptiveness. The results of path analyses showing Model fit parameters consistent with recommendation for  $CMIN/DF < 2$ ,  $0 < RMSEA < 1$ ,  $0 < GFI < 1$ ,  $0 < AGFI < 1$ ,  $0 < RMR < 1$ ,  $0 < NFI < 1$ ,  $0 < CFI < 1$ , and  $PCLOSE > 0.05$ . The full AMOS output (Regression Weights) is displayed in table (5.30)

Table (5.30 ) the relationship between Value Co-creation and business adaptiveness

H6.1 Value Co-creation and Strategic adaptiveness							
			Estimate	S.E.	C.R.	P	
Value Co-creation	→	Strategic adaptiveness	.730	.041	14.587	***	Supported
Value Co-creation	→	Operational adaptiveness	.667	.049	12.217	***	Supported
Value Co-creation	→	Marketing adaptiveness	.730	.049	14.573	***	Supported

Table(5.31) summarizes the results of testing hypotheses concerning the relationships between value co-creation and business adaptiveness.

The table shown that all of the hypotheses are fully supported. These results signify that value co-creation show significant positive relationship on the all three dimensions of business adaptiveness. Thus, over all hypotheses are fully supported.

**Table (5.31)**

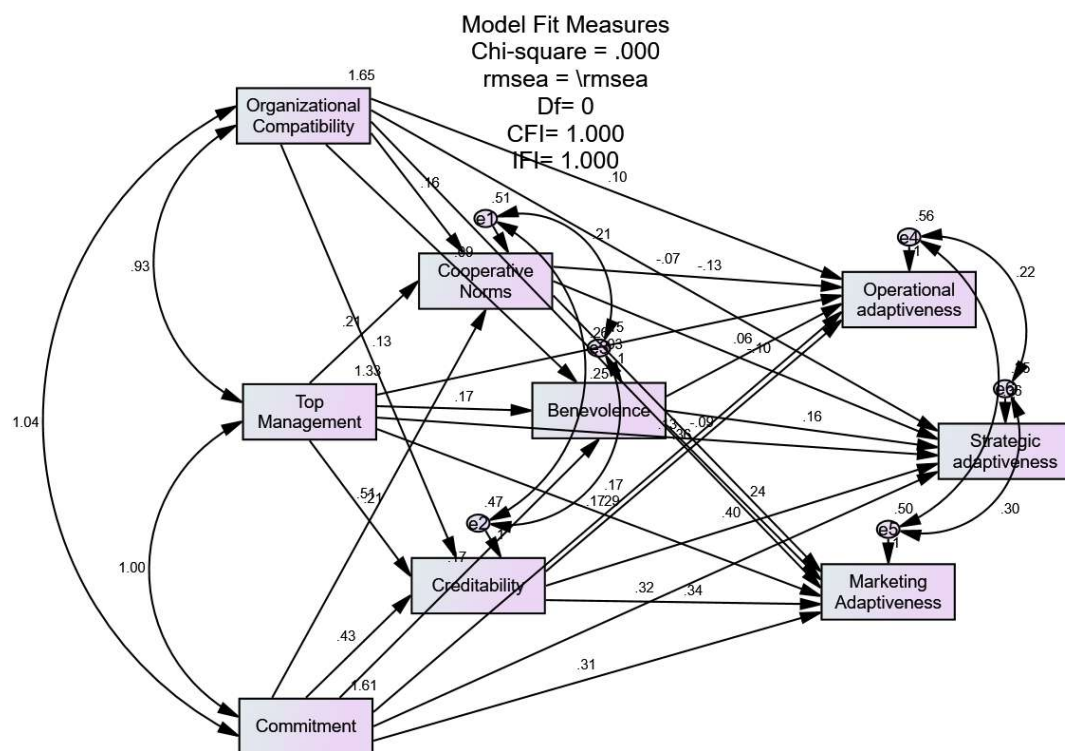
**Summary of Hypotheses Testing Results for the Relationship between Value co-creation and Business adaptiveness**

Item		Statement of Hypothesis: There is a positive relationship between,	Remark
H5		value co-creation and Business adaptiveness	fully Supported
H51		value co-creation and business adaptiveness	fully Supported
	H5.1a	value co-creation and Operational adaptiveness	Supported
	H5.1b	value co-creation and Strategic adaptiveness	Supported
	H5.1c	value co-creation and Marketing adaptiveness	Supported

### 5.15 The Mediating Effect OF Structural SCO

Testing mediation impact aims to detect the intervening variable in the model through the differences in coefficients using an examination method. On the other hand, in order to found whether mediator is fully or partially mediating the relationship between the independent variable and dependent variable, the impact of independent variable on dependent variable controlling for mediating variable should be zero or  $\beta_4$  is not significant in fully mediator, while partial mediator exists once  $\beta_4$  is significant but reduced.

Despite the method outlined by (e.g., Baron & Kenny, 1986; Kenny et al., 1998) is the most commonly used approach in the literature (Frazier, Tix, and Barron, 2004) however, to fulfill the condition for testing the mediation effect of marketing orientation in this study the direct and indirect effect was conducted to examine firstly, the direct effect between strategic *supply chain orientation* and business adaptiveness then the indirect effect to this relation through the Structural supply chain orientation. Given that the third assumption of Kenny approach was not satisfied in this study, in which the mediating variable must significantly influence the dependent variable ( $\beta_3$  must be significant), this means that the relationship between the Structural SCO and business adaptiveness is partially significant. The results of the direct and indirect effect analyses were discussed in the next subsections. figure (5.15) H7.1.1 benevolence mediates the relationship between Strategic SCO And operational adaptiveness



Concerning the model fit recommendation AMOS output showing Model fit indices as follow, CMIN/DF=.852, RMSEA=.000, GFI=.987, AGFI=.956, RMR=.008, NFI=.944, CFI=1, and PCLOSE=.853. Figure (5.32) below presents the model fit measures and their interpretations.

The test result of path coefficient and hypotheses for the impact of mediation variable in Table 2 shows that the impact of strategic SCO(compatibility) on business adaptiveness (strategic, operational, marketing)through Structural SCO(Benevolence) dependent on

Parameter A x B power by (Gaskin, 2016) to calculate indirect effect after testing mediating effect

Table(5.32) presented the results of the testing the mediating effect of structural SCO(benevolence) on the relationship between strategic SCO (compatibility) and Business adaptiveness. The results indicate that benevolence as mediating variable significantly influenced the relationship between organizational Compatibility and strategic adaptiveness, also the results shown that benevolence as mediate the relationship between Compatibility and marketing adaptiveness thus, it can be interpreted that benevolence fully mediated the relationship between organizational Compatibility and business adaptiveness. The full AMOS is presented in Appendix.

Table (5.32), H7.1.1the mediation effect of benevolence

	Estimate	Direct	indirect		Sig	Nature of Mediation	Empirical Evidence
			Lower	upper			
compatibility --> Benevolence --> op. adaptiveness	0.027	-.026	-.007	.069	.077	NO Mediation	<b>Not Supported</b>
Compatibility --> Benevolence --> strategic. Adaptiveness	0.043	.151**	.006	.090	.008	partial Mediation	<b>Supported</b>
compatibility --> Benevolence --> marketing. Adaptiveness	0.081	.026	.026	.183	.006	full Mediation	<b>Supported</b>

Source: prepared by researcher, (2017).Note: Level of significant: \*p<0.10, \*\*p<0.05, \*\*\*p<0.000

#### 5.15.1 The mediating role of benevolence on the relationship between Top management support and business adaptiveness.

The test result of path coefficient and hypotheses for the impact of mediation variable in Table(5.33) shows that the impact of strategic SCO(Top management support) on business adaptiveness (strategic, operational, marketing) through Structural SCO(Benevolence) dependent on Parameter A x B power by (Gaskin, 2016) to calculate indirect effect after testing mediating effect

Table (5.33) presented the results of the testing the mediating effect of structural SCO(benevolence) on the relationship between strategic SCO(top management support) and Business adaptiveness. The results indicate that benevolence as mediating variable significantly influenced the relationship between top management support and strategic adaptiveness, also the results shown that benevolence as mediate the relationship between top management support and marketing adaptiveness thus, it can be interpreted that benevolence partially mediated the relationship between top management and business adaptiveness.

Table (5.33) H7.1.2 mediating effect of benevolence on the relationship between strategic top management support and Business adaptiveness

The mediating role of benevolence on the relationship between Top management support and business adaptiveness.	Estimate	Direct	indirect		Sig	Nature of Mediation	Empirical Evidence
			Lower	upper			
Top management --> Benevolence --> op. adaptiveness	0.049	.251***	-.015	.128	.091	NO Mediation	<b>Not Supported</b>
Top management --> Benevolence --> strategic. Adaptiveness	0.078	.336***	.024	.159	.013	partial Mediation	<b>Supported</b>
Top management --> Benevolence --> marketing. Adaptiveness	0.081	.361***	.026	.183	.006	partial Mediation	<b>Supported</b>

### 5.15.2 The mediating role of benevolence on the relationship between commitment and business adaptiveness.

The test result of path coefficient and hypotheses for the impact of mediation variable in Table 2 shows that the impact of strategic SCO(Commitment) on business adaptiveness (strategic, operational, marketing) through Structural SCO(Benevolence) dependent on Parameter A x B power by (Gaskin, 2016) to calculate indirect effect after testing mediating effect

Table(5.34) presented the results of the testing the mediating effect of structural SCO (benevolence) on the relationship between strategic SCO(commitment) and Business adaptiveness. The results indicate that benevolence as mediating variable significantly influenced the relationship between commitment and strategic adaptiveness, also the results shown that benevolence as mediate the relationship between commitment and marketing adaptiveness thus, it can be interpreted that benevolence partially mediated the relationship between commitment and business adaptiveness.

Table (5.34), H7.1.3 mediating effect of benevolence on the relationship between Commitment and Business adaptiveness.

	Estimate	Direct	Indirect		Sig	Nature of Mediation	Empirical Evidence
			Lower	upper			
Commitment --> Benevolence --> op. adaptiveness	0.048	.314***	-.007	.121	.086	NO Mediation	<b>Not Supported</b>
Commitment --> Benevolence --> strategic. Adaptiveness	0.077	.587***	.016	.152	.014	partial Mediation	<b>Supported</b>
Commitment --> Benevolence --> marketing. adaptiveness	0.080	.361***	.019	.183	.011	Partial Mediation	<b>Supported</b>

Table(5.35) summarizes the results of testing hypotheses concerning the mediating effect of structural SCO (benevolence) between strategic SCO and business adaptiveness. The results of mediating role indicates that the three components of strategic SCO (organizational compatibility, top management and commitment) influences the business adaptiveness (strategic and marketing adaptiveness) through benevolence.

While these components the three dimensions of strategic SCO are not influence on operational adaptiveness through benevolence .

**Table(5.35) Summary of Hypotheses Testing Results for Mediated Effects of Structural SCO (benevolence)**

Item		Statement of Hypothesis:	Remark
H6		Benevolence mediate the relationship between Strategic SCO and business adaptiveness	partially Supported
H61		Benevolence mediate the relationship between organizational compatibility and business adaptiveness	partially Supported
	H6.1a	Benevolence mediate the relationship between organizational compatibility and operational adaptiveness	Not Supported
	H6.1b	Benevolence mediate the relationship between organizational compatibility and strategic adaptiveness	Supported
	H6.1c	Benevolence mediate the relationship between organizational compatibility and marketing adaptiveness	Supported
H6.2		Benevolence mediate the relationship between top management support and business adaptiveness	partially Supported
	H6.2a	Benevolence mediate the relationship between top management support and operational adaptiveness	Not Supported
	H6.2b	Benevolence mediate the relationship between top management support and strategic adaptiveness	Supported
	H6.2c	Benevolence mediate the relationship between top management support and marketing adaptiveness	Supported
H6.3		Benevolence mediate the relationship between commitment and business adaptiveness	partially Supported
	H6.3a	Benevolence mediate the relationship between commitment and operational adaptiveness	Not Supported
	H6.3b	Benevolence mediate the relationship between commitment and strategic adaptiveness	Supported
	H6.3c	Benevolence mediate the relationship between commitment and marketing adaptiveness	Supported

**5.15.3 The mediating role of cooperative norms on the relationship between organizational compatibility and business adaptiveness.**

The test result of path coefficient and hypotheses for the impact of mediation variable in Table 2 shows that the impact of strategic SCO(compatibility) on business adaptiveness (strategic, operational, marketing)through Structural SCO(cooperative Norms) dependent on Parameter A x B power by (Gaskin, 2016) to calculate indirect effect after testing mediating effect.

Table (5.36) presented the results of the testing the mediating effect of structural SCO (cooperative norms) on the relationship between strategic SCO(organizational compatibility) and Business adaptiveness. The results indicate that cooperative norms as mediating variable significantly influenced the relationship between organizational compatibility and strategic adaptiveness, also the results shown that cooperative norms as mediate the relationship between organizational compatibility and marketing adaptiveness thus, it can be interpreted that cooperative norms partially mediated the relationship between commitment and business adaptiveness. AMOS output presents sufficient values. appendix

Table (5.36) H7.2.1 the mediating effect of cooperative norms on the relationship between organizational compatibility and Business adaptiveness

	Estimate	Direct	Indirect		Sig	Nature of Mediation	Empirical Evidence
			Lower	upper			
compatibility --> cooperative Norms --> op. adaptiveness	0.013	-.026	-.018	.051	.347	NO Mediation	<b>Not Supported</b>
Compatibility --> cooperative Norms --> strategic. adaptiveness	0.026	.151**	.004	.081	.028	Partial Mediation	<b>Supported</b>
compatibility --> cooperative Norms --> marketing. adaptiveness	0.027	.026	.000	.074	.048	Full Mediation	<b>Supported</b>

Source: prepared by researcher, (2017).**Note:** Level of significant: \*p<0.10, \*\*p<0.05, \*\*\*p<0.000

#### 5.15.4 The mediating role of cooperative norms on the relationship between top management support and business adaptiveness

The test result of path coefficient and hypotheses for the impact of mediation variable in Table 2 shows that the impact of strategic SCO(Top management support) on business adaptiveness (strategic, operational, marketing)through Structural SCO(Cooperative Norms) dependent on Parameter A x B power by (Gaskin, 2016) to calculate indirect effect after testing mediating effect.

Table (5.37) presented the results of the testing the mediating effect of structural SCO (cooperative norms) on the relationship between strategic SCO(Top management support) and Business adaptiveness. The results indicate that cooperative norms as mediating variable significantly influenced the relationship between Top management support and strategic adaptiveness, also the results shown that cooperative norms as mediate the relationship between Top management support and marketing adaptiveness thus, it can be interpreted

that cooperative norms partially mediated the relationship between Top management support and business adaptiveness. AMOS output presents sufficient values. appendix

Table (5.37) H7.2.2 the mediating effect of cooperative norms on the relationship between Top management support and Business adaptiveness

	Estimate	Direct	Indirect		Sig	Nature of Mediation	Empirical Evidence
			Lower	upper			
Top management --> Cooperative Norms --> op. adaptiveness	0.016	.251***	-.018	.086	.249	NO Mediation	<b>Not Supported</b>
Top management --> Cooperative Norms --> strategic. Adaptiveness	0.033	.336***	.003	.107	.020	Partial Mediation	<b>Supported</b>
Top management --> Cooperative Norms --> marketing. Adaptiveness	0.035	.361***	.002	.140	.022	partial Mediation	<b>Supported</b>

### 5.15.5 The mediating role of cooperative norms on the relationship between commitment and business adaptiveness

The test result of path coefficient and hypotheses for the impact of mediation variable in Table(5.38) shows that the impact of strategic SCO(Top management support) on business adaptiveness (strategic, operational, marketing)through Structural SCO(Cooperative Norms) dependent on Parameter A x B power by (Gaskin, 2016) to calculate indirect effect after testing mediating effect

Table (5.38) presented the results of the testing the mediating effect of structural SCO (cooperative norms) on the relationship between strategic SCO(commitment) and Business adaptiveness. The results indicate that cooperative norms as mediating variable significantly influenced the relationship between commitment and strategic adaptiveness, also the results shown that cooperative norms mediate the relationship between commitment and marketing adaptiveness. thus, it can be interpreted that cooperative norms partially mediated the relationship between commitment and business adaptiveness. AMOS output presents sufficient values. appendix

Table (5.38) H7.2.3 the mediating effect of cooperative norms on the relationship between commitment and Business adaptiveness

	Estimate	Direct	Indirect		Sig	Nature of Mediation	Empirical Evidence
			Lower	upper			
Commitment --> Cooperative Norms --> op. adaptiveness	0.040	.314***	-.041	.135	.334	NO Mediation	<b>Not Supported</b>
Commitment --> Cooperative Norms --> strategic. adaptiveness	0.081	.587***	.011	.219	.017	partial Mediation	<b>Supported</b>
Commitment --> Cooperative Norms --> marketing. adaptiveness	0.086	.471***	.007	.196	.019	partial Mediation	<b>Supported</b>



Table(5.39) summarizes the results of testing hypotheses concerning the mediating effect of structural SCO (cooperative norms) between strategic SCO and business adaptiveness. The results of mediating role indicates that the three components of strategic SCO (organizational compatibility, top management and commitment) influences the business adaptiveness (strategic and marketing adaptiveness) through cooperative norms.

While these components the three dimensions of strategic SCO are not influence on operational adaptiveness through cooperative norms.

**Table (5.39) Summary of Hypotheses Testing Results for Mediated Effects of Structural SCO (cooperative norms)**

Item		Statement of Hypothesis: There is a positive relationship between,	Remark
H6		Cooperative norms mediate the relationship between Strategic SCO and business adaptiveness	partially Supported
H61		Cooperative norms mediate the relationship between organizational compatibility and business adaptiveness	partially Supported
	H6.1a	Cooperative norms mediate the relationship between organizational compatibility and operational adaptiveness	Not Supported
	H4.1b	Cooperative norms mediate the relationship between organizational compatibility and strategic adaptiveness	Supported
	H4.1c	Cooperative norms mediate the relationship between organizational compatibility and marketing adaptiveness	Supported
H4.2		Cooperative norms mediate the relationship between top management support and business adaptiveness	partially Supported
	H4.2a	Cooperative norms mediate the relationship between top management support and operational adaptiveness	Not Supported
	H4.2b	Cooperative norms mediate the relationship between top management support and strategic adaptiveness	Supported
	H4.2c	Cooperative norms mediate the relationship between top management support and marketing adaptiveness	Supported
H4.3		Cooperative norms mediate the relationship between commitment and business adaptiveness	partially Supported
	H4.3a	Cooperative norms mediate the relationship between commitment and operational adaptiveness	Not Supported
	H4.3b	Cooperative norms mediate the relationship between commitment and strategic adaptiveness	Supported
	H4.3c	Cooperative norms mediate the relationship between commitment and marketing adaptiveness	Supported

**5.15.6 The mediating role of credibility on the relationship between organizational compatibility and business adaptiveness**

The test result of path coefficient and hypotheses for the impact of mediation variable in Table (5.40) shows that the impact of strategic SCO(compatibility) on business adaptiveness (strategic, operational, marketing)through Structural SCO(Credibility) dependent on Parameter A x B power by (Gaskin, 2016) to calculate indirect effect after testing mediating effect.

Table (5.40) presented the results of the testing the mediating effect of structural SCO (credibility) on the relationship between strategic SCO (organizational compatibility) and Business adaptiveness. The results indicate that credibility as mediating variable has no significantly influenced on the relationship between organizational compatibility and three components of business adaptiveness(strategic, operational and marketing adaptiveness). Thus, it can be interpreted that credibility has no mediation effect on the relationship between organizational compatibility and business adaptiveness. AMOS output presents sufficient values in the appendix

Table (5.40) H7.3.1 the mediating effect of (credibility) on the relationship between organizational compatibility and Business adaptiveness

	Estimate	Direct	Indirect		Sig	Nature of Mediation	Empirical Evidence
			Lower	upper			
compatibility --> Credibility --> op. adaptiveness	0.042	-.026	-.006	.108	.078	NO Mediation	<b>Not Supported</b>
Compatibility --> Credibility --> strategic. Adaptiveness	0.054	.151**	-.015	.126	.119	NO Mediation	<b>Not Supported</b>
compatibility --> Credibility --> marketing. Adaptiveness	0.049	.026	-.012	.125	.087	NO Mediation	<b>Not Supported</b>

Source: prepared by researcher, (2017).Note: Level of significant: \*p<0.10, \*\*p<0.05, \*\*\*p<0.000

The mediating effect of Credibility on the relationship between strategic SCO(top management support) and business adaptiveness.

The test result of path coefficient and hypotheses for the impact of mediation variable in Table (5.41) shows that the impact of strategic SCO(Top management support) on business adaptiveness (strategic, operational, marketing)through Structural SCO(Credibility) dependent on Parameter A x B power by (Gaskin, 2016) to calculate indirect effect after testing mediating effect

Table (5.41) presented the results of the testing the mediating effect of structural SCO (credibility) on the relationship between strategic SCO(top management support) and Business adaptiveness. The results indicate that credibility as mediating variable has no significantly influenced on the relationship between top management support and three components of business adaptiveness(strategic, operational and marketing adaptiveness). Thus, it can be interpreted that credibility has no mediation effect on the relationship between

top management support and business adaptiveness. AMOS output presents sufficient values. appendix

Table (5.41) H7.3.2 the mediating effect of (credibility) on the relationship between top management support and Business adaptiveness.

	Estimate	Direct	Indirect		Sig	Nature of Mediation	Empirical Evidence
			Lower	upper			
Top management support --> Credibility --> op. adaptiveness	0.067	.336***	.016	.162	.006	Partial Mediation	<b>Supported</b>
Top management support --> Credibility --> strategic. Adaptiveness	0.085	.251***	.019	.195	.010	Partial Mediation	<b>Supported</b>
Top management support --> Credibility --> marketing. Adaptiveness	0.078	.361***	.010	.190	.012	Partial Mediation	<b>Supported</b>

.Note: Level of significant: \*p<0.10, \*\*p<0.05, \*\*\*p<0.000

The test result of path coefficient and hypotheses for the impact of mediation variable in Table(5.42) shows that the impact of strategic SCO(Commitment) on business adaptiveness (strategic, operational, marketing)through Structural SCO(Credibility) dependent on Parameter A x B power by (Gaskin, 2016) to calculate indirect effect after testing mediating effect. Table(5.42) presented the results of the testing the mediating effect of structural SCO (credibility) on the relationship between strategic SCO(Commitment) and Business adaptiveness. The results indicate that credibility as mediating variable has significantly influenced on the relationship between Commitment and three components of business adaptiveness(strategic, operational and marketing adaptiveness). Thus, it can be interpreted that credibility has mediation effect on the relationship between Commitment and business adaptiveness. AMOS output presents sufficient values. appendix

Table (5.42) H7.3.3 the mediating effect of (credibility) on the relationship between Commitment and Business adaptiveness

	Estimate	Direct	Indirect		Sig	Nature of Mediation	Empirical Evidence
			Lower	upper			
Commitment --> Credibility --> op. adaptiveness	0.139	.314***	.058	.290	.002	Partial Mediation	<b>Supported</b>
Commitment --> Credibility --> strategic. Adaptiveness	0.177	.587***	.088	.309	.005	Partial Mediation	<b>Supported</b>
Commitment --> Credibility --> marketing. Adaptiveness	0.163	.471***	.070	.268	.006	Partial Mediation	<b>Supported</b>

.Note: Level of significant: \*p<0.10, \*\*p<0.05, \*\*\*p<0.000

Table(5.43) summarizes the results of testing hypotheses concerning the mediating effect of structural SCO (credibility) between strategic SCO and business adaptiveness. The results of mediating role indicates that two components of strategic SCO (top management and

commitment) influences the business adaptiveness (strategic and marketing adaptiveness) through credibility.

While the components of organizational compatibility are not influence on business adaptiveness through credibility .

**Table (5.43) Summary of Hypotheses Testing Results for Mediated Effects of Structural SCO (credibility)**

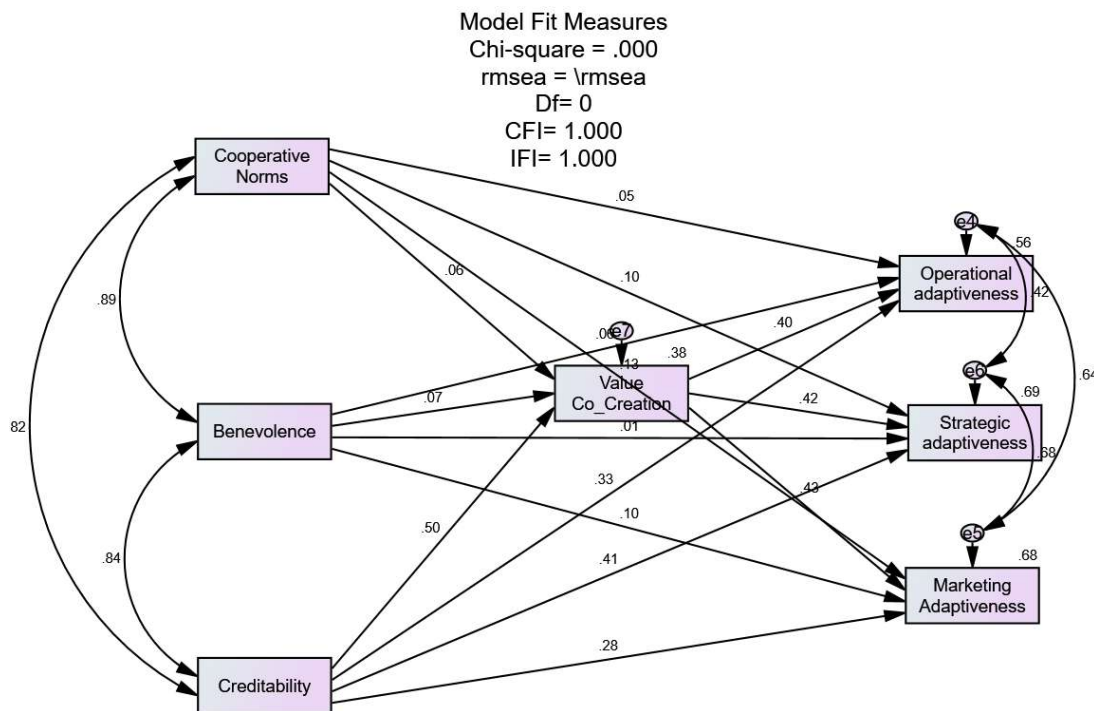
Item		Statement of Hypothesis: There is a positive relationship between,	Remark
H6		credibility mediate the relationship between Strategic SCO and business adaptiveness	partially Supported
H61		credibility mediate the relationship between organizational compatibility and business adaptiveness	Not Supported
	H6.1a	credibility mediate the relationship between organizational compatibility and operational adaptiveness	Not Supported
	H4.1b	credibility mediate the relationship between organizational compatibility and strategic adaptiveness	Not Supported
	H4.1c	credibility mediate the relationship between organizational compatibility and marketing adaptiveness	Not Supported
H4.2		credibility mediate the relationship between top management support and business adaptiveness	fully Supported
	H4.2a	credibility mediate the relationship between top management support and operational adaptiveness	Supported
	H4.2b	credibility mediate the relationship between top management support and strategic adaptiveness	Supported
	H4.2c	credibility mediate the relationship between top management support and marketing adaptiveness	Supported
H4.3		credibility mediate the relationship between commitment and business adaptiveness	fully Supported
	H4.3a	credibility mediate the relationship between commitment and operational adaptiveness	Supported
	H4.3b	credibility mediate the relationship between commitment and strategic adaptiveness	Supported
	H4.3c	credibility mediate the relationship between commitment and marketing adaptiveness	Supported

#### **4.16 The Mediation of Value Co-creation**

This section show the results of testing mediator of value co-creation on the relationship between Structural SCO and Business adaptiveness.

H8.1. The mediating effect of Value Co-creation on the relationship between Cooperative Norms and business adaptiveness.

Figure 5.16 path of mediation of value co-creation



Concerning the model fit recommendation AMOS output showing Model fit indices as follow, CMIN/DF=.852, RMSEA=.000, GFI=.987, AGFI=.956, RMR=.008, NFI=.944, CFI=1, and PCLOSE=.853. Figure (5.29) below presents the model fit measures and their interpretations.

The test result of path coefficient and hypotheses for the impact of mediation variable Table (5.44) shows that the impact of structural SCO on business adaptiveness (strategic, operational, marketing) through (Value C-creation) dependent on Parameter A x B power by (Gaskin, 2016) to calculate indirect effect after testing mediating effect .

Table(5.44) presented the results of the testing the mediating effect of value co-creation on the relationship between structural SCO (Cooperative Norms) and Business adaptiveness. The results indicate that Cooperative Norms as mediating variable has no significantly influenced on the relationship between Cooperative Norms and three components of business adaptiveness (strategic, operational and marketing adaptiveness). Thus, it can be interpreted that (Value C-creation) has no mediation effect on the relationship between Cooperative Norms and business adaptiveness. AMOS output presents sufficient values showed in the appendix

Table (5.44) H8.1 the mediating effect of value co-creation on the relationship between Cooperative Norms and Business adaptiveness

	Estimate	Direct	Indirect		Sig	Nature of Mediation	Empirical Evidence
			Lower	Upper			
Cooperative Norms --> Value Co-Creation --> op. adaptiveness	0.023	.078	-.099	.140	.682	No Mediation	<b>Not Supported</b>
Cooperative norms --> Value Co-Creation --> strategic. adaptiveness	0.022	.130	-.085	.135	.679	No Mediation	<b>Not Supported</b>
Cooperative Norms --> Value Co-Creation --> marketing. adaptiveness	0.027	.157	-.155	.338	.588	No Mediation	<b>Not Supported</b>

Level of significant: \*p<0.10, \*\*p<0.05, \*\*\*p<0.000

### 5.16.1 The mediating role of value co-creation on the relationship between structural SCO (benevolence) and business adaptiveness.

The test result of path coefficient and hypotheses for the impact of mediation variable in Table (5.45) shows that the impact of structural SCO(benevolence) on business adaptiveness (strategic, operational, marketing)through (Value C-creation) dependent on Parameter A x B power by (Gaskin, 2016) to calculate indirect effect after testing mediating effect

Table(5.45) presented the results of the testing the mediating effect of value co-creation on the relationship between structural SCO (benevolence) and Business adaptiveness. The results indicate that value co-creation as mediator variable has no significantly influenced on the relationship between benevolence and three components of business adaptiveness(strategic, operational and marketing adaptiveness). Thus, it can be interpreted that value co-creation has no mediation effect on the relationship between benevolence and business adaptiveness.

AMOS output presents sufficient values. appendix

Table (5.45) H8.2 the mediating effect of value co-creation on the relationship between structural SCO benevolence and Business adaptiveness

	Estimate	Direct	Indirect		Sig	Nature of Mediation	Empirical Evidence
			Lower	Upper			
Benevolence --> Value Co-Creation --> op. adaptiveness	0.052	.092	-.155	.338	.588	No Mediation	<b>Not Supported</b>
Benevolence --> Value Co-Creation --> strategic. Adaptiveness	0.049	.040	-.143	.310	.573	No Mediation	<b>Not Supported</b>
Benevolence --> Value Co-Creation --> marketing. Adaptiveness	0.061	.127	-.180	.394	.580	No Mediation	<b>Not Supported</b>

### 5.16.2 The mediating role of value co-creation on the relationship between structural SCO(Credibility) and business adaptiveness

The test result of path coefficient and hypotheses for the impact of mediation variable in Table 2 shows that the impact of structural SCO(Credibility) on business adaptiveness (strategic, operational, marketing)through co-creation dependent on Parameter A x B power by (Gaskin, 2016) to calculate indirect effect after testing mediating effect .

Table(5.46) presented the results of the testing the mediating effect of value co-creation on the relationship between structural SCO (credibility) and Business adaptiveness. The results indicate that value co-creation as mediating variable has no significantly influenced on the relationship between credibility and three components of business adaptiveness(strategic, operational and marketing adaptiveness). Thus, it can be interpreted that value co-creation has no mediation effect on the relationship between credibility and business adaptiveness. AMOS output presents sufficient values. appendix

Table (5.46) H8.3the mediating effect of value co-creation on the relationship between credibility and Business adaptiveness

	Estimate	Direct	Indirect		Sig	Nature of Mediation	Empirical Evidence
			Lower	upper			
Credibility --> Value Co-Creation --> op. adaptiveness	0.205	.529***	.081	.361	.001	Partial Mediation	<b>Supported</b>
Credibility --> Value Co-Creation --> strategic. Adaptiveness	0.192	.621***	.079	.331	.001	Partial Mediation	<b>Supported</b>
Credibility --> Value Co-Creation --> marketing. Adaptiveness	0.239	.502***	.097	.403	.001	Partial Mediation	<b>Supported</b>

Source: prepared by researcher, (2017).Note: Level of significant: \*p<0.10, \*\*p<0.05, \*\*\*p<0.000

Table(5.47) summarizes the results of testing hypotheses concerning the mediating effect of value co-creation between Structural SCO and business adaptiveness. The results of mediating role indicates that two components of Structural SCO (Cooperative norms and benevolence) have no influences on the business adaptiveness (operational, strategic and marketing adaptiveness) through value co-creation.

While the components Credibility has influence on business adaptiveness through value co-creation.

**Table (5.47) Summary of Hypotheses Testing Results for Mediated Effects of value co-creation**

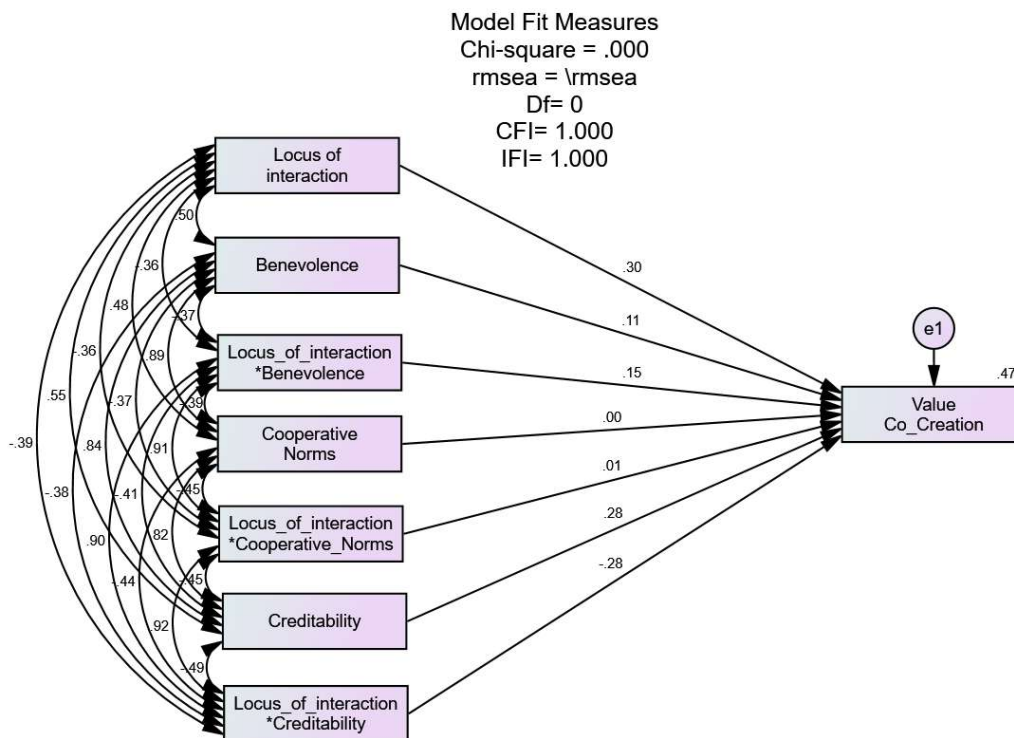
Item	Statement of Hypothesis: There is a positive relationship between,	Remark
H6	value co-creation mediate the relationship between structural SCO and business adaptiveness	partially Supported
H61	value co-creation mediate the relationship between cooperative norms and business adaptiveness	Not Supported
	H6.1a value co-creation mediate the relationship between cooperative norms and operational adaptiveness	Not Supported
	H4.1b value co-creation mediate the relationship between organizational compatibility and strategic adaptiveness	Not Supported
	H4.1c value co-creation mediate the relationship between cooperative norms and marketing adaptiveness	Not Supported
H4.2	value co-creation mediate the relationship between benevolence and business adaptiveness	Not Supported
	H4.2a value co-creation mediate the relationship between benevolence	Not Supported

		and operational adaptiveness	
	H4.2b	value co-creation mediate the relationship between benevolence and strategic adaptiveness	Not Supported
	H4.2c	value co-creation mediate the relationship between benevolence and marketing adaptiveness	Not Supported
H4.3		value co-creation mediate the relationship between credibility and business adaptiveness	fully Supported
	H4.3a	value co-creation mediate the relationship between credibility and operational adaptiveness	Supported
	H4.3b	value co-creation mediate the relationship between credibility and strategic adaptiveness	Supported
	H4.3c	credibility mediate the relationship between credibility and marketing adaptiveness	Supported

**5.17 The Moderating Effects of locus on interaction on the relationship between Structural SCO and Value Co-creation**

The three hypothesis predicts that the of (locus of interaction) moderate the relationship between Structural SCO and Value Co-creation, as shown in Figure 5.17 below.

H9.1 The Moderating Effect of locus of interaction in the relationship between structural SCO and Value co-creation.



In order to test this hypothesis many criteria must be met. These criteria can be classified as global or local tests. According to (Gaskin, 2016) in arranging for a hypothesis to be supported global tests of model fit are the first assumption must be met, to let a local test



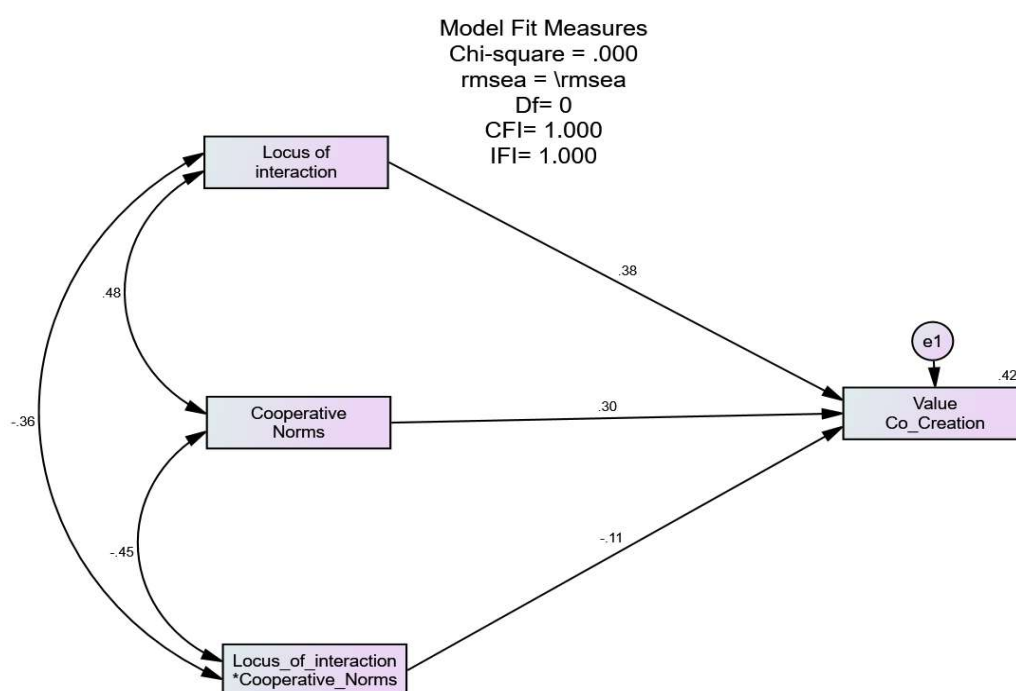
(p-value) to have meaning. Next is the global test of variance explained or R-squared. Lastly, if a regression weight is significant, but is in the wrong direction, our hypothesis is not supported. Instead, there is counter-evidence.

In brief the conditions for testing moderating variable, observing significant p-values and good model fit, but the R-square must be greater than 0.025 to explain sufficient variance in the dependent variable. Also the process requires introduction of a multiplicative interaction term into the path analysis. Accordingly, Three interaction terms were created by multiplying the values of Structural SCO.

To make obvious if the moderator effect is present on the proposed relationship; three or four maximum conditions were used. First, the model fit indices is adequate. Second, the P-value is significant. Third, the R-square must explain sufficient variance in the dependent variable. Fourth, the interaction term is also statistically significant. Additionally, in order to establish whether moderator is a pure or a quasi-moderating this research applied the criteria mentioned by Sharma et al (1981). If the coefficients of both the multiplicative interaction term and the moderator variable are significant, the moderator is a quasi-moderator. However, if the coefficient of the multiplicative interaction term was significant and the coefficient of the moderator variable effect was not significant, the moderator is a pure moderator.

H8.1 The moderating effect of locus of interaction on the relationship between Cooperative norms and Value co-creation

Figure 5.18 path of moderating role of locus of interaction between Cooperative norms and value co-creation



Table(5.48) summarized the results of moderating effect of locus of interaction on the relationship between structural SCO and Value co-creation. The results showed that locus of interaction has no moderating effect on the relationship between cooperative norms and value co-creation.. moreover the test reveals that the coefficient of the locus of interaction effect was not significant.

Table (5.48) H9.1 the moderating effect of locus of interaction on the relationship between structural SCO and Value co-creation

Regression Weights: (Group number 1 - Default model)

		Estimate	S.E.	C.R.	P	Label
Value_Co_Creation	<--- Locus_of_interaction	.397	.068	5.808	***	par_4
Value_Co_Creation	<--- Cooperative_Norms	.311	.070	4.463	***	par_5
Value_Co_Creation	<--- ZLocus_of_interaction_ZCooperative_Norms	-.093	.055	-1.684	.092	par_6

Figure 5.19 path of moderating role of locus of interaction between benevolence and value co-creation

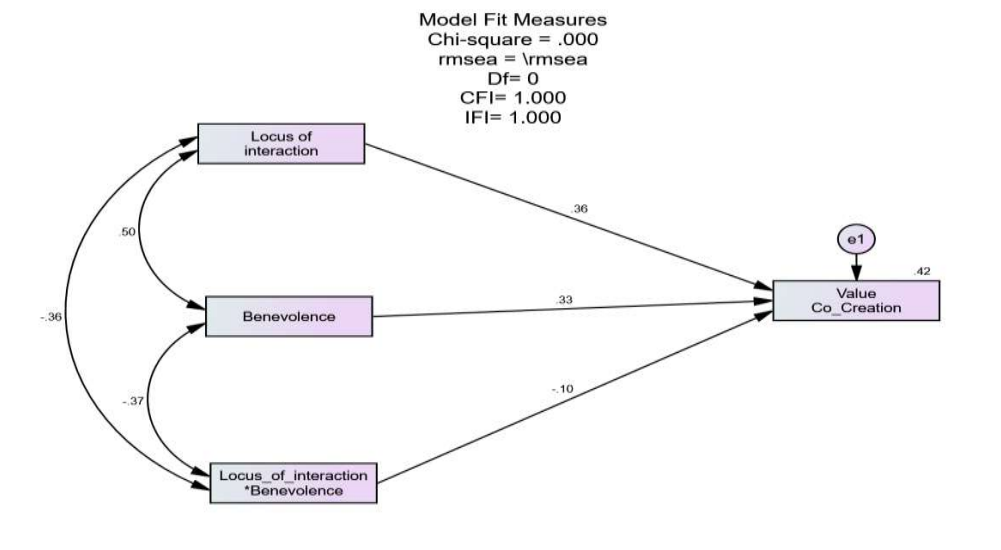


Table (5.49) summarized the results of moderating effect of locus of interaction on the relationship between benevolence and Value co-creation. The results showed that locus of interaction has no moderating effect on the relationship between benevolence and value co-creation.. moreover the test reveals that the coefficient of the locus of interaction effect was not significant. The SPSS output is shown in Appendix

Table (4.9)H9.2 the moderating effect of locus of interaction on the relationship between benevolence and Value co-creation

Regression Weights: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
Value_Co_Creation <--- Locus_of_interaction	.380	.070	5.440	***	par_4
Value_Co_Creation <--- Benevolence	.676	.136	4.983	***	par_5
Value_Co_Creation <--- ZLocus_of_interaction_ZBenevolence	-.089	.057	-1.582	.114	par_6

H9.3 The moderating effect of locus of interaction on the relationship between Credibility and value co-creation

Figure 5.20 path of moderating role of locus of interaction between benevolence and value co-creation

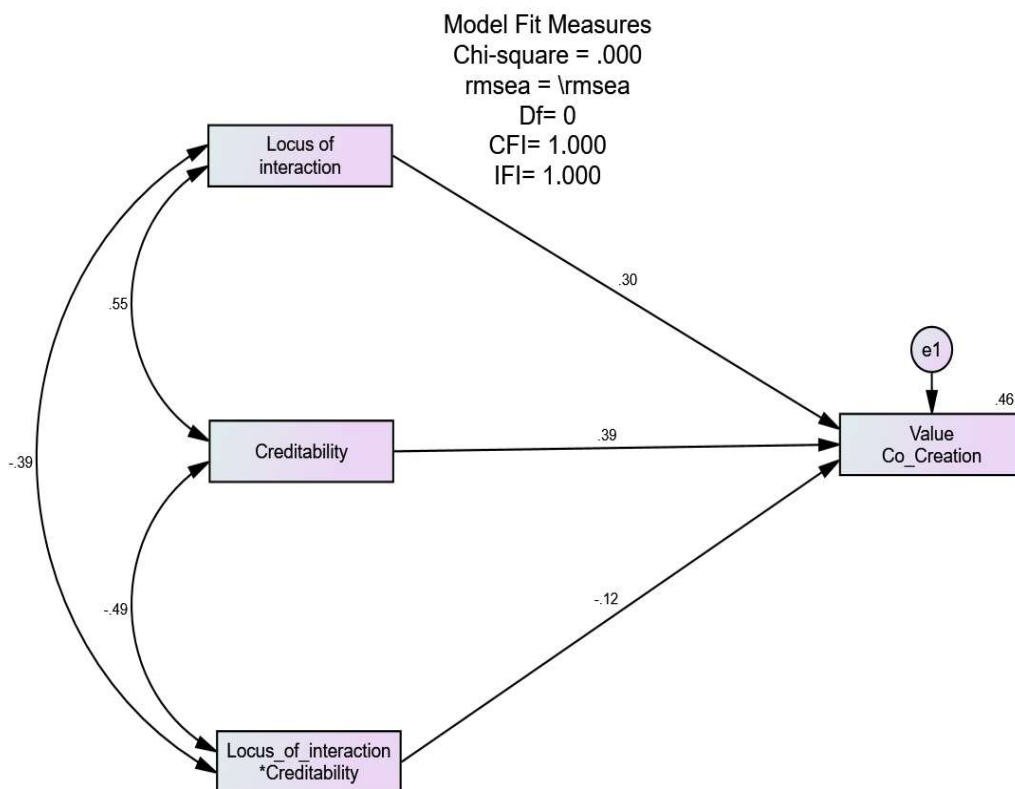


Table (5.50) summarized the results of moderating effect of locus of interaction on the relationship between credibility and Value co-creation. The results showed that locus of interaction has no moderating effect on the relationship between credibility and value co-creation. Moreover the test reveals that the coefficient of the locus of interaction effect was not significant.

Table (5.50) The moderating effect of locus of interaction on the relationship between Credibility and value co-creation.

Regression Weights: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
Value_Co_Creation <--- Locus_of_interaction	.321	.069	4.668	***	par_4
Value_Co_Creation <--- Credibility	.435	.078	5.609	***	par_5
Value_Co_Creation <--- ZLocus_of_interaction_ZCredibility	-.102	.054	-1.902	.057	par_6

Table(5.51) summarizes the results of testing hypotheses concerning the moderating effect of locus of interaction between Structural SCO and value co-creation. The results of moderating role indicates that there is no moderating effect for locus of interaction on the relationship between structural SCO and value co-creation

#### Summary of Hypotheses Testing Results for moderating Effects of locus of interaction

Item		Statement of Hypothesis: The effect of is stronger when locus of interaction is higher.	Remark
H9		The effect of structural SCO on value co-creation is stronger when locus of interaction is higher	Not Supported
	H9.1	The effect of cooperative norms on value co-creation is stronger when locus of interaction is higher	Not Supported
	H9.2	The effect of benevolence on value co-creation is stronger when locus of interaction is higher..	Not Supported
	H9.3	The effect of credibility on value co-creation is stronger when locus of interaction is higher.	Not Supported

#### Summary of the Chapter

This chapter present the empirical analysis and presented the results of the analysis. The empirical analysis was to examine the causal structure representing the research hypotheses of this study. The causal structure was examined with SEM (Structural Equation Modelling) which primarily comprises a measurement model and a structural model. Before conducting the measurement and structural models, the collected data were screened

The data was analyzed using various statistical analysis techniques. The first part, factor analysis was conducted to test goodness of measurement and bias followed by the validity and reliability test on the items used to measure the study variables. Then, descriptive analyses were utilized to identify the characteristics of responding firms and respondents and all variables under study. Bivariate correlations were also conducted to identify interrelationships among all the variables. Finally, SEM Path Analysis to test the research hypotheses. The next chapter reviews the findings and discusses the results and their implications as well as limitations, future research and conclusions of the study.