Study of Network Marketing in Syrian market using SEM

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Abstract – *This research sheds light on the concept of network marketing as one of the emerging types of marketing, which appeared and spread extensively among all producers, especially after the technology and information revolution and the Internet, which swept all countries of the world. In this paper, we present the general concept of marketing network , and then it will go to talk about structural equation modeling (SEM) technique has significant potential as a research tool for assessing and modifying theoretical models . However, despite its increasing use in the field, it remains a complex tool that is often difficult to apply effectively. The purpose of this study is to evaluate the previous IS applications of SEM and to suggest guidelines to realize the potential of SEM in IS research. We show how results are extracted with (SPSS) program as a statistical programs important data analysis.*

Keywords: structure equation modeling (SEM), network marketing, SPSS.

I.   Introduction

The business market has become a highly competitive, so marketers must recognize the rapid developments, the continuing volatility and trends of competitors to be able to measure the effectiveness of investment in marketing activities, What we observe now is a powerful dynamic in the business market resulting from the rapid growth of the economy, the competitive intensity, globalization, merger or acquisition of some institutions on the other, many kinds of products, technological innovations, and other changes that have formed a strong challenges to managers for possibility of the appropriate response to these changes quickly and flexibly, and the inability to that , properly led to the demise of many companies with familiar names such as "Kmart, Circuit City"[1]. As a result, managers had to find a strategic directions that will enable their companies to achieve effective performance, especially in light of changing market conditions[2].

These days, "Network Marketing" is one of the most growing business in Syria, so it should examine the factors that affect the "Network Marketing" in Syria.

The traditional method of selling any product depends on the announcement expenses, agents , distributors and retail stores any product cost 20% and 80% distributed to other expenses.

Where the company when you create any product it does not cost the factory more than 20%, but the customer pays 100% and the remaining 80% is distributed in the rest of the participants in the sales process.[3]

In 1959, the idea emerged in America are summarized briefly in the following question:

Does the company can deal directly with customers without intermediaries?

Answer: Yes, you can, so there are no need for them because the marketers marketed the product without feel, and you can imagine the number of free propaganda carried out by an individual without charge and on a daily basis (such as a new restaurant, new movie, watch...).

Therefore network marketing companies came and adopted this idea to deal directly with the customer and announced that it would give a percentage of profits totaling 60% distributed to all shareholders in the company, and the company benefited an additional 20% profit.

The idea can be summarized with the following words:

Instead of that marketed the person and work free advertisements inadvertently, make the publicity deliberately and so takes a percentage of profits.[4]

II.   The Structural equation modeling (SEM)

Structural equation modeling (SEM) has become an important and widely used research tool for theory testing and development in the social and behavioral sciences. One reason for the substantive use of SEM is that the confirmatory methods provide researchers with a comprehensive means for assessing and modifying

theoretical models. In addition, the potential of SEM for comprehensive investigations of construct measurement is also generally acknowledged. Because of these merits of SEM, many researchers in the field of information systems (IS) have been using it for measuring constructs or developing and testing IS theories.

[5] argue, however, that because of the relative sophistication of SEM, initial applications might be prone to misuse, which can inhibit theory development. This could be an acute problem in a younger field like IS, where erroneous theory development and testing could greatly inhibit the building of a cumulative tradition of research. Also, if the trend in more mature disciplines (e.g., marketing) is any indication, the use of SEM in IS research is only going to increase. Therefore, we believe it is important to take an introspective view of this important methodology.

The purpose of this study is to provide an in-depth analysis of a critical mass of SEM applications in seven leading IS journals and to suggest specific avenues for improvement. To our knowledge, no comprehensive survey of SEM applications in the IS field has been reported in the literature.

Terminology of Structural Modeling and Unit of Analysis

Before discussing the methodological issues of SEM, it is useful to establish the commonly accepted terminology of SEM formulation. A structural model can be represented by the following equations:

(1) $\eta = B\,\eta + \Gamma\,\xi + \zeta,$

(2) $x = \Lambda^x\,\xi + \delta,$

(3) $y = \Lambda^y\,\eta + \varepsilon$

Equation (1) is called the structural model. This equation represents the structural relationships among the endogenous and exogenous constructs. η indicates the endogenous constructs that are causally affected by other endogenous or exogenous constructs in the model. ξ represents exogenous constructs that are not influenced by other constructs in the model. While the structural coefficients among endogenous constructs are represented by B matrix, those between endogenous and exogenous constructs are represented by Γ matrix. The amount of unexplained relationship in each structural equation is referred to as error in equation and is denoted by ζ. Equations (2) and (3) are called measurement model. These equations represent how the constructs are related to their indicators (i.e., measured items). While y represents indicators of the endogenous constructs (η), x represents indicators of the exogenous constructs (ξ). Λ^x and Λ^y show how y relates to η and x relates to ξ, respectively. δ and ε represent measurement errors.

To discuss methodological issues in the SEM applications, it is necessary that the unit of analysis be not a paper but a model. In some papers multiple models

are estimated and analyzed: (1) a model is estimated on multiple samples for cross-validating; (2) different models are estimated on the same sample; or (3) different models are estimated on different samples. For example, separate measurement models are specified for different constructs, or a two-step approach by [5] is conducted, separately estimating measurement model and structural model. In the first case, the data were averaged across replications in the analysis. In the other two cases, each distinct model was used separately in this study. As a result, a total of 139 models were analyzed.

A total of 78 models were confirmatory measurement models that solely investigate the measurement structure between indicators and endogenous or exogenous constructs, i.e., Equations (2) or (3) above. In five cases, SEM was used to examine only the structural relationships among constructs that are all measured by single indicators. These models were represented by only Equation (1). A total of 34 models were full structural equation models that include both measurement models and structural models, i.e., Equations (1), (2), and (3). In this paper, these confirmatory measurement models, single-indicator structural models, and full structural models will be referred to as Type I, Type II, and Type III, respectively. Figure 1 provides sample illustrations of these three types of models.

Type I: Measurement Model
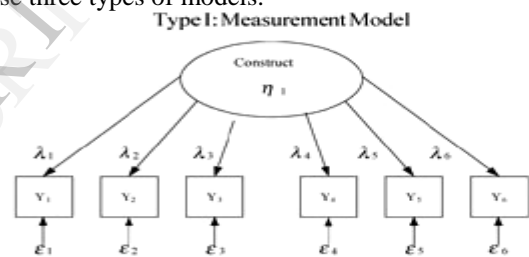
Type II: Structural Model with Single Indicators
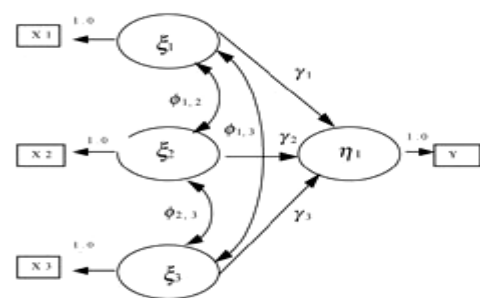
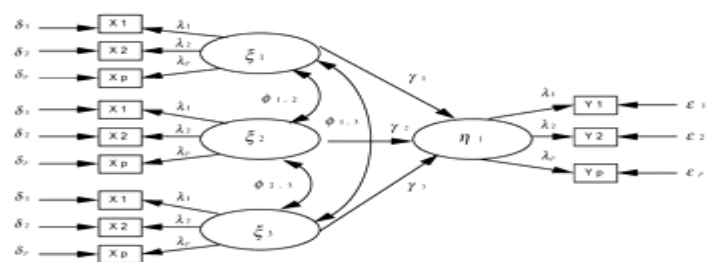Type III: Full Structural Model

Figure 1: Sample Illustrations of Type I, Type II and Type III Applications.

It should be noted that the goal of this study is not to provide a tutorial on SEM. Interested readers are referred to excellent treatment of the methodology in [6] Bagozzi (1984), [7] Anderson and Gerbing (1984), [8] Bagozzi & Baumgartner (1994), and [9] Sharma (1996).

And also indicators and the conformity quality base for structural equation modeling: [7] Anderson and Gerbing (1984)

Indicators	The conformity quality base
χ2 to Degrees of Freedom Ratio	< 5
Goodness of Fit Index (GFI)	>0.90
Normal Fit Index(NFI)	>0.90
Comparative Fit Index (CFI)	>0.95
Root Mean Square Error of Approximation (RMSEA)	Between 0.05-0.08

Table prepared by the researcher based on(Chan et al.,, 2007)

Applications SEM in information systems

Seven widely regarded IS outlets were chosen for selection of SEM applications. These are MIS Quarterly (MISQ), Information Systems Research (ISR), Journal of Management Information Systems (JMIS), Information & Management (I&M), Communication of the ACM (CACM), Decision Sciences (DS), and Management Science (MS). All issues of these seven journals between 1987 and 2001 were searched for empirical SEM applications. Theoretical papers dealing with issues related to SEM and papers using exploratory factor analysis, path analysis, structural modeling by regression analysis, and partial least square (PLS) models were excluded from the sample. The final sample of this study includes confirmatory measurement models, structural models with single indicator, and integrated measurement/structural models.

Most of the SEM applications were performed by using:
- ➢ SPSS
- ➢ EQS was also used to perfom SEM (20.1%)
- ➢ LISREL (57.6%), reflecting the popularity of this package.
- ➢ PROC CALIS procedure in SAS (8.6%) and AMOS in SPSS (7.9%) have been used for SEM in the IS field.

For example: I've included a study in 2011 by distributing questionnaires in that year, and the study included a sample of community members and community representative randomly represented to contain 1001 people from different groups and ages and levels to take into account the principle of random as possible. For that the **SPSS** was chosen because the

number of a few samples and therefore is not used Data Mining.

III. SPSS Statistical Package for the Social Sciences

SPSS Statistics is a software package used for statistical analysis. It is now officially named "IBM SPSS Statistics". Companion products in the same family are used for survey authoring and deployment (IBM SPSS Data Collection), data mining (IBM SPSS Modeler), text analytics, and collaboration and deployment (batch and automated scoring services).

SPSS Statistics (originally, Statistical Package for the Social Sciences, later modified to read Statistical Product and Service Solutions) was released in its first version in 1968 after being developed by [11] Norman H. Nie, Dale H. Bent, and C. Hadlai Hull. SPSS is among the most widely used programs for [12] statistical analysis in [13] social science. It is used by market researchers, health researchers, survey companies, government, education researchers, marketing organizations and others.

Statistics included in the base software:
- Descriptive statistics: Cross tabulation, Frequencies, Descriptives, Explore, Descriptive Ratio Statistics.
- Bivariate statistics: Means, t-test, ANOVA, Correlation (bivariate, partial, distances), Nonparametric tests.
- Prediction for numerical outcomes: Linear regression.
- Prediction for identifying groups: Factor analysis, cluster analysis (two-step, K-means, hierarchical), Discriminant.
-

The program has three basic windows:
- The Data View which displays the data.
- The Variables View displays variables and their characteristics are linked to the previous window.
- SPSS Viewer which is independent and displays the results (tables - fees - the results of statistical analysis).

SPSS Statistics places constraints on internal file structure, data types, data processing, and matching files, which together considerably simplify programming. SPSS datasets have a two-dimensional table structure where the rows typically represent cases (such as individuals or households) and the columns represent measurements (such as age, sex, or household income). Only two data types are defined: numeric and text (or "string"). All data processing occurs sequentially case-by-case through the file. Files can be matched one-to-one and one-to-many, but not many-to-many.

IV. Practical implementation

Hypothesis and variables

The hypothesis of independent personal v
(gender, age, work, certificate, annual income,
computer, use the Internet, use online
transactions) on the dependent variable (the d
confidence e-marketing company).
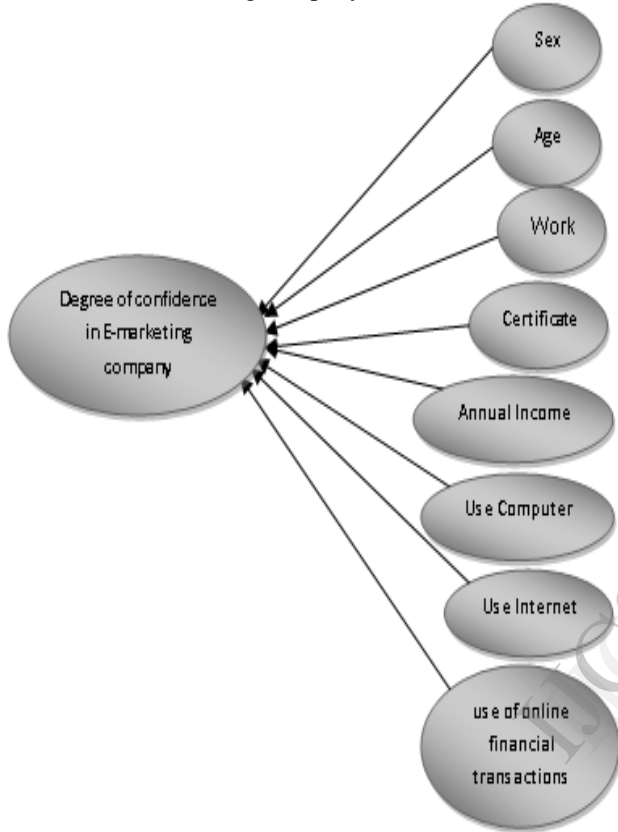
Output

Here will be the analysis of the data derived from questionnaires that were distributed in advance, and therefore samples will be analyzed for duplicates search variables in addition to the correlation analysis and regression analysis between variables Search by hypotheses set in advance to extract models serve results search:

The duplicates

Duplicates related to sex

Sex

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	524	52.3	52.3	52.3
Female	477	47.7	47.7	100.0
Total	1001	100.0	100.0	

Duplicates related to age

Age

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 18	57	5.7	5.7	5.7
18- 24	141	14.1	14.1	19.8
25- 31	266	26.6	26.6	46.4
32- 38	331	33.1	33.1	79.4
39- 45	161	16.1	16.1	95.5
Begger than 45	45	4.5	4.5	100.0
Total	1001	100.0	100.0	

Test Relations

For example:

Desire to jointly between the Syrian companies and Syrian guarantees

Correlations

		to join in Syrian companies if they exist	trust in network marketing in the case of there is Syria guarantees
to join in Syrian companies if they exist	Pearson Correlation	1	.202**
	Sig. (2-tailed)		.001
	N	269	259
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**. Correlation is significant at the 0.01 level (2-tailed).

From the previous table we note the Significant correlation coefficient which amounted to (sig=0.001<0.05) and it is a significant at the 0.05 degree line that whenever there is more guarantees more greater the desire to join in national company.

Regression Test

Regression test on The hypothesis of independent personal variables (gender, age, work, certificate, annual income, use the computer, use the Internet, use online financial transactions) on the dependent variable (the degree of confidence e-marketing company).

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.457[a]	.209	.089	.738

a. Predictors: (Constant), gender, age, work, certificate, annual income, use the computer, use the Internet, use online financial transactions

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b. Dependent Variable: the degree of confidence e-marketing company

Indicates the coefficient of determination (R squar) which amount of Value 0.209 to extent the interpretation of the independent variables to the dependent variable contrast and middle arithmetic any The sum of the independent variables explain only 0.209 of the variations of the independent variable from the middle arithmetic, The rest of the variation produces on other factors that are not exist with personal variables for the personal which studied.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.605	8	.951	1.746	.109[a]
	Residual	28.863	53	.545		
	Total	36.468	61			

a. Predictors: (Constant), gender, age, work, certificate, annual income, use the computer, use the Internet, use online financial transactions

b. Dependent Variable: the degree of confidence e-marketing company

The results of analysis of variance

The table above is the analysis of variance table and from it , we find there is no significant regression coefficient and thus weak regression model, (sig=0.109>0.05) The regression model between the independent variables and the dependent variable is not significant and this is normal where the coefficient of determination as we have seen previously was not significant.

Confidence: c, Certificate: s, Age: a, Work: j, Sex: g, The annual income: i, Use computer: u, Use Internet: w, Use of online financial transactions: f.

$$(C = 1.987 + 0.034\ S - 0.7A + 0.067J - 0.157G + 0.074I - 0.028U + 0.227W - 0.316F\ )$$

Coefficients^a

| Model | Unstandardized Coefficients | | Standardized Coefficients | | |
	B	Std. Error	Beta	t	Sig.
1 (Constant)	1.987	.434		4.577	.000
Certificate	.034	.080	.064	.432	.667
Age	-.070-	.090	-.127-	-.778-	.440
Work	.067	.100	.110	.672	.505
Sex	-.157-	.211	-.099-	-.746-	.459
Annual Income	.074	.102	.131	.730	.469
Use computer	-.028-	.107	-.039-	-.262-	.794
Use internet	.227	.133	.304	1.706	.094
use of online financial transactions	-.316-	.220	-.197-	-1.434-	.158

a. Dependent Variable: the degree of confidence e-marketing company

Table for the regression coefficients between the variables studied

The above table is a transactions table , which shows the likes of independent variables in the column labeled (B) as the first digit of reducing fixed in the equation of 1.987 , and the variables below are the independent variables and fold in the structural model of the independent variables and dependent , where from here you can reach the following form which represents the impact of personal variables on variable confidence with e-marketing company as the dependent variable:

If we gave each variable symbols of variables as follows:

V.   Recommendation

- focusing on other personal factors who would be work in such kind of research, may be interpreted variable's.
- Increase the percentage of subscribers who have top certificates to the strength of their influence on others than others
- Syrian guarantees also very necessary in order to increase trust certificate holders.
- Guarantees affect the decision jointly large amounts
- Go first to the certificate holders, so that the greater degree of certificate diminished concern that the company is fake or not real, and thus become the Syrian most important guarantees and that increase confidence.

VI.   Conclusion and future work

In this paper, we light on the concept of network marketing as one of the emerging types of marketing, a network marketing is a very complicated network, and that is why we always try to model network marketing as accurately as possible within a simple model.

We talked also about structural equation modeling (SEM) technique has significant potential as a research tool for assessing and modifying theoretical models, The purpose of this study is to evaluate the previous IS applications of SEM and to suggest guidelines to realize the potential of SEM in IS research.

We talked also about (SPSS) program and show how results are extracted as a statistical programs important data analysis.

This research presented a vision for proposals or prospects can work on them in the event of this message in the future in order to follow the study or any future developments in the idea of creating a realistic network marketing company in Syria.

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