

# Integrating Technology Acceptance Model and Motivational Model towards Intention to Adopt Accounting Information System

Khalil Mesbah Abduljalil<sup>1</sup>

Faculty of Industrial Management, University Malaysia Pahang, Kuantan,  
Malaysia

Yuserrie Zainuddin

Faculty of Industrial Management, University Malaysia Pahang, Kuantan,  
Malaysia

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## Abstract

The main purpose of this study was to integrate technology acceptance model and motivation model to investigate mediating effect of attitude for IS adoption studies. Quantitative survey questionnaire was developed and distributed using purposive sampling technique. Owner of SMEs are targeted as respondents and in total 348 samples were collected with a response rate of 42%. The findings revealed that integration perception and motivation increases user's attitude towards acceptance of IS. It can also be concluded that planning for information system adoption in the organizational context is very crucial factor that should be taken into consideration along with the attitude of the decision makers and users towards system adoption.

**Keywords:** Technology acceptance model, Motivation model, User's attitude, accounting information system

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Cite this article: Abduljalil, K. M., & Zainuddin, Y. (2015). Integrating Technology Acceptance Model and Motivational Model towards Intention to Adopt Accounting Information System. *International Journal of Management, Accounting and Economics*, 2(5), 346-359.

## Introduction

Information is one of the main resources used and applied in organization. Information development is essential for improving or developing new contexts to support management, strategy, and decision making. Furthermore, management information is

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<sup>1</sup> Corresponding author's email: [khalil812003@yahoo.com](mailto:khalil812003@yahoo.com)

important in organizations as it requires quality information, to improve the efficiency and effectiveness of their operations for higher profitability and increased productivity. Accounting information system is a tool that incorporates the field of information system and is designed to help and control the management on economic and financial aspects.

Threats that face the SMEs sector usually fall into one of the two types: financial or technical. On the finance side, microfinance is characterized by its high risk due to many logics. Lack of information from the creditor and the client due to high numbers can lead to the problem of adverse selection where clients who are less risk adverse are the ones selected for giving funds. The absence of a financial guarantee is another problem that rises as a normal result of most of the clients being of lower standards of living. On the other side, technical problems arise when the cost of getting information about the market in terms of prices and quantities demanded is high. Despite of substantial influence of SMEs on the national economy of Libya, SMEs face various obstacles to their development such as operational and financial impediments, limited expertise in accounting, limited strategic planning and ineffective implementation of information technology. For instance, Abdesamed and Wahab (2014) mentioned that small businesses are important in the economy and its growth because a major part of small firms' external financing comes from bank loans.

Moftah, Hawedi, Abdullah, and Ahamefula (2012), examined the challenges of security, protection and trust on online purchasing in Libya and mentioned that nature of online transaction in Libya is constrained due to instability resulting from insecurity, trust, and unprotected transaction. Due to lack of trust online consumer's intention to purchase via online is discouraged. Orens and Reheul (2013), found that due to positive attitude of CEO towards change and innovation, the factors like experience, CEO tenure, CEO education does not have any association with the level of holding cash. Said and Noor (2013), mentioned that for the e-commerce adoption in hotel industry of Libya, lack of trust on online services, insecurity of personal information, lack of infrastructure and poor knowledge have been great challenge. Abukhzam and Lee (2010), investigated adoption of e-banking in Libya by identifying factors affecting bank staff's attitude towards adopting e-banking technology and concluded that bank staffs are happy to adopt e-banking technology if they are easy to use and help to accomplish their work tasks effectively. Lack of IT knowledge and awareness of managers about e-banking and its benefits is the main reason for struggling in implementation of system at a regular interval of time. Thus the main objective of accounting in Libya is to comply the requirements of statistics and tax authorities.

## **Literature review**

The acceptance of technology by the companies especially by SMEs in today's highly competitive and fast growing environment had made them to focus heavily on the achievement of technological superiority that can enhance production and operational performance with the usage of available resources. According to Pontiggia and Virili (2010), the acceptance of technology has been considered as one of the most important issues in the organization.

However, Chan and Ngai (2007) suggested how “AISs adoption and application could be a highly complex task by which strong managerial and strategic productivity need to perform the best fit involving the business peculiarities” and also the system itself and to cope with the unavoidable organizational impact caused by an AIS implementation. In ropes with this, Ngai et al., (2008) argued that “it is not only the technological factors that affect the adoption of the system, but there are many other sub factors like appropriate business and IT legacy system, business planning, vision, justification, top management support, teamwork, monitoring and evaluation of performance”. Abukhzam and Lee (2010), user’ attitude Thong et al., (1996) lack of IT expertise, Taherdoost and Masrom (2009) control, security, usefulness, flexibility and ease of use”. Kijsanayotin et al. (2009), mentioned that “user’s acceptance and usage of technology is one of the most important factor for the success of the IT implementation”.

Thus the main purpose of this paper is

- To identify factor that affects the attitude factors (Perceived Usefulness, Perceived Ease of use, intrinsic motivation, and extrinsic motivation) towards increasing the intention of users to adopt the system.
- To increase the technology usage in Libya initiating with increase in technology usage of SMEs in Libya

This paper makes an important contribution to filling a research gap given the critical importance of user’s attitude to adopt AIS in Libyan SMEs. Attitude considering as a mediating variable with the sub-constructs (perceived usefulness, perceived ease of use, intrinsic motivation, and extrinsic motivation) between user’s acceptance characteristics and user’s intention is the main contribution for the study. This study attempts to take the concept of acceptance of technology one step ahead of previous literatures like Davis, Bagozzi, and Warshaw (1989), who utilized factors like (perceived usefulness and perceived ease of use) explaining beliefs of users towards acceptance of technology. This study provides a comprehensive contribution by including perception level (intrinsic motivation and extrinsic motivation) to fill the gap identified by Davis et al. (1989) towards having less influence of attitude on the acceptance of system or technology.

### *Theoretical Background*

The origin and advancement of technology acceptance literature constitutes a major issue of information system (IS) research. As the goal of this study is to gain a recognizing on how and why organizations use, and accept technologies the focus is on the stream of research that makes intention to use the system. Thus in order to investigate the intention and technology acceptance as followed by Venkatesh et al.,(2002), the author approaches to technology acceptance model and Self-determination Theory (SDT) Deci and Ryan (1985) for Motivation model (MM) together.

#### **Theory of Reasoned Action (TRA)**

Acceptance model have been developed from several base theories stemming from the Theory of Reasoned Action (TRA). According to this theory behavioral intention is able

to predict performance of behaviors that are under the individual's control. According to theory of reasoned action, external variables that influence behavior to do so directly influence attitude, subjective norms or their relative weights.

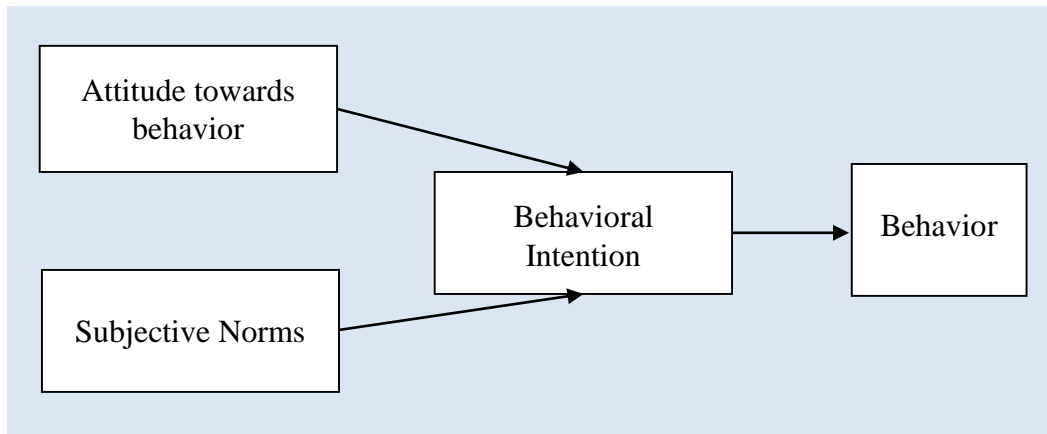


Figure 1 Theory of Reasoned Action

Source: (Fishbein, 1979)

The theory was extended to two directions, leading to the Technology acceptance model (TAM) and the Theory of Planned Behavior (TPB). As both the Technology acceptance model and Theory of Planned Behavior (TPB) extracted from the Theory of Reasoned Action (TRA), it make sense to integrate both model into one and form a decomposed model. TAM and TPB had been used in many studies for the development of new scales (Teo, 2011).

According to TRA attitude and subjective norms influence intentions to perform a behavior. Attitude is influenced by beliefs that are perceptions about the characteristics of behavior. According to (Fishbein and Ajzen, 1975), “the person may or may not be motivated to comply with any given referent. The normative beliefs and motivation to comply lead to normative pressures”.

### Theory of planned behavior

The theory of planned behavior postulates that human behavior is predicted through cognitive self-regulation, rather than a person's disposition such as their general social attitudes or personality traits (Ajzen, 1991). TPB was created as an extension of the Theory of Reasoned Action (TRA).

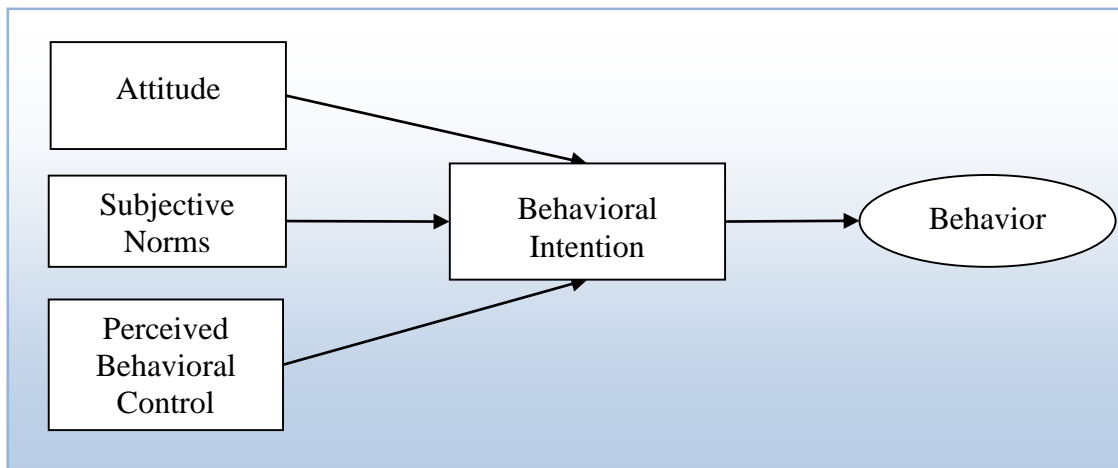


Figure 2 Theory of Planned Behavior  
Source: (Ajzen, 1985)

The theory assumes that a person's intention to perform or not perform is the determinant of the action, while TPB extends to include the perceived behavioral control component to conclude that TPB is more effective than the use of TRA (Servo, 2008).

### Technology Acceptance Model

Technology acceptance model was introduced by Davis (1985), this study attempts to examine the relationship between user acceptance of accounting information system and two antecedent factors: perceived usefulness, perceived ease of use, to see if the earlier results are still valid after recent advances in system and technology affecting system usage. Technology Acceptance Model provided a theoretical base in this study for examining the factors contributing technology acceptance in organizations.

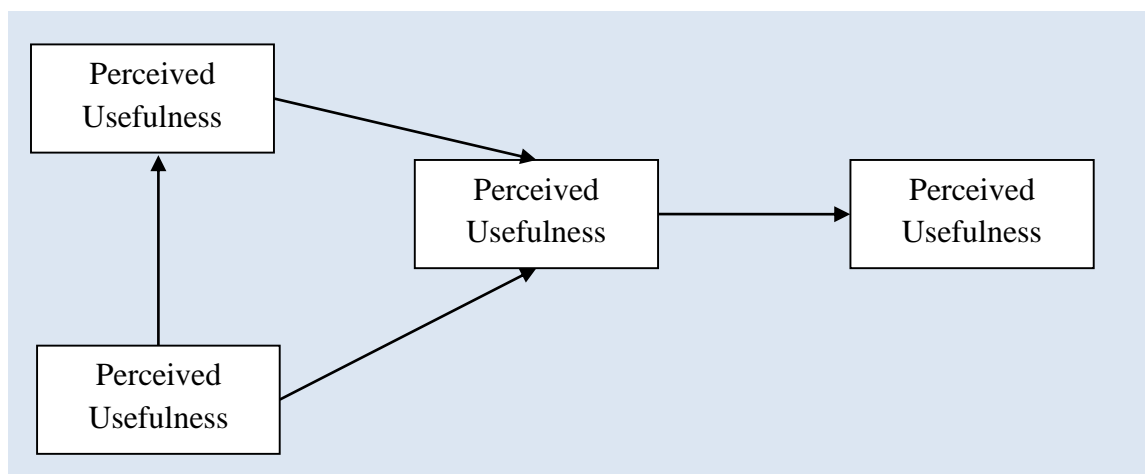


Figure.3. Technology acceptance model  
Source: Davis et al (1989)

Information technology adoption has been a central concern in information system research and practices. Brilliant progress has been made over the past decades in

disclosing and predicting acceptance of information technology in organizations. Davis et.al (1989) developed technology acceptance model and disclosed substantial proportion of variance in intention and behavior and also compared with alternative models like Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB) (Venkatesh, 1999).

### Self-determination theory (SDT)

Self-determination theory, the theory of motivation is concerned is concerned for influencing intrinsic tendencies to behave in healthy ways. SDT is a theory based on human motivation and advancement. Motivation is the idea used for maintaining the needs, achievement, and for control. Self-determination theory was initiated by Deci and Ryan (1985) that considered how to foster and intervene the exercise of motivation on others. Self-determination theory has identified three key psychological needs like autonomy, relatedness and competence that need to increase user's satisfaction. Venkatesh et al (2003) also redefined TAM within a motivational framework. The resulting model included both extrinsic and intrinsic motivations as predictors of behavioral intention to use. Motivation involves the internal processes that give behavior its energy and direction (Riva, 2001). Energy relates to the strength, intensity and persistence of the behavior concerned.

This study accepts the technology acceptance model as described above with intention to use as dependent variable and perceived usefulness, perceived ease of use, intrinsic motivation and extrinsic motivation as independent variables from the original model of Technology Acceptance model and Self Determination Theory (SDT).

### *Review of previous studies*

This paper attempts to increase awareness and attitude of users for positive perception towards IS adoption. Below are some of the previous studies that are critically reviewed:

Afshari et al (2013) found high correlation between perceived ease of use and attitude when investigating computer assisted language learning for students. Furthermore, Suki and Suki (2011), mentioned that perceived ease of use are believed to directly influence person's attitude and also found that perceived ease of use (PEOU) is significantly related to behavioral intention. Kigongo (2011), stated that adoption of new technology is affected by perceived usefulness and perceived ease of use that influences behavioral intention to use the system. According to Straub (2009) "user's adoption innovations addresses key constructs like emotions, contextual concerns, and cognitive approach".

According to Polgar and Adamson (2011), "Since perceived usefulness is such a fundamental driver of usage intentions, it is crucial to recognize the determinants of this construct and how their influence changes over time with increasing experience using the system" (p.254). In addition Venkatesh and Davis (2000), mentioned that: "Perceived ease of use, one of the determinant of intention, has displayed a less persistent effect on intention across studies" (p.187). Claar (2011), confirmed that "major premise of TAM is that the perceived usefulness and perceived ease of use of technologies will directly correlate to technology is accepted and used in the work environment" (p.23).

According to Frey and Osterloh (2001): “extrinsic motivation serves to satisfy indirect or instrumental needs”. Extrinsic motivation stems from the desire to satisfy directly one’s non-work related needs. According to Gagné and Deci (2005): “Activities that are not intrinsically motivating needs extrinsic motivation, so their initial achievement depends upon the perception of a contingency between the behavior and a desired effect such as implicit approval or tangible rewards” (p.334). Within SDT, when a behavior is so motivated it is said to be externally regulated, initiated and maintained by contingencies external to the person. The literature review has also reviewed the level of user’s characteristics which include CEO IT knowledge, CEO innovativeness and CEO trust on technology that would influence the perception and motivation of users for adoption of accounting information system in small and medium enterprises of Libya. Hence, the necessity of controlling these factors becomes crucial when investigating other relationships that also have impact on behavioral intention of users.

## **Methodology**

This research applied positivist paradigm using epistemology and quantitative methodology. Positivism could be viewed as a research philosophy assuming the phenomena being studied have a stable reality measurable from the outside by an objective observer (Lincoln, Lynham, and Guba, 2011). With regards to technology adoption studies, significant numbers of previous studies (Arayici et al., 2011; Jeyaraj, Rottman, and Lacity, 2006; Osofsky, Bandura, and Zimbardo, 2005) apply the quantitative approach.

Data analysis was performed in two stage process. In the first stage preliminary data analysis was performed along with descriptive respondent data followed with the model confirmatory process in the second stage of data analysis. Analysis and interpretation of the result was then explained. In the final stage of research process, conclusions and discussions on the implication of findings were provided. Relevant literature and theories were conferred with detailed discussion and explanation of findings.

Face to face closed ended self-administered survey questionnaire was constructed and were pre-tested with academics and research students, firm’s managers and pilot testing with firm managers. The questionnaire was addressed to the chief executive officer (CEO) or the owner of the firms. Owners were targeted as participants by the researcher because they were more likely the decision making power for adoption of AIS.

The main hypothesis formulated for empirical verification are provided as below:

H5: Attitude mediates the relationship between CEO IT knowledge and user’s behavioral intention

H6: Attitude mediates the relationship between CEO innovativeness and user’s behavioral intention

H7: Attitude mediates the relationship between CEO trust in technology and user’s behavioral intention

This study adopts confirmatory factor analysis that was introduced first by researchers like Anderson and Rubin (1956) and by Jöreskog (1969) that allowed for testing the hypothesis regarding the number of factors and the pattern of loadings. Previous studies have claimed SEM to be more reliable and valid for social science studies. SEM methodology is claimed to be useful in the behavioral and social sciences where many constructs are unobservable (Stevens, 2012). SEM helps researchers to assess the unidimensionality, reliability and validity of each construct. Besides, SEM provides an overall test of model fit and individual parameter estimate tests simultaneously (Hair, Anderson, Tatham, and Black, 1998; Kline, 2011).

## Results and Discussions

By applying SEM for the data analysis, it is important to ensure that the data meet several assumptions such as normality and having adequate sample size. As for sample size, SEM requires the sample size to be adequate because covariance and correlations are less stable when estimated from small sample sizes (Kline, 2011; Tabachnick and Fidell, 2001).

Reliability is assessed using composite reliability (CR) and average variance extracted (AVE) whilst for validity using construct, convergent and discriminant validity analysis. Composite reliability was used as an indicator to determine the reliability of the measurement scale of CEO IT Innovativeness, CEO IT knowledge, CEO Trust in IT, Perceived usefulness, perceived ease of use, intrinsic motivation, extrinsic motivation and behavioral intention. The value of composite reliability was above (0.70) and AVE was above 0.50 as recommended by Bagozzi and Yi (1988), suggesting further support of the reliability of the constructs.

Below figure 4 shows final structural model constructed using analysis of moment structure (AMOS) version 21. Figure 4 illustrates the structural model after removing the three non-significant paths. This left no paths from the three CEO characteristics to behavioral intention. After removing the path of three constructs, an examination of the goodness-of-fit indices showed that the model fitted the data effectively ( $\chi^2 = 1648.705$ ,  $df = 926$ ,  $p = .000$ ). The GFI = .831, AGFI = .811, CFI = .929, TLI = .924, RMSEA = .047 and  $\chi^2/df = 1.782$ . Based on an examination of goodness-of-fit indices including the normed chi-square value, structural model appears to have a better fit compared to previous models.



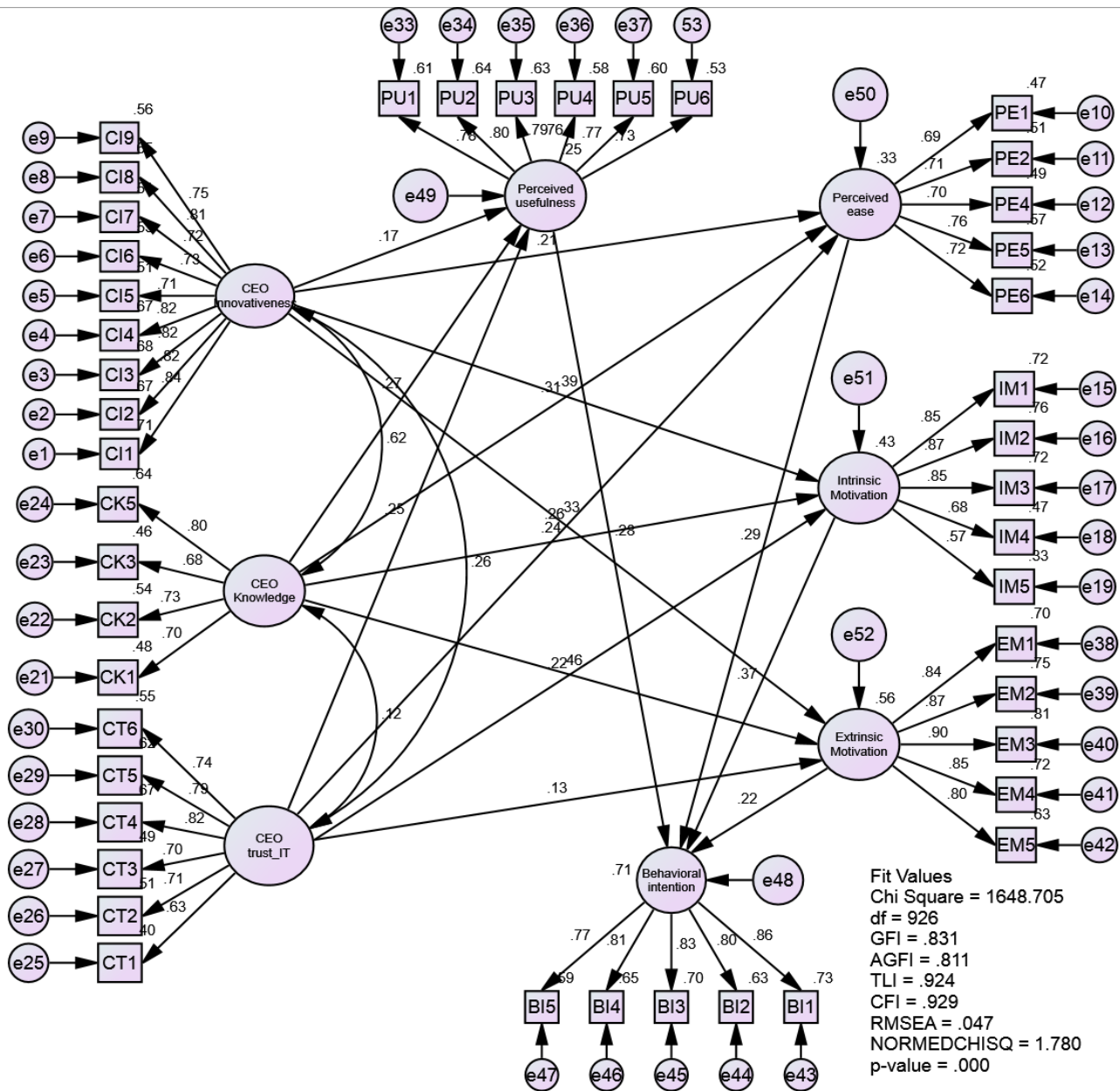


Figure 4 Final structural model

From the square multiple correlation result, it is noted that the model fit criteria are solved and there is a high correlation between the perceived ease of use, intrinsic motivation and behavioral intention. With the significant standardized regression weights of all the constructs and items, the overall square multiple correlation was found to be 0.71 (71%) which is considered as very strong and significant finding of the study. Finally, from the results of the re-specified model shown in figure.4, it can be seen that the AGFI (0.8) (Acceptable fit criteria) and RMSEA less than (0.08) is fit (Hooper, Coughlan, and Mullen, 2008). This shows that the measurement model has a good fit with the data (Anderson and Fornell, 1994). Thus overall the model is fit.

The final model indicated that user's intrinsic and extrinsic motivation and CEO innovativeness collectively influence heavily towards adoption of AIS. However in the current sample, CEO IT knowledge was having more influence on the dimensions of attitude constructs as compared to CEO IT innovativeness and CEO trust in IT. Moreover, confirmatory analyses found that attitude was significantly related to user's intention to adopt AIS but CEO characteristics had no effect on behavioral intention. Similar findings were examined by (Hanafizadeh, Behboudi, Abedini Koshksaray, and Jalilvand Shirkhani Tabar, 2014; Prompattanakdee, 2009) where level of knowledge and system characteristics found to have no influence of adoption intentions. Below table shows the hypothesized path between the constructs. It was found that all the paths were supported with the acceptance of critical threshold value 1.96.

Table 1 Standardized regression weight for final model

Hypothesized Path		Standardized	C.R.	P	Support
Perceived ease	<--- CEO Innovativeness	0.211	2.809	0.005	Yes
Perceived ease	<--- CEO Knowledge	0.308	3.903	***	Yes
Perceived usefulness	<--- CEO Innovativeness	0.167	2.248	0.025	Yes
Perceived usefulness	<--- CEO Knowledge	0.266	3.445	***	Yes
Perceived usefulness	<--- CEO trust IT	0.250	4.213	***	Yes
Intrinsic Motivation	<--- CEO Knowledge	0.242	3.528	***	Yes
Intrinsic Motivation	<--- CEO Innovativeness	0.386	5.679	***	Yes
Extrinsic Motivation	<--- CEO Innovativeness	0.335	5.456	***	Yes
Extrinsic Motivation	<--- CEO Knowledge	0.456	6.738	***	Yes
Extrinsic Motivation	<--- CEO trust IT	0.128	2.800	0.005	Yes
Intrinsic Motivation	<--- CEO trust IT	0.224	4.257	***	Yes
Perceived ease	<--- CEO trust IT	0.258	4.269	***	Yes
Behavioral intention	<--- Perceived ease	0.290	5.972	***	Yes
Behavioral intention	<--- Extrinsic Motivation	0.217	4.684	***	Yes
Behavioral intention	<--- Intrinsic Motivation	0.371	7.817	***	Yes
Behavioral intention	<--- Perceived usefulness	0.280	6.430	***	Yes

## Conclusion

The findings concluded that attitude plays a mediating role between IT characteristics and behavioral intention to adopt AIS in Libyan SMEs. SMEs must realize that planning for information system adoption in the organizational context is very crucial factor that should be taken into consideration along with the attitude of the decision makers and users towards system adoption. The process of carrying out adoption plan with ultimate success must be carried out. Planning processes like rationality, adaptability and intuition should be utilized by the management operationalizing different planning process approach. Managers can improve their AIS outcomes by adapting more measurement items for the fulfillment of the key objectives construct dimensions, and can perhaps improve on their capability by considering the measurement items for their adoption outcomes. In addition, managers should realize that a great level of AIS adoption is associated with its process and context. Therefore, AIS adoption in SMEs will have an effect on AIS implementation, along with organizational context, affecting the level of AIS implementation directly and indirectly through the adoption of AIS.

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