

Factors Influencing the Adoption of Accounting Information Systems (AIS) in Algerian Firms

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Received: 06/10/2025

Accepted: 02/12/2025

Published: 30/12/2025

Abstract:

In most cases, an Accounting Information System (AIS) will include multiple interconnected parts that work together to carry out a single or multiple missions. However, interoperability within organizations is limited and ineffective in developing countries like Algeria. Accordingly, this research uses the TOE frameworks to look at what factors are affecting the adoption of AIS, this covers IT infrastructure, top management support, and awareness. One hundred and seventy senior executives from petroleum businesses across four areas of Algeria (the South, North, West, and East) were surveyed to gather the data. Data analysis was conducted using SPSS version 26.0 and PLS-SEM 3.3.3. It was found that the adoption of AIS is influenced solely by the IT infrastructure and the support of senior management. Researchers, legislators, and Algerian petroleum companies can use this study's findings to put AIS improvement priority in Algeria.

Keywords: Accounting Information System (AIS); IT infrastructure; Top management support; TOE framework; Adoption.

JEL Classification Codes : M41; M15; O33

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1. Introduction

The Internet is facilitating new forms of communication between individuals and businesses, which is rapidly altering society. Another benefit of the Internet is the ease and variety of communication and information-gathering options it provides. In comparison to what is available now, twenty years ago, the Internet would have been impossible to use (Oriwoh & Conrad, 2015). According to Kumar, Mukerji, Butt, and Persaud (2007), governments all over the world have been exerting a significant amount of effort in order to promote and distribute information through the use of the Internet.

The widespread adoption of information and communication technology (ICT) has had a significant and deep effect on contemporary society. In a similar vein, this revolution has revolutionized the manner in which governments communicate with citizens, corporations, institutions, employees, and other stakeholders on a worldwide scale (Lee, 2010; Rokhman, 2011). Transforming the public sector into a digital one is essential for reforming it and making it more efficient, effective, transparent, and accountable while simultaneously enhancing the communication and access to information that stakeholders have (Al-Shafi & Weerakkody, 2009; Christofi et. el., 2019).

As a consequence of this technological progress, the affiliations of government organizations have been pushed to reevaluate their internal and exterior connections, as well as their transactions. Therefore, in order to achieve sustainable development, governments need to convert their administrative procedures into computerized platforms. Al-Sobhi, Weerakkody, and Kamal (2010) provided evidence that governments all over the world are making efforts to establish an electronic mechanism, known as an accounting information system, within their organizations and institutions. The purpose of this endeavor is to replace traditional services with ones that are higher in reliability.

In general, an AIS system is made up of a number of interconnected components that work together to carry out a particular function or multiple functions. The system is governed by rules and procedures, which are routinely followed and monitored by the system administrator to ensure that there are no deviations from the policies that have been set. This is true regardless of whether or not the system is computerized. There is a logical progression from inputs to outputs in an accounting system, which is itself a set of processes. To maintain objectivity in the outcomes, various accounting policies have limited the actions and processes of the separate owners of property rights and management (Alrabei, Haija, & Aryan, 2020).

According to Rehman, Kamal, and Esichaikul (2016), the objective of the AIS is to enhance management practices that are transparent, accountable, and rational. It is expected to improve citizen services, consolidate ties with business and industry, citizens' empowerment across information access, and rationales AIS administration. It may result in a reduction in corruption and an increase in transparency, as well as increased convenience, revenue growth, and cost savings.

The failure of the AIS has been explored by researchers from a variety of perspectives in order to determine the reasons in question. Based on the findings of Chaabna, Wang, and Lutf's (2014) research on Algeria, it is imperative that a legislative framework that is capable of resolving potential problems be developed in order to ensure the successful implementation of AIS. Issues of legal responsibility, consumer rights, privacy, security, intellectual property, and electronic contracts and payments are possible sources of such worries. On the other hand, they pointed out that the Algerian government had not given adequate attention to a number of these problems, while at the same time providing early solutions to others.

Through the presentation of a TOE model that has been built in accordance with the features of the economic environment in Algeria, the objective of this study is to establish a framework that offers a full knowledge of the elements that influence the utilization of AIS. Managers and decision-makers will gain a better grasp of user views and the significance of assessment in bolstering system use thanks to this study's practical findings, which show the social component and care about individuals.

2. The factors that influence the acceptance of AIS and the formulation of hypotheses

2.1 Technological Factors

All technologies that are pertinent to the company and are either in use or have the potential to be used in the near future are considered technological aspects. There are a number of technical considerations that affect the uptake of any e-initiative, and AIS in particular, according to the research.

2.1.1 IT Infrastructure

The term "infrastructure" does not limit itself to IT. According to Grey (1998) and Khanh (2014), the most obvious infrastructure consists of the roads and streets that are utilized for transportation and logistics. On the other hand, that is not how IT systems might appear. An information technology (IT)-based infrastructure is the backbone of an AIS system. Because of the Internet, people are able to access a wide range of services, and digital broadcast systems are able to function on a global digital network. Soufiane and Ibrahim (2018) and Wang, Cao, Leckie, and Zhang (2004) state that governments are responsible for ensuring the availability and capacity of telecommunications networks in order to handle the increased traffic that these new services will cause. As a result, the current study stipulated the following:

H1: IT infrastructure positively influences AIS adoption.

2.2 Organizational Factors

Organizational factors are defined in this study as the traits and assets of an organization that link its structures to its workers. This factor affects the acceptance of AIS in multiple ways.

2.2.1 Top Management Support

According to Cavaness and Manoochehri (1993), higher management consists of all directors, administrators, and managers who have the authority to establish and carry out policies and procedures. The term "top-level management support" describes the preparedness of higher-ups to supply the funds and authority required to finish a project effectively (Pinto & Slevin, 1987). According to Murphy, Sabharwal, and Aazhang (2006), a positive attitude from top management regarding AIS indicates their support for implementing AIS in the organization. Thus, the following were the hypotheses put out by the present investigation:

H2: Top management support positively influences AIS adoption.

2.3 Environmental Factors

The term "environmental factors" was coined to describe the aspects that are not connected to any specific organization.

2.3.1 Awareness

According to Kirui and Kemei (2014), there is still a lack of understanding regarding the use of AIS, despite the fact that its usability is of the utmost importance. There is a pressing need to educate organisations that do not have sufficient knowledge about technology about the importance of keeping up with the fast development of AIS technologies and operations (Khamallag, Kamala, & Tassabehji, 2016). As a result, the following hypothesis was proposed:

H3: Awareness is positively influencing AIS adoption.

3. Research Framework

A conceptual study model on how one theory logically senses the relationship among various aspects that have been established earlier as significant to the difficulties is a framework (Sekaran, 2016). Consequently, this study's framework checked the impact of technological, organizational, and environmental variables on AIS adoption. The substantial literature assessment and supporting ideas are part of the early research framework that was built. According to Damanpour (2018), there are a number of internal and external factors that can affect an organization's ability to accept new innovations. A thorough examination of the relevant literature reveals that prior research in the field of information and communication technology has made use of the TOE framework (Teo, Lin, & Lai, 2009; Iacovou, Benbasat, & Dexter, 1995). Every one of the three contextual variables was approached differently in other research. (technological, organizational and environmental factors). It shows that Zhu, Kraemer, and Dedrick (2004) in the field of IS studies have consistently backed the TOE framework empirically. Consequently, it can serve as a foundation for investigating the elements associated with the implementation of AIS. AIS adoption is impacted by technological, organizational, and environmental variables, as shown by the TOE framework.

It was in 1990 that Tornatzky, Fleischer, and Chakrabarti laid out the TOE framework. There are three important aspects of a company's situation that impact how it uses and

implements technology: the technological context, the organizational context, and the environmental context. (a) Intrinsic and extrinsic technologies related to the company are both explained by technological context. This takes into account both the technologies that are external to the company and its present procedures and equipment (Hedberg, Nystrom, & Starbuck, 1976; Hage, 1980; Khandwalla, 1972; Thompson, 2017). (b) In describing an organization, factors including its size, scope, and management structure are relevant. (c) The business, industry, competitors, and dealings arena in which a firm performs are all part of the environmental context (1992). Lastly, by providing a conceptual framework, the present study improves the existing literature. (see Figure 1) It hypothesised, using Algeria as a case study, how the TOE Framework influences AIS adoption for the purpose of gaining more information.

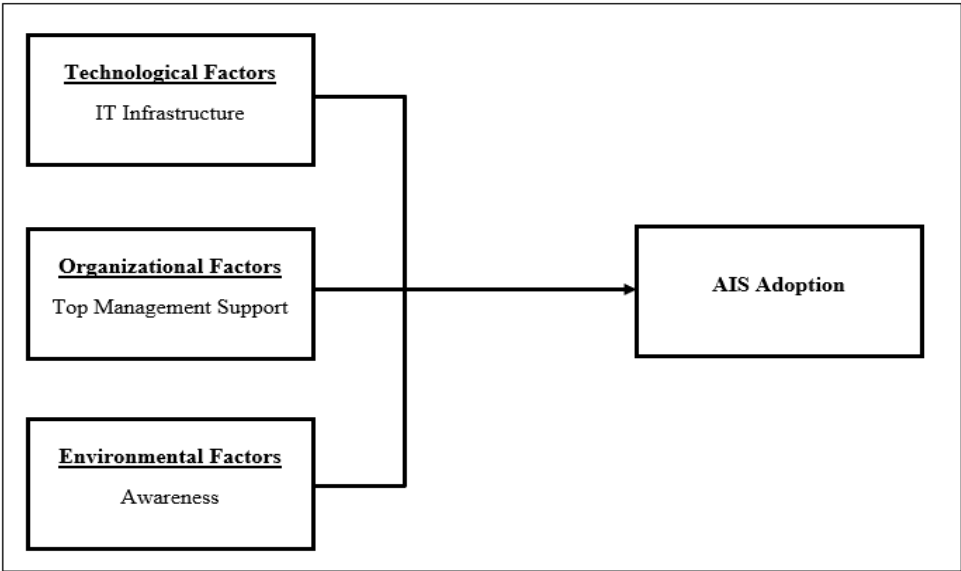


Figure. 1 Research framework

4. Methodology

This research is based on an empirical examination of petroleum companies in Algeria that are engaged in AIS adoption activities. The Ministry of Energy and Mines provided the sample frame with a list of firms. The current study gathered 170 respondents from Algerian petroleum companies (n = 32), South (n = 115), East (n = 13), and West (n = 10). To ensure the variables were measured in a valid and reliable manner, validated scales from previous research were used for all constructs in the current study. IT infrastructure is quantified using (Ramamurthy, Premkumar, & Crum, 1999) items. Top management support was adopted from (Denison, & Mishra, 1995). The items of Papazafeiropoulou. Pouloudi, and Doukidi (2002) are used to assess awareness. Finally, the adoption of AIS is measured using items from Zhao, Truell, and Alexander (2008)

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that assess the extent to which petroleum companies have adopted AIS, with higher scores indicating greater satisfaction. All independent variables were quantified using a scale with poles ranging from strongly disagree (1) to strongly agree (5). While for dependent variables, the range is from not using them at all (1) to always using them (5). IBM SPSS version 26.0 was used to assess the reliability and regression of the measurement items for each construct. This process involved distributing 170 questionnaires to managers and above at Algerian petroleum companies. The questionnaire was designed for respondents to complete in order to represent their organization. After that, to find out how consistent each construct was, we ran regression and reliability studies on the measurement data. To determine the actual association between TOE parameters and Algerian AIS adoption, we will analyse the data using partial least squares (PLS) 3.3.3 after establishing the reliability and regression coefficients for the returned questionnaire.

4. Results

4.1 Descriptive Analysis

A total of 300 questionnaires were distributed among managers level and above of petroleum companies. One hundred seventy responses were, however, obtained. There were 51 businesses with five to 10 years of operation, 50 with more than fifteen, 36 with fewer than five, and 33 with eleven to fifteen years of operation. 57.1% of the petroleum companies are citizen-owned with an approximate annual sales turnover of 3,000,000–9,900,000 DZA. 48.2% of the companies have overall 100–499 employees with up to five IT staff in the company, and less than 5% of their annual budget is allocated for IT. 28.2% of all companies considers themselves to be the industry leader and close follower in terms of internet usage. Additional demographic data can be found in Table 1.

Table 1 Descriptive analysis of respondents

Variable	Classification of variables	Frequency (N = 170)	Percent
Position in Company	Owner/Proprietor	8	4.7
	Managing Director/Chief Executive Officer	33	19.4
	Senior Manager	90	52.4
	Manager	39	22.9
Gender	Male	135	79.4
	Female	35	20.6
Age	30 years old	32	18.8
	30–39 years old	61	35.9
	40–49 years old	55	32.4
	>50 years old	22	12.9
Level of Education	Diploma	19	11.2
	Bachelor's degree	68	40.0
	Master's degree	77	45.5
	PhD	6	3.5
Access the Internet	About an hour a day	5	2.9
	1 to 2 hours a day	9	5.3
	2 to 3 hours a day	25	14.7
	More than 3 hours a day	131	77.1

4.2 Measurement Model

In the model that was defined for this study, there are four main components and twenty-six elements or indicators that make up the measurements. During the evaluation of the measurement model, we checked for convergent validity, discriminant validity, and internal consistency reliability. In their respective studies, Hair et al. (2017) and Ramayah et al. (2018) advocated the utilisation of factor loadings, composite reliability (CR), and average variance extracted (AVE) in order to evaluate convergent validity.

Table 2 Measurement of constructs validity and reliability

Variable	Composite Reliability (CR)	Average Variance Extracted (AVE)
IT Infrastructure	0.862	0.557
Top Management Support	0.881	0.651
Awareness	0.883	0.716
AIS adoption	0.963	0.629

All reflective constructs had CR greater than 0.7, indicating that they all had a high internal consistency and reliability level. The AVE from all constructs is used to determine their convergence validity (AVE). These values are greater than 0.5, indicating a high degree of convergent validity for the measure of all reflective constructs. In order to arrive at a conclusion on the discriminant validity, the Fornell-Larcker criterion and cross-loadings are utilized. Cross-loadings and the Fornell-Larcker criterion are utilized in order to ascertain the discriminant validity of a classification system.

Table 3 Fornell-Larcker criterion, construct correlations and discriminant validity/mean and standard deviation

	A	ITI	TMS	AISA
Awareness	0.846			
IT Infrastructure	0.468	0.456		
Top Management Support	0.521	0.591	0.451	
AIS adoption	0.493	0.495	0.688	0.787

4.3 Structural Model: Hypothesis Testing

This section summarizes the structural model evaluation's findings. Hair et al. (2017) characterizes a five-step evaluation procedure for the structural model:

- 1 evaluate the structural model for collinearity
- 2 evaluate the path coefficient
- 3 evaluate the R² level
- 4 evaluate the effect size f²
- 5 evaluate the predictive relevance Q².

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In Table 3, you can see an illustration of the lateral collinearity test. In Table 3, you can see an illustration of the lateral collinearity test.

Table 4 Collinearity statistics of structural model (inner VIFs)

	AIS adoption
Awareness	2.120
IT Infrastructure	2.003
Top Management Support	1.931

This study developed three direct hypotheses to explain the relationships between the constructs. T-statistics were generated for all paths using the SmartPLS 3.3.3 bootstrapping function to determine the significance of each predictor. Based on the evaluation of the path coefficient, Table 4 reveals that two associations were discovered to be determined to be positive and significant, with a t-value that is equal to or more than 1.645. In particular, it was found that there was a strong relationship between AIS adoption and IT infrastructure ($\beta = 0.151$, $p < 0.05$) as well as senior management support ($\beta = 0.496$, $p < 0.05$). In light of this, Hypotheses 1 and 2 were validated. According to the findings, the support of top management was the most significant factor in the adoption of AIS. On the other hand, awareness ($\beta = 0.056$, $p < 0.05$), was discovered to be insignificantly related to AIS adoption. The current study's model has an R2 value of 0.612, indicating that the interaction of all independent variables can account for 61.2% of the variation in AIS adoption. The Q2 values were used to assess the model's predictive relevance. These values were obtained through a blindfolding procedure with a seven-degree omission distance. The value for Q2 was 0.314, indicating a high predictive relevance for the path model.

Table 5 Structural model assessment

Relationship	Direct effect (β)	Standard error	T-statistics	P-value	Decision	R²	f²	Q²
H ₁ IT infrastructure → AIS adoption	0.151	0.077	1.985	0.025	Supported	0.536	0.025	0.314
H ₂ Top Management Support → AIS adoption	0.496	0.065	7.582	0.000	Supported		0.230	
H ₃ Awareness → AIS adoption	0.056	0.082	0.689	0.246	Not Supported		0.000	

5. Conclusion

The findings indicated that TOE variables, especially concerning technology and organization, were critical for increasing AIS adoption. Nonetheless, not all aspects exert a substantial influence on the adoption of AIS. It was found that the adoption of AIS by Algerian petroleum businesses was impacted by only one dimension of technological considerations, specifically IT infrastructure. A reasonable explanation for the reasons stated by Ziemba, Papaj, & Descours (2014) and Glyptis et al. (2020), among others, citizens' access to information and the utility of services are enhanced by IT infrastructure, lowers operational expenses while simultaneously raising the quality and openness of service (Chipeta, 2018).

Furthermore, it was discovered that the adoption of AIS by Algerian petroleum businesses was influenced by one dimension of organizational factors: top management support. To be more specific, the results of this study show that the backing of upper management is the single most important factor in determining whether or not a company uses AIS. This suggests that companies in Algeria would be well to put this backing of upper management at the forefront of their AIS implementation efforts.

However, awareness had no discernible impact on the adoption of AIS in Algeria, according to this study. The results showed that awareness did not influence the adoption of AIS by Algerian firms, which is in line with the findings of Eyupoglu and Kaya (2020) when the demographics of the respondents are taken into account. That most Algerians don't know what AIS is shows how ignorant they are. Even if they are cognizant, they are less inclined to select it initially. Additionally, Algerians' cash culture may dissuade them from using electronic payment in order to avoid transparency (Zerhouni, 2016).

6. Research implication

By constructing and validating a complete conceptual framework that takes into consideration all key drivers of AIS acceptance by public sector organizations in Algeria's petroleum businesses, this research makes a theoretical contribution to the existing body of knowledge as it pertains to the adoption of AIS in the public sector. TOE factors all play a role. Furthermore, it demonstrates the TOE framework's suitability for analyzing the factors affecting Algeria's adoption of AIS.

From a managerial perspective, the findings can assist Algerian petroleum companies in better comprehending the process of AIS implementation. Algerian petroleum companies should priorities developing and demonstrating TOE factors. More specifically, the infrastructure of information technology and the assistance of senior management, in order to speed up the implementation of AIS. in particular the infrastructure of information technology and the assistance of senior management, in order to speed up the implementation of AIS.

7. Recommendations for Future Research

While this study contributes significantly to the literature, it is necessary to consider the study's limitations when interpreting the results and conclusions drawn. To start, since

petroleum businesses are the principal driver of economic growth in Algeria, this study narrowed its attention to that industry. Future studies could examine the use of AIS by small and medium-sized enterprises (SMEs) in Algeria or in different industries. It is consistent with the Algerian government's objective of increasing the economic contribution of small and medium-sized enterprises.

The present investigation was quantitative in character and used a new strategy. Researchers in the future might use qualitative or mixed methodologies approaches, which could lead to new insights. Furthermore, future research may investigate AIS adoption on an individual level, while this study focused on corporate (organisational) adoption.

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