

# Impact of Cultural and Environmental Factors on the Adoption of AAOIFI Accounting Standards in MENA Countries: Logistic Regression and Neural Networks

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## ABSTRACT

The purpose of this study was to investigate the effect of cultural and environmental factors on the decision of adoption of Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) in MENA countries. Precisely, we empirically diagnosed the impact of culture, the origin of the legal system, economic growth, the presence of National Shariah Council and the political freedom on the adoption of AAOIFI. Data from 44 countries belonging to the MENA region was used and compared between 26 countries adopting the standards of AAOIFI and 18 not adopting during the period 2007-2017. The paper used a Logit regression analysis to model the binary decision to adopt the AAOIFI or not. Additionally, neural networks were performed to test the robustness of the results of the logistic regression. We found that all macroeconomic factors affected the decision of adoption. Furthermore, the neuronal model showed that the level of education and the political freedom were the most important factors influencing the adoption of AAOIFI.

**Keywords:** AAOIFI standards, culture, legal origins of law, political freedom, economic growth, logistic regression, neuronal networks.

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## **INTRODUCTION**

The imminent need for international accounting harmonization is due to the increased divergence between accounting standards (Cardona et al., 2014). Despite the creation of standardization bodies, the problem of harmonization persists because the diversity of local accounting standards and the voluntary nature of international standards. In this context, the Islamic accounting standard aims to improve the comparability of financial statements and to increase the confidence of investors on the compliance of banking transactions with Islamic laws (Khan & Bhatti, 2018). So, Islamic accounting standards should enhance stability (Hassan et al., 2019) and improve resource mobilization for economic development (Shabsigh et al., 2017).

Previous research has addressed the problem of adoption of the AAOIFI standards at the micro level precisely at the bank level and not at the country level like Vinincombe (2012) and Sarea and Hanefah (2013). This research show that differences in adoption are due to educational, sociological, economic, political, legal, technological and organizational factors (Ullah, 2013).

Other studies have focused on the environmental factors explaining the origin of the diversity of accounting treatments between countries (Sarea & Hanefah. 2013). Thus, accounting is the product of its environment (Gernon & Wallace, 1995; Rodrigues & Graig, 2007; Kamran et al., 2013) and the environment creates its own accounting standards taken into account the national culture and the country's history (Abongwa, 2005).

In the Islamic financial sector, the adoption of the AAOIFI standards is also voluntary and few MENA countries fully adopt the AAOIFI but rather converge towards partial adoption. Moreover, due to a lack of consensus on accounting in Islamic finance, many institutions apply the International Financial Reporting Standards (Sori, 2017) despite that Islamic banks cannot fully comply with the International Financial Reporting Standards (IFRS) in their financial reporting and are sometimes in conflict with this standards which convey a vision of the capitalist world (Ibrahim & Hameed, 2009).

So, Bin Idrees et al. (2021) suggested that banks should adopt the AAOIFI accounting standards in order to achieve religious, social and economic satisfactions. The best solution for Islamic finance is to adopt the AAOIFI standards and research should study the barriers to adoption to identify the solutions.

The motivation for the study was twofold. The first attempts to fill the gaps in the existing literature on the adoption of the AAOIFI accounting standards across countries and at the macroeconomic level. The second results from a desire to conduct a study comparable to that carried out in the context of the IFRS on the cultural, institutional, political and economic factors encouraging adoption (Zeghal & Mhedhbi, 2006; Zehri & Chouaibi, 2013; Damak & Ben Salem, 2014). For this, the objective of this article is to expose the factors influencing the adoption of the Islamic standards of the AAOIFI, focusing on the one hand, on three cultural factors namely religion, language and level of education. On the other hand, we studied the environmental factors like legal, institutional, political and economics.

The interest of this study is to highlight the macroeconomic determinants favoring the adoption of the AAOIFI standards according to a comparative study of 44 countries. The article consists of a first part which presents a literature review of studies dealing with the relationship between cultural and environmental factors and the decision to adopt the AAOIFI. The second part presents the research methodology used and ends with a discussion of the results obtained in the third part.

## **LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT**

The Islamic international standards aim to contribute to an improvement in the comparability of financial statements and to increase investor confidence in the compliance of banking transactions with Islamic laws (Khan & Bhatti, 2018).

The Institutional Theory emerged with the work of Meyer and Rowan (1977) and was introduced into the management literature of organizations by Demaggio and Powell (1983). According to this Theory, an organization

is influenced by its institutional environment and to achieve its goals, the organization must succeed economically and ethically while respecting legitimacy.

This Theory shows that accounting is often used as an institution of legitimization vis-à-vis the environment (Touron, 2011). In search of this legitimacy, organizations self-regulate to society (Scott, 2003) according to a collective rationality inducing the institutionalization of structures. Structures can manifest themselves in accounting standards and organizations interact in their institutional environment according to isomorphism mechanisms.

This isomorphism is defined as a tendency to conformism is a central element of the Institutional Theory and can be a coercive, normative and mimetic isomorphism. Coercion arises with “the formal and informal pressures exerted on the organization and the expectations of the society in which the company operates” (DiMaggio & Powel, 1983).

In this sense, the adoption of the AAOIFIs is under the institutional influence of stakeholders in the Islamic finance sector which requires the establishment of strict rules, control mechanisms and sanction measures (Scott, 1995).

Bin Idrees (2021) showed that institutional constraints need the establishment of an organizational framework designed to structure political, economic and social interactions (Powell & DiMaggio, 1991).

Moreover, mimicry supposes that faced with situations of uncertainty, organizational practices converge. The accounting literature shows that the sectoral influence is a mimetic influence (Neu, 1992) and the adoption of the AAOIFI follows a rational mimicry (Eggrickx, 2012).

In this perspective, the document states the decision to adopt the AAOIFI standards according to the Institutional Theory since the change or the elaboration of new accounting, legislative or political rules is the consequence of the pressure produced by force or by the persuasion.

Similarly, Richardson (1987) asserted that accounting is a set of beliefs and techniques that act as a form of environmental legitimation.

## **Hypothesis's Development**

The process of globalization has an impact on the adoption of international accounting standards (Mohammed, 2018).

Several studies have focused on the factors of adoption of the IFRS in both developed and developing countries (Chamisa, 2000; Perera & Baydoun, 2007; Damak & Ben Salem, 2014). Adoption factors are categorized into internal and external factors relating to legal and political system, taxation, reporting system (El Khatib & Nizami, 2015). Recently, Bengtsson (2021) identifies three factors of adoption of the IFRS relating to the social and legal traditions of countries such religion and culture (Sharairi, 2020), economic and financial needs and factors relating to intra-organizational dynamics.

On the other hand, fewer studies have focused on the factors influencing the adoption of Islamic accounting standards by the banking sector.

A recent trend focuses on the motivations of adoption of the AAOIFI (El-Halaby & Hussainey, 2016) relating to governance of banks, the independence of the board, the presence of women on the board, the presence of the audit committees (Bechichi et al., 2021) and the presence of professional accountants specialized in auditing the AAOIFI accounting standards (Alqaraleh et al., 2020).

Another trend concentrates on the factors of adoption at level of countries. Rodriguez and Craig (2017) highlight the role of religion, culture and history in the adoption of accounting standards (Hofstede, 1980). Choi and Meek (2005) explain the difficulties of adoption by the differences between the political, legal, financial, educational systems (Wan Abdullah et al., 2015) and environmental factors such as the economic system and religion (Iqbal & Mikahor, 2004).

These factors are also related to economic and political conditions such the economic growth and civil and political freedom (Farrok et al., 2011).

Like previous studies and according to the theoretical basis confirming that accounting is the product of its institutional environment (Ahmad et al., 2013), we highlight the macroeconomic factors influencing the adoption of the AAOIFI. They are classified into cultural factors like religion, language and level of education, environmental factors like the legal origin of the system, political freedom, economic development and a governance factor linked to the presence of the National Sharia Council.

## **Cultural Factors**

In the process of globalization, culture plays a key role in the accounting systems adopted by countries. Culture is a key determinant of people's values, preferences and beliefs individuals and societies (Bin Idrees et al., 2021).

Thus, the Institutional Theory emphasizes the influence of a country's environment on the various institutions of the society such as accounting standards bodies (Hofstede, 1980, Bengtsson, 2021).

In the context of the IFRS, several studies have focused on this subject and attempted to study the impact of cultural affiliation on the adoption of the IFRS standards (Zeghal & Mhedhbi, 2006; Damak & Ben Salem, 2014). These researchers concluded that developing countries with an Anglo-Saxon culture are more likely to adopt the IFRS (Zehri & Chouaibi, 2013).

Abulkasem et al. (2017) confirmed that the obstacles to the adoption of IFRS are due to the conflict between some of the principles of the Islamic religion and the IFRS standards, the problems of translating the IFRS from English to the local language which leads to incorrect application. They add that the lack of technical skills and experience of accountants and auditors is a barrier to adoption.

By analogy, we also assumed that adoption of the AAOIFIs depends on the culture of each adopting country. With these standards, the religious beliefs conveyed by Islam, the official Arabic language and the experience of banks in the Islamic banking sector have a significant impact on the adoption of AAOIFI standards (Bin Idrees et al., 2021).

Similarly, Mohamed (2018) showed that training in Islamic accounting is one of the determinants of the implementation of accounting standards for Islamic financial institutions in Iraq. For this, we divide culture, as in previous research, into religion, language and level of education.

Thus, religious beliefs can represent a social pressure to support the adoption of the AAOIFIs, the official language and the level of education facilitate the application of these standards in the Islamic banking sector.

### **Religion**

The objective of the Islamic banking system is to achieve an economic standards in accordance with Sharia and religious requirements (Baydoun & Willet, 1997). Faruqi (1986) defined religion as a set of beliefs related to cultural dimensions of Hofstede (Marie et al., 2021). In addition, the values which dominate each Islamic country depend on its culture, for example, interest is prohibited in the Islamic religion and sharia must regulate the ethical and social life. In this context, Napier (2009) shows that standards is the realization of the aspiration of Muslims to observe the principles of Islam in all aspects of their lives, including accounting and economics (Alqaraleh et al., 2020).

The culture is strongly impregnated by the religion and in Islamic banking. The AAOIFI standards are based on the fundamental principle of respect for Islamic culture and laws. Thus, we can assume that:

**H1:** A country's Islamic religion is positively associated with adopting the AAOIFI.

### **Language**

International accounting harmonization aims to find a common accounting language but has the obstacle that the standards use a different language from adopting countries. In this context, the translation of the IFRS into different languages has always been a threat to comparability (Tsakumis et al., 2009).

In this sense, the official language is an essential cultural variable in the business world because it facilitates communication between countries (Stulz & Williamson, 2002; Damak & Ben Salem, 2014). Nobes (1998)

confirms that linguistic similarities reinforce the common culture while differences can slow down the transfer of any technology.

Thus, Abulkasem et al. (2017) show that language is a cultural barrier to the adoption of international standards because translation is not an easy process. Hooper et al. (2010) explain the reasons for France's resistance to the adoption of the IFRS since it is a country strictly defends its language.

On the other hand, the countries belonging to the Anglo-American culture adopt the IFRS more because English is the official language of the IASB (Abd-Elsalam & Weetman, 2003).

In the case of the AAOIFI standards, the first version of these standards was published in Arabic and English. This can limit the problems of bad translation which can limit the harmonization (Evans, 2004; Zeff, 2007) and the decision of adoption (Bin Idrees et al., 2021). For this, we assumed that:

**H2:** The language used in the country is significantly related to the decision to adopt the AAOIFIs.

**H2a:** The use of Arabic language in a country is positively related to the adoption of AAOIFIs.

**H2b:** The use of the English language in a country is positively related to the adoption of the AAOIFIs.

### ***Level of education***

Culture is influenced by the level of education of the population (Cooke & Wallace, 1990; Zeghal & Mhedhbi, 2006). The cultural dimension has been studied also in the context of the IFRS. Researchers show that a basic education system prevents the development of complex accounting methods due to the lack of technical skills and experience to apply the developed and complex standards (Doopnik et al., 1995; Abulkasem et al. 2017).

Similarly, Zeghal and Mhedhbi (2006) confirmed that the level of education and scientific research is the main reason for the adoption of the IFRS in developed economies.

Shima and Yang (2012) showed that countries with more sophisticated education systems find the transition to the IFRS less expensive. In this



sense, Judge et al. (2010) added that the more the population is educated through the general literacy rate, the more the country is likely to adopt the IFRS.

With the AAOIFI standards, Islamic banking education is a significant determinant of banking development (Kaabachi & Obeid, 2016; Tarman & Chigisheva, 2017). But Islamic banking is a new field facing problem of qualified professionals (Abidin, Haseeb, Azam & Islam, 2015; Abidina, Haseeb, & Jantan, 2016). Besides, this new accounting system requires a specific teaching methodology (Mohammed, 2018).

In order to deal with the relationship between the level of education and the decision to adopt in the specific context of the Islamic banking sector, we assumed that:

**H3:** The level of education in a country is positively associated with the adoption of the AAOIFI.

## **Environmental Factors**

The institutional environment of a country generates formal and informal constraints (Bin Idrees et al., 2021). This institutional constraints need the establishment of an organizational framework to structure political, economic and social interactions (Powell & DiMaggio, 1991).

In our article, the formal constraints represented in the factors of governance and the informal constraints represented in the social pressures exerted by the legal, political and economic factors.

## ***Legal origins***

The international accounting literature shows the impact of the legal origin of the country on accounting harmonization.

In this context, Levine (1999) proved that the legal origin and the legal system adopted has an impact on the financial systems of the countries and the development of the financial sector (Becks et al., 2004).

Thus, Mita and Husnah (2016) affirmed that the legal system affects the protection of investors and impact the adoption of the IFRS in developing countries (Bengtsson, 2021). Stulz and Williamson (2002) explained that the legal origin is the product of religious and cultural influences that have an impact on financial development.

In our context, the countries applying the Islamic banking system are countries with multiple legal origins. These origins are classified in common law for the British colonies and civil law for the French, German or Scandinavian colonies (La Porta et al., 1998). Some other countries have an Islamic legal origin relating to Sharia and others use mixed legal origins. So, we assumed that:

**H4:** Differences in a country's legal origins are significantly associated with the adoption of the AAOIFI.

Some countries base the legislation on detailed rules and rigid instructions. It is an inflexible system where change is difficult because the rules are based on formal laws resulting from costly legislation (Porta et al., 1998). Thus, Grassa and Gazdar (2014) found a negative relationship between the legal origin of civil law and the development of Islamic banking. So, we adopted this hypothesis:

**H4a:** The legal origin of civil law is negatively associated with the adoption of the AAOIFI.

On the other hand, common law countries are more flexible and evolve to respond to economic changes. Rules can be replaced by new guidelines (La porta et al., 1998). Previous studies have confirmed that countries with a common law legal system are more likely to adopt the IFRS (Zeghal & Mhedhbi, 2006; Zehri & Chouaibi, 2013) due to the flexibility of the system and the adaptation to change (Hail et al., 2010; Shima & Yang, 2012). So, we assumed that:

**H4b:** The legal origin of common law is positively associated with the adoption of the AAOIFI.

In addition, some countries apply Islamic law requiring the validation of transactions by the Koran and the Sunnah. Grassa and Gazdar (2014) found that those countries with this legal system have a highly developed financial system and are motivated to adopt the AAOIFI standards. The researchers added that the Islamic culture is a force leading to several institutional changes including the development of the financial system. For this, we assumed that:

**H4c:** The legal origin of Islamic law is positively associated with the adoption of the AAOIFI.

However, most of the countries studied have a mixed legal origin based on the legal system of common law or civil law and inspired by Islamic law. Grassa and Gazdar (2014) noted that countries with a mixed legal system between common law and Islamic law are characterized by a flexibility of the systems by integrating any modification of the law according to the evolution of socio- economic conditions (Habib, 2006).

However, countries adopting a mixed legal system between civil law and Islamic law are characterized by the rigidity of the legal system. This lack of adaptation of standards limits the development of financial systems (Beck et al., 2004). For this, we assumed that:

**H4d:** The legal origin mixing civil and Islamic law is negatively associated with the adoption of the AAOIFI.

**H4e:** The legal origin mixing common and Islamic law is positively associated with the adoption of the AAOIFI.

Grassa and Gazdar (2014) indicated that countries adopting a combined legal system based on civil law and common law had a less developed Islamic financial industry. Moreover, these countries had weak infrastructures for Islamic financial systems. So we assumed that:

**H4f:** The legal origin mixing common and civil law is negatively associated with the adoption of the AAOIFI.

Similarly, we can add the last hypothesis concerning countries with a mixed legal system based on common, civil and Islamic law. These countries

with a complicated legal system do not accept changes in methods and we assumed that:

**H4g:** The legal origin mixing common, civil and Islamic law is negatively associated with the adoption of the AAOIFI.

### ***Political freedom***

The adoption of accounting standards is the product of political action reflecting a balance embedded in a scientific logic (Barbu, 2005). Several studies have shown the relation between the political system and the adopted accounting system.

ElNaby et al. (2003) confirmed that political freedom is one of the main components of the political environment. In a democracy, accounting evolves. Thus, an unstable political situation can change the accounting systems of a country as in the case of the Iranian revolution in 1979 followed by many changes in the Iranian accounting system (Pourjalali & Meek, 1995).

In the context of AAOIFIs, we assumed that:

**H5:** A country's political freedom is positively associated with the adoption of the AAOIFI.

### ***Presence of National Shariah Council***

The Sharia Board is defined as the internal mechanism ensuring that Islamic financial and banking institution adheres to Sharia (Khalil & Taktak, 2020). Thus, the Sharia Board is a governance structure which promises compliance of banking transactions with Islamic law (Alam et al., 2022). Several studies have highlighted the importance of the National Shariah Board in all Islamic institutions to enhance their credibility with shareholders and all stakeholders (Chapra, 2009; Rammal & Parker 2012; Mervyn, 2014). Bahari and Baharudin (2016) added that the purpose of the council is to ensure the efficient functioning of the Islamic financial system, promote its integrity and Sharia compliance.

So, the national council acts as a governance variable pushing banks operating in the Islamic sector to adopt the AAOIFIs to ensure compliance

of their activities with Islamic law. It is a concretization of a coercive isomorphism presented previously by the Institutional Theory. For this, we assumed that:

**H6:** The presence of a National Shariah Council is positively associated with the adoption of the AAOIFI.

### ***Economic growth***

Accounting standards should correspond to macroeconomic programs allowing the achievement of national objectives (Solomons, 1983). So, economic development pushes accounting institutions to set standards increasing growth (Mueller, 1963).

Accounting is therefore a factor of economic development and conducive to economic growth (Peev & Mueller, 2012). Some researchers have highlighted the positive relationship between the IFRS and economic growth such as Zeghal and Mhedhbi (2006), Zehri and Chouaibi (2013) and Hassan et al. (2019). These research have shown that the adoption of the IFRS is done by countries with high quality reporting standards, strong institutions and high economic growth (Hail et al., 2010).

In the context of the AAOIFIs, studies have shown that a stable Islamic financial environment leads to the achievement of the objective of sustainable development and an improvement in economic growth (Hassan et al., 2019). Islamic accounting standards must also respect several societal values and environmental requirements (Shahwan & Hasan, 2013; Shamsudin & Mohammed, 2015). For this, the adoption of these standards generates economic development and social progress (Asutay, 2008). For this, we assumed that:

**H7:** The level of economic growth of a country is positively associated with the adoption of the AAOIFI.

## **DATA AND MODELS**

Islamic finance is practiced in emerging and developing economies (IFSB, 2015) exactly by more than 60 countries (Shabsigh et al., 2017). Countries localized in the MENA region and in Southeast Asia opt for Islamic banking and financial systems.

For this, the choice of the sample was justified by the fact that these countries had a high concentration of Islamic banks and adopted the system as an alternative to the conventional banking system.

We selected a sample containing 44 countries divided into two groups. The first group contained 26 countries adopting a strategy of convergence or the adoption of the AAOIFI while the second group contained 18 countries using either their local standards or the IFRS. Sample division is based according to the official website of the AAOIFI (2017) and similar scientific research.

Thus, Al-Sulaiti et al. (2018) compared the disclosure of AAOIFI accounting standards within Islamic banks by comparing between the countries adopting the standards obligatorily (Bahrain, Qatar, Oman, Sudan and Syria) and those which voluntarily adopted (Indonesia, Pakistan, Brunei, Egypt, Kuwait, Lebanon, Malaysia, Saudi Arabia, South Africa and United Arab Emirates). Similarly El-Halaby and Hussainey (2016) worked on the degree of compliance with the AAOIFI accounting standards in countries that fully adopted the AAOIFI in the MENA region (Bahrain, Yemen, Qatar, Syria, Palestine, Sudan, Oman and Jordan) and countries that hadn't adopted these standards.

Like these studies, we carried out a comparative study where the dependent variable took the value "1" if the country used Islamic norms (convergence strategy or adoption strategy), "0" otherwise (Damak & Ben Salem, 2014).

The study period spanned ten years, from 2007 to 2017. Data was collected manually from multiple sources such as Thomson Reuters Mena (Zawya). Next, we reviewed the latest editions available for the AAOIFI (AAOIFI 2014) which ranked countries that had adopted these standards. The variables relating to the culture and the origin of the legal system

were collected from the CIA FACTBOOK 2015 database. For the religion and the language of the country, we selected the religion practiced and the language spoken by the majority of the population. This information was supplemented by the publications of the Pew Research Center (2011).

Besides, the variables of legal origin were obtained from the CIA Global Factbook (2015), the variable relating to GDP was collected from the World Bank database and political Freedom was taken from the Freedom House database.

The list of countries in the two groups, divided by continent, is shown in Table 1.

**Table 1: Countries Adopting AAOIFI Standards (by Region)**

Countries adopting AAOIFI			Countries not adopting AAOIFI			
MENA	SUD EST	AFRIQUE	MENA	SUD EST	AFRIQUE	Europe
Bahrain	Malaise	Nigeria	Algeria	Thailand	South Africa	Albania
Kuwait	Bangladesh	Zambia	Egypt	Seychelles	Senegal	Bosnia Herzegovina
United Arabe emirates	Brunei Darussalam	Gambia	Morocco	Iran	Tanzania	
Jordan	Indonesia		Tunisia		Rwanda	
Mauritania	Afghanistan		Saudi Arabia		Benin	
Lebanon	Pakistan				Niger	
Sudan	Philippines				Kenya	
Gaza	Kirghizstan				Guinea	
Oman	Srilanka					
Qatar	Turkey					
Yemen	Iraq					
	Maldives					

*Source: The AAOIFI Web site*

The statistical model retained is that of logistic regression which is frequently used in the Positive Accounting Theory. This model is considered the best solution to address accounting choices like the decision of adoption of accounting standards (Fields et al., 2001; Missonier, 2004).

This paper studied the effect of the factors influencing the adoption of the AAOIFI. Since our dependent variable is a dichotomous variable taking the value of 1 or 0, we used a logistic regression analysis model.

$$\begin{aligned} \log (P_i / (1-P_i)) = & \\ = & \alpha_0 + \alpha_1 P_i B_i + \alpha_2 I S L_i + \alpha_3 A R B_i + \alpha_4 E N G_i + \alpha_5 A L P H M_i \\ & + \alpha_6 C O M L_i + \alpha_7 C I V L V_i + \alpha_8 P I_i + \alpha_9 S H A L_i + \\ & \alpha_{10} M C V S_i + \alpha_{11} M C S_i + \alpha_{12} M V S_i + \alpha_{13} M C V_i + \alpha_{14} I L P_i \\ & + \alpha_{15} E C C N_i + \varepsilon \end{aligned}$$

We present in Table 2 all the variables of the study and finish with the presentation of the empirical model.

**Table 2: Definitions and Measurements of Variables**

Variables	Label	Operational definition
<b>Adoption</b>	Log (Pi/ (1- Pi))	Variable = 1 if the country fully or partially adopts AAOIFI and = 0 otherwise
<b>Religion</b>	ISL	Variable measuring the rate of Muslims in the country: Number of Muslim people/ Total population
<b>Arabic language</b>	ARB	Variable = 1 if the official language in the country is Arabic and = 0 otherwise
<b>English language</b>	ENG	Variable = 1 if the official language in the country is English and = 0 otherwise
<b>Level of education</b>	ALPH	Variable measuring the general literacy rate in the country : Number of literate people/ Total population
<b>Civil law</b>	CIVL	Variable = 1 if the country has a legal civil law origin and = 0 otherwise
<b>Common law</b>	COML	Variable = 1 if the country has a legal common law origin and = 0 otherwise
<b>Islamic law</b>	SHAL	Variable = 1 if the country has a legal Shariah origin and = 0 otherwise
<b>Mixed legal origin of civil and Islamic law</b>	MVS	Variable =1 if the country has a mixed civil and Islamic law and = 0 otherwise
<b>Mixed legal origin of common and Islamic law</b>	MCS	Variable =1 if the country has a mixed common and Shariah law and = 0 otherwise
<b>Mixed legal origin of civil and common law</b>	MCV	Variable =1 if the country has a Mixed common civil law and = 0 otherwise



<b>Mixed legal origin of common, civil and Islamic law</b>	MCVS	Variable =1 if the country has a mixed common, civil and Shariah law and = 0 otherwise
<b>Political freedom</b>	ILP	Variable measuring the score of political freedom in the country: rating of 1 to 7, with 1 representing the great degree of freedom and 7 the small degree of Freedom.
<b>National Shariah board</b>	ECCN	Variable =1 if national Shariah board exist in the country and = 0 otherwise
<b>Economic Growth</b>	PIB	Variable measuring annual average of growth rate per person : Gross Domestic Product/ Total population

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## **EMPIRICAL RESULTS**

Our research was based on a hypothetico-deductive methodology where we carry out a comparative analysis between two groups of countries. The empirical model was a logistic regression using a binary variable equal to 1 if the country adopted a strategy of adoption or convergence to the AAOIFIs and 0 otherwise.

Hassan and Zhang (2021) showed that logistic regression is used when the dependent variable is binary. Logit is a nonparametric method requiring a linear relationship between the independent and dependent variables.

In order to test the robustness of our results, we used the neural network method to test the relation between the adoption of the AAOIFI and cultural, institutional, economic and political factors.

Hassan and Zhang (2021) added that artificial neural networks (ANN) become a good statistical modeling technique.

This method of artificial intelligence and machine learning algorithm (Gross & Vozikis, 2000) is more reliable than logistic regression analysis (Atiya, 2001).

## Descriptive Statistics

Table 3 present descriptive statistics for quantitative variables for each group of countries separately.

**Table 3: Descriptive Statistics of Independent Variables**

Variable	Countries adopting AAOIFI (G1)					Countries not adopting AAOIFI (G2)				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
ISL	287	34.5331	14.98804	0	61	198	45.77778	21.02817	7	79
ALPH	287	83.1231	17.58291	50.1	99.5	198	74.21667	22.84023	19.1	98.5
ILP	287	76.85854	28.81228	2.7	100	198	58.38586	40.18225	1.6	99.4
PIB	286	3.9209	4.402721	-16.678	21.39	198	2.984739	3.991793	-21.594	25.263

Table 3 presents the descriptive statistics for the quantitative variables for the two group of countries.

We found that the average PIB in the G1 was higher than in G2 countries. But the percentage of Muslims was higher in the G2 with an average of 45% against 34% in the G1. The level of education was higher in countries adopting the AAOIFI (83%) than in countries not adopting (74%). In addition, the average political freedom score was equal to 58% in the G2 countries showing that the countries of this group were less democratic than those in group 1 (76%).

## Bivariate Analysis

If the distribution of a variable follows the normal law, the student's test is the appropriate technique to compare the means between two groups of countries. Otherwise, the Mann-Whitney test is the most appropriate.

Thus, the non-parametric Mann-Whitney test was used to compare the means of PIB, ISL, ALPH and ILP while the other variables were studied according to the t-test.

**Table 4: Test of normality Kolmogorov-Smirnov**

	<b>Null hypothesis</b>	<b>Sig.</b>	<b>Decision</b>
1	The ISL distribution is normal with a mean of 69.32 and a standard deviation of 35.08	0.000	Reject the null hypothesis
2	The distribution of ALPH is normal with a mean of 79.49 and a standard deviation of 20.35	0.000	Reject the null hypothesis
3	The distribution of ILP is normal with a mean of 39.12 and a standard deviation of 18.53	0.000	Reject the null hypothesis
4	The distribution of PIB is normal with an average of 3.38 and a standard deviation of 3.98	0.000	Reject the null hypothesis

Significance levels is 5%

As shown in Table 4, we rejected the hypothesis of normality of the variables (GDP, ISL, ALPH, and ILP) at the 1% significance level. Therefore, we used the Mann-Whitney U test to compare the medians of the nonparametric data.

**Table 5: Mann-Whitney U test**

	<b>Z</b>	<b>SIG</b>
<b>ISL</b>	3,693	0.002
<b>ALPHA</b>	4,889	0
<b>ILP</b>	-5,851	0
<b>PIB</b>	3,827	0.001

In light of the results of this test, there was a significantly positive difference between the levels of economic growth. This result showed that the PIB of G1 was higher than G2. The test also revealed that the level of education (ALPH) and the percentage of Muslims (ISL) were higher in countries adopting AAOIFI. Consequently, the level of education was more developed and the Muslim population was larger in these countries.

On the other hand, the result of the variable (ILP) presented a significantly negative difference, which meant that political freedom was more developed in countries that did not adopt the AAOIFI standards.

### Multivariate Analysis

We present in Table 6 the results of the multivariate analysis.

**Table 6: The Results of the Logistic Regression**

	<b>Coefficient</b>	<b>significance P&gt; z </b>
<b>Const.</b>	-16.647	0.000***
<b>ISL</b>	0.109	0.000***
<b>ENG</b>	-2.624	0.035**
<b>ARB</b>	5.884	0.000***
<b>ALPH</b>	0.123	0.000***
<b>CIVL</b>	-8.539	0.001***
<b>COML</b>	3.075	0.002***
<b>SHAL</b>	-14.567	0.000***
<b>MVS</b>	-9.715	0.000***
<b>MCS</b>	2.470	0.043**
<b>MCV</b>	-2.626	0.134
<b>MCVS</b>	-8.290	0.000***
<b>ILP</b>	0.079	0.014**
<b>ECCN</b>	0.895	0.362
<b>PIB</b>	0.177	0.006***

Prob>chi2 = 0.0000  
R2 = 0.7184

Table 6 presents the results of the logistic regression (RL). First, we found that all the cultural variables were significant at the 1% level, with the exception of the English language, which was significant at the other 5%, which proved the significant impact of these variables on the adoption of then AAOIFI accounting standards.

Indeed, the religion variable (ISL) had a significant and positive coefficient and supported H1. So, Islamic religion is a belief system integrating politics, economics and culture (Sarea & Hanefah, 2013). The compliance with requirements of Islam encourages countries to adopt the AAOIFI in order to increase the confidence of investors in the reliability of the banking system (Napier, 2009; Sarea & Hanefah, 2013; Alqaraleh et al., 2020).

Similarly, the Arabic language (ARB) has a significant and positive coefficient showing that countries with an official Arabic language adopted more AAOIFI standards because these standards present their main version in Arabic. H2a. was therefore supported, which is consistent with the results of Evans (2004), Zeff (2007) and Bin Idrees et al. (2021) who carried out the same research in the context of the IFRS.

On the other hand, the English language (ENG) presented a significant but negative coefficient, which did not support hypothesis H2b. This result is related to the composition of our sample composed mainly of Arab countries in the MENA region, Southeast Asia and all countries with Arabic as their mother tongue and confirmed that language is a cultural barrier to the adoption of international standards because translation is not an easy process (Abulkasem et al., 2017; Zehri & Chouaibi, 2013; Damak & Ben Salem, 2014).

In addition, the cultural variable relating to the level of education (ALPH) presented a significant and positive coefficient showing that countries with a good level of education adopted the accounting standards of the the AAOIFI more. So, the adoption of complex standards requires a good professional level, specific education and developed skills. Our third hypothesis H3 was therefore supported and is compatible with the research of Kaabachi and Obeid (2016), Tarman (2010) and Tarman and Shigisheva (2017).

Furthermore, as in Table 6 all the variables relating to the legal origin of the countries were significant, except those concerning countries with a mixed source between civil and common law.

For civil law countries, the coefficient was significantly negative (-8.539). It showed that this legal origin does not encourage the adoption of the AAOIFIs and supported H4a. Thus, the decision to adopt a standards is costly because the accounting rules are based on laws and any change must take place in a specific legal context (Grassa & Gazdar, 2014; Habib, 2006).

On the other hand, for common law countries the coefficient was significantly positive (3.075). This result confirmed H4b and proved that these countries are more likely to adopt the AAOIFI because of the flexibility

of their legal systems and their capacity to accept new accounting standards (Hail et al., 2010; Shima & Yang, 2012, Grassa & Gazdar, 2014).

The variable relating to the Islamic legal system (SHAL), presented a significant and negative coefficient (-14.567) highlighting countries with an Islamic legal system had a negative effect on the adoption of the AAOIFI, therefore H4c. was not supported. This counter-intuitive result is not coherent with previous research (Grassa and Saudi Arabia).

Moreover, the statistical results confirmed that the mixed legal systems of civil and Islamic law (MVS), as well as the mixed legal system of common, civil and Islamic law (MCVS) were significant (1%) with a negative coefficient (-9.715 and -8.290). These results supported the H4d and H4f.

Thus, countries with mixed legal systems between civil law and Islamic law are characterized by rigidity limits the development of financial systems (Beck et al., 2004; Grassa & Gazdar, 2014). Countries adopting mixed legal systems of common, civil and Islamic law do not have developed infrastructures in Islamic finance and therefore do not adopt the AAOIFI (Grassa & Gazdar, 2014). Moreover, the statistical results confirmed that the mixed legal system of common and Islamic law (MCS) was significantly positive (2.47). This result supported H4e and the results of Grassa and Gazdar (2014) showed that these countries were characterized by flexible legal systems and facilitate adaptation to changing socio-economic conditions (Habib, 2006).

Political freedom (ILP) presented a significant and positive coefficient (0.079). This result showed that the political environment promoted the adoption of the AAOIFI and supported H5. The political freedom impacted the change of accounting systems as in the case of Iran which changed its accounting system just after the Iranian revolution of 1979 and also the case of Tunisia adopting the IFRS in 2014 but the revolution of 2011 delayed this project due to the political instability of the country (Ben Slama & Klibi, 2017).

In addition, PIB was statically significant at the 1% level, with a positive coefficient (0.177). So, countries with high levels of economic

growth are more likely to adopt the AAOIFI. This result supported the hypothesis H6 and was consistent with the results of previous studies (Asutay, 2008; Hail et al., 2010; Hassan et al., 2019).

However, the ECCN variable relating to the presence of the national Shariah council was not significant. This result did not support hypothesis H6 and can be explained by the optional presence of this council in Islamic banks as the case of Saudi Arabia which did not oblige the Islamic bank to set up a Sharia council.

## **Robustness Tests**

In order to strengthen the results, we completed our analysis by the method of artificial neural networks (RNA) presented in Table 7.

Several researchers have considered this method as an alternative to traditional linear methods characterized by many methodological constraints and biases (Sharma & Chandra, 2020).

The neural network results showed that all variables were significant since the normalized significance threshold is  $>30$ . This result meant that all variables were relevant in explaining the research model.

According to Table 7, the variable relating to the level of education (ALPH) and political freedom (ILP) were the most influencing variables in the adoption of the AAOIFI accounting standards. These variables presented two significance thresholds equal to 100% and 93% respectively. All the other variables were also significant with a threshold varying between 31% and 88%.

Besides, comparing the two models, we saw the superiority of the RNA over the RL because the RNA model is a nonlinear model. The neural model showed that the ECCN variable was positive on the order of 31.5% and supported our hypothesis H6 which was rejected by the logistic model. Thus, the presence of the National Shariah Board encouraged the adoption of the AAOIFI accounting standards. This result was consistent with previous research of Grassa and Gazdar (2014), Bahari and Baharudin (2016), Rammal and Parker (2012) showing that the National Shariah

Council aims to enhance the credibility of banks and to ensure the efficient compliance of Islamic financial system to Sharia’s rules.

Similarly, the MCV variable relating to the mixed legal system between civil and common law presented a significant and negative coefficient with high significance threshold (68%). This result supported H4f and was consistent with the previous literature proving that countries adopting a mixed system between civil and common law don’t encourage the adoption of new standards because this decision is costly and need changes in laws (Laporta et al., 2008).

These countries did not have a developed Islamic financial sector (Grassa & Gazdar, 2014) and did not adopt the AAOIFI accounting standards. So the hypothesis previously rejected by the logistic regression was supported.

**Table 7: Comparison between RL and RNA Results**

The explanatory variables	Logistic Regression Method		Neuronal network method	
	Coefficient	P>Z	SIGNE	Standardized Importance
ISL	0.109	0.000***	+	57.7%
ENG	-2.624	0.035**	+	46.2%ARB
ARB	5.884	0.000***	+	74.3%
ALPH	0.123	0.000***	+	100%
CIVL	-8.539	0.001***	-	36.9%
COML	3.075	0.002***	+	67%
SHAL	-14.567	0.000***	+	88.1%
MVS	-9.715	0.000***	-	42.7%
MCS	2.470	0.043**	+	45.8%
MCV	-2.626	0.134	-	68.5%
MCVS	-8.290	0.000***	-	42.4%
ILP	0.793	0.014**	+	93.8%
ECCN	0.895	0.362	+	31.5%
PIB	0.177	0.006***	+	62%



Finally, we present in Table 8 below, the results presented by the ANN model and the RL model at the level of the classification of the sample.

According to the logistic model, we noted that the sample classification rate was 88% for the group of countries not adopting the AAOIFI (Group 2) and 92% for countries adopting the AAOIFI (Group 1). Unlike the result of classification according to the RL method, the RNA method had a good classification rate equal to 100% for the two groups of samples.

**Table 8: Classification of the sample**

RL			RNA		
Adoption		Percentage correct	Adoption		Percentage correct
0	1		0	1	
176	22	88,9	145	0	100
21	265	92,7	0	191	100

By comparing the RL and ARN methods, we noted that the signs of the coefficients were identical in the two models, but the model ARN gave a better significance than the RL.

This superiority of the neuron model is explained by the fact that this model is a better alternative to traditional linear methods which have many methodological constraints and biases (Slim, 2004).

## **CONCLUSION AND IMPLICATIONS**

The main objective of this study was to identify the macroeconomic factors influencing the adoption of the AAOIFI standards. Thus, we examined the impact of cultural and environmental factors using a sample of 44 countries.

In order to achieve our objective, we carried out a comparative study between two groups of countries. The first group included countries adopting a strategy of convergence or adoption of the AAOIFIs and those not adopting these standards. As our predictions, we found that cultural and environmental factors severely influenced the adoption of Islamic accounting standards.

Our study revealed different incremental contributions to the literature of the AAOIFI. First, the result indicated that all macroeconomic factors played a key role in the adoption of the AAOIFI standards including the culture of countries, the origin of the legal system, economic growth and the degree of political freedom.

Second, the study contributes to an insufficient literature on this subject since the majority of similar studies have focused on the factors influencing countries' compliance with the AAOIFI standards or the influence of a single factor such as culture on the adoption of these standards. Thirdly, this study brings an empirical interest which consists in a comparison between two logistic regression models and a neural model. We noted the superiority of the neural network model which allowed us to highlight two major factors influencing adoption, namely the level of education and political freedom.

Furthermore, this research offers practical and valuable evidence for academics, banks and even regulators. It contributes to the literature at the academic level by revealing the factors affecting the adoption of international Islamic norms and highlighting the main obstacles.

In addition to its scientific and theoretical value, this document is useful for various professionals. It helps national accounting policy makers better understand the determinants of adopting the AAOIFI standards.

Finally, through this analysis, this document informs the AAOIFI of the results of the harmonization's efforts. This harmonization becomes a significant challenge because of the problems of heterogeneity between Islamic accounting standards and several generally accepted accounting principles (Jaber, 2017).

However, this study is limited to a small sample not exceeding 44 countries belonging to the MENA region and Southeast Asia and we found problems of unavailability of some data.

Despite these limitations, we believe that our study makes a significant contribution to the existing literature. Furthermore, future research should pay more attention to the impact of factors relating to investor protection, corruption and to the economic consequences of these factors on the decision to adopt the AAOIFI accounting standards.

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