



## International Journal of Accounting, Auditing and Performance Evaluation

ISSN online: 1740-8016 - ISSN print: 1740-8008 https://www.inderscience.com/ijaape

## Determinants of national IFRS adoption: evidence from the Middle East and North Africa region

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DOI: 10.1504/IJAAPE.2024.10061064

### **Article History:**

1arch 2022
September 2022
September 2022
December 2023

# Determinants of national IFRS adoption: evidence from the Middle East and North Africa region

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**Abstract:** This paper aims to examine the determinants of the adoption of international of financial reporting standards (IFRS) in 14 Middle Eastern and North African (MENA) countries. Using a panel data from the period 2005 to 2020 and the three forms of isomorphic pressures (coercive, mimetic and normative isomorphism), and employing the Student-t test of difference in means between two samples, binary and ordinal logistic regression, we find that total external debt, openness of the economy to the outside world and educational level are significant in their positive association with national IFRS adoption for the full sample. However, these relationships are more significant in Middle Eastern countries than those in North African countries and they are more significant in MENA oil-exporting countries than those in other MENA non-oil-exporting countries. The findings have several practical implications for regulators and policymakers.

**Keywords:** IFRS adoption; MENA region; institutional theory; coercive isomorphism; mimetic isomorphism; normative isomorphism.

**Reference** to this paper should be made as follows: Elhamma, A. (2024) 'Determinants of national IFRS adoption: evidence from the Middle East and North Africa region', *Int. J. Accounting, Auditing and Performance Evaluation*, Vol. 20, Nos. 1/2, pp.69–90.

**Biographical notes:** Azzouz Elhamma is a Professor of Accounting & Finance at the National School of Business and Management (ENCG), Ibn Tofail University-Kenitra, Morocco. His research interests include international accounting, management control and risk management. His work has been published in several academic journals. He has taught courses in "International Financial Reporting Standards-IFRS", "international accounting" and "advanced management control".

### 1 Introduction

Certainly, since the European Union's decision in 2002 to require listed companies within the EU to adopt International of Financial Reporting Standards (IFRS) for their consolidated accounts from 2005, the national adoption of IFRS as developed and issued by the International Accounting Standards Board (IASB) has witnessed a formidable

trend (Bengtsson, 2021). According to a report of IFRS foundation in 2018,144 or 87% of jurisdictions in the world require IFRS for all or most companies (IFRS foundation, 2018). In this context, and to better understand these international accounting standards, a large body of studies has examined several topics such as the impact of IFRS adoption on financial reporting quality (Bodle et al., 2016; Klish et al., 2022; etc.), its impact on foreign direct investment (Gordon et al., 2012; Lungu et al., 2017; etc.), audit and regulatory compliance (Chen and Zhang, 2010; Alzeban, 2018; Borgi and Mnif, 2022; etc.), etc.

Concerning the IFRS adoption determinants, the research works are relatively rare. Judge et al. (2010) indicated: "while there has been considerable research on the effects of IFRS adoption, there has been relatively little systematic study as to the antecedents of IFRS adoption". The determinants of IFRS adoption are studied especially at the firm level, however, research studies at the jurisdictional (or national) level are almost absents. In a literature review, Bengtsson (2021) demonstrate that "it is important to separately examine IFRS adoption at the country level as opposed to the firm level". Bengtsson (2021) identified three main categories of national IFRS adoption determinants studied in the literature. First, the socio-legal traditions composed especially by the governance (Alon and Dwyer, 2014; Mita and Husnah, 2016; etc.), legal system (Hope et al., 2006; Shima and Yang, 2012; etc.), education (Judge et al., 2010; Zehri and Chouaibi, 2013; etc.) and culture (Shima and Yang, 2012; El-Helaly et al., 2020; etc.). Second, the economic and financing needs regroup the access to foreign capital and economic openness (Hope et al., 2006; Zeghal and Mhedhbi, 2006; etc.), economic growth (Shima and Yang, 2012; Zehri and Chouaibi, 2013; etc.) and existence of financial market (Shima and Yang, 2012; Mita and Husnah, 2016; etc.). Third, the intra-organisational dynamics includes the lender/donor relations (Hassan, 2008; Judge et al., 2010; etc.) and the membership network of national accounting standard-setters in the international arena (Saudagaran and Diga, 2000; Khlif et al., 2020; etc.). However, this type of research remains very rare in the Middle East and North Africa (MENA) region.

MENA is a strategic area in the world and it is considered an important source of global economic resources. It includes several countries that have vast reserves of oil and natural gas. According to the Oil and Gas Journal (2009), the MENA region has 60% of the world's oil reserves and 45% of the world's natural gas reserves. In the field of accounting, some countries of this region have adopted IFRS as issued by the International Accounting Standards Board (IASB) (Jordan, GCC countries, Lebanon, Turkey, etc.) while others countries have adapted their local accounting to IFRS standards (the New Financial and Accounting Standards in Tunisia, etc.). In this context, in this paper we will try to answer the following question: what are the main factors influencing the adoption of IFRS as issued by the IASB by the MENA countries at a national level?

To respond to the research problem in this paper, we will examine the main determinants of the national IFRS adoption in 14 countries of the MENA region (5 North African countries and 9 Middle Eastern countries). According to some previous studies (Touran, 2005; Hassan, 2008; Judge et al., 2010; Barbu and Baker, 2010; Ritsumeikan, 2011; Ben Othman and Kossentini (2015); Boolaky et al., 2020; etc.), we have chosen to

use the neo-institutional theory. This theory was largely developed by DiMaggio and Powell (1983) in the early 1980s. According to these two researchers, the institutional pressures, called isomorphism, arise from three sources namely coercive, mimetic and normative isomorphism. Therefore, based on neo-institutional theory, the aim of this research is to highlight whether national IFRS adoption derives from the coercive, normative and mimetic isomorphism in 14 MENA countries.

A presentation of some characteristics of the MENA region and the main determinants of the national IFRS adoption in this area (\$1), a highlighting of the neo-institutional theory and formulation of our hypotheses (\$2), and a presentation of our methodological choices (\$3) are necessary to conduct a statistical analysis and present the main results obtained (\$4).

#### 2 The MENA region: some characteristics and national IFRS adoption

In this section, we present firstly some economic and demographic characteristics of the MENA region (2.1), and secondly, we expose the main determinants of the national IFRS adoption in this area (2.2).

#### 2.1 Some economic and demographic characteristics of the MENA region

MENA refers to a large region that includes the countries of the North Africa and Middle East. Unfortunately, the MENA region and its constituent countries are different according to the international organisations. Table 1 summarises these countries according to four organisations.

United Nations Children's Fund (UNICEF)	Algeria, Bahrain, Djibouti, Egypt, Iran (Islamic Republic of), Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, State of Palestine, Sudan, Syrian Arab Republic, Tunisia, UAE, Yemen
World Bank	Six Gulf Cooperation Council (GCC) countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and UAE), and 15 other countries or territories: Algeria, Djibouti, the Arab Republic of Egypt, Iraq, the Islamic Republic of Iran, Israel, Jordan, Lebanon, Libya, Malta, Morocco, the Republic of Yemen, the Syrian Arab Republic, Tunisia, and West Bank and Gaza
Organization for Economic Cooperation and Development (OECD)	Algeria, Bahrain, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestinian Authority, Qatar, Saudi Arabia, Syria, Tunisia, UAE and Yemen
Food and Agriculture Organization (FAO)	Algeria, Bahrain, Djibouti, Egypt, Iran, Israel, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Syria, Tunisia, UAE and Yemen

Table 1	The MENA region according to the UNIC	EF, World Bank, OECD and FAO
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Source: Website of UNICEF, WB, OECD and FAO

To have a general idea of this region, we will present its principal demographic (population/Table 2) and economic (Gross Domestic Product/ Table 3) characteristics.

	1980	2000	2020
MENA region according to the World Bank	184,628,581	315,326,781	464,554,123
Mauritania	1,540,644	2,630,217	4,649,660
Pakistan	78,054,346	142,343,583	220,892,331
Turkey	43,975,972	63,240,196	84,339,067
Sudan	14,507,466	27,275,019	43,849,269
Somalia	6,281,138	8,872,250	15,893,219
Afghanistan	13,356,500	20,779,957	38,928,341
Total	342,344,647	580,468,003	873,106,010
World	4,432,963,650	6,114,324,040	7,761,620,150
% in the World	7.72%	9.49%	11.25%

#### Table 2Population in MENA region

Source: Website of the World Bank

The MENA region's population is estimated in 2020 at 873 million, or 11.25% of the world's population. This rate was 9.49% and 7.72% respectively in 2000 and 1980. The population of the MENA region has increased in 2020 by 155% compared to that in 1980. This rate of increase is only 75% for the world. These statistics show clearly a superiority regarding the rapid demographic increase in the MENA region compared to the world trends.

	1980	2000	2020
MENA (World Bank)	594,416.88	1,046,434.25	3,026,265.07
Mauritania	1,047.92	1,779.52	7,913.68
Pakistan	23,654.44	82,017.74	262,610
Turkey	68,789.28	274,302.95	719,954.82
Sudan	7,459.83	12,257.41	21,329.10
Somalia	603.59	917.04	4,988.44
Afghanistan	3,641.72	4,055.17 (in 2002)	20,116.13
Total	699,613.66	1,421,764.08	4,063,177.24
World	11,305,288.27	34,178,588.78	84,679,924.81
% in the World	6.18%	4.16%	4.8%

**Table 3**GDP in MENA region (current USD) (millions)

Source: Website of the World Bank

The GDP in the MENA region reached 4.06 billion USD in 2020, which represents 4.8% of the world's GDP. This rate was 4.16% and 6.18% respectively in 2000 and 1980. The GDP in MENA region in 2020 increased by 481% compared to that in 1980, then this variation rate is 649% for the world. The GDP in the MENA region increased less rapidly than that in the world.

#### 2.2 Determinants of national IFRS adoption in the MENA region

In the last years, some research works have examined the IFRS adoption at the national level such as Becker et al. (2018) in USA; Nobes and Zeff (2016) in Canada, Japan and Switzerland, etc.). However, in the MENA region this type of researches is very rare.

Hassan (2008), based on in-depth interviews and an analysis of documents, and by using the institutional theory of coercive, mimic and normative pressures, examined the development of national accounting standards in Egypt. The author found that the adoption of Egyptian Accounting Standards (EAS) similar to international accounting standards (IAS) is affected especially by the political philosophy of the state, the motivations of regulators and the processes of the accountancy profession. In Iraq, Hassan et al. (2014) analysed the factors that have influenced the IFRS adoption decision. By using the three institutional isomorphic, the authors found that the IFRS adoption results from coercive pressure generated by international accoust as the World Bank (WB) and the International Monetary Fund (IMF). The Normative pressure arise from the membership of the International Federation of Accountants (IFAC) and the Asian-Oceanian Standard-Setters Group (AOSSG). The mimetic pressures derive especially from the desire to attract foreign direct investment (FDI), multinational corporations, etc.

In the Jordanian context, Tahat et al. (2018), based on a survey of the perceptions of 306 participants and 20 interviewees, examined the institutional factors affecting the development of accounting practices in this country. The main results of this research demonstrate that the national IFRS adoption is influenced by the government of Jordan, pressures from international donors and large economic organisations, education and training/development, and the efforts to attract FDI and getting access into the international fund and trade. In the same country, Al-Htaybat (2018) investigated the reasons as to why IFRS were adopted at the national level. Based on semi-structured interviews and Stones' strong structuration, the researcher demonstrated that the external structure that cause the IFRS adoption is the Gulf War and the internal structures are the need to adopt new regulation in order to protect and support the Jordanian economy and attract FDI. In UAE, and based on data collected from a survey with professionals and managers of four Islamic banks, Sharairi (2018) examined the factors that affect the IFRS adoption by Islamic banks in this country. The author found that "factors, such as religion, culture and local investors, may have limited influence on the current adoption of accounting standards in the Islamic banks".

Recently, Boolaky et al. (2018) examined the impact of economic, political, legal and cultural institutions on the level of the IFRS adoption in four economies in the MENA region (Egypt, Jordan, Libya and UAE). They found that three MENA countries (Egypt, Jordan and UAE) "could be placed on a level playing field with their principal trading partners (the US, the UK, Germany and Italy) given the formers' business environments, methods of raising finance and levels of professional accounting practices". More recently, in the North African context, Khlif et al. (2020) examined the factors affecting the national IFRS adoption in three countries (Algeria, Morocco, and Tunisia). These authors found thet algeria has higher IFRS convergences than Morocco and Tunisia. This result was explained by the authors by three factors. First, the importance of foreign investors from Western countries. Second, the dominant position of the Big-4 international audit firms. Third, the Algeria's strong commercial relationship with the European Union.

According to this literature presentation, we can note that the all of these research works are done on only one or a few MENA countries (Hassan, 2008; Hassan et al., 2014; Sharairi, 2018; Boolaky et al., 2018; Khlif et al., 2020), but unfortunately we did not find any study done on all or most countries of the MENA region. This situation legitimises the present research, which covers almost all countries of the MENA region (14 countries).

## 3 Literature review and formulation of hypotheses

DiMaggio and Powell (1983) demonstrated that institutional pressures drive similar practices and norms such as the national IFRS adoption. In this context, Judge et al. (2010) found empirically "relatively robust support for the institutional perspective on the adoption of IFRS" (p.169). These institutional pressures arise from three isomorphic pressures, namely coercive isomorphism (2.1), mimetic isomorphism (2.2) and normative isomorphism (2.3).

## 3.1 Coercive isomorphism

Coercive isomorphism "results from both formal and informal pressures exerted on organisations by other organisations upon which they are dependent and by cultural expectations in the society within which organisations function" (DiMaggio and Powell, 1983, p.150). According to DiMaggio and Powell (1991), coercive isomorphism comes mainly from financial and technical aid. In this situation, international financial institutions (IFIs) such as the WB and the IMF may exert pressure on developing countries to adopt several reforms to be eligible for funding (Rodrigues and Craig, 2007). Undoubtedly, the adoption of IFRS standards is considered as one of these required reforms (Chua and Taylor, 2008).

Several researchers such as Mir and Rahaman (2005), Hassan (2008), Irvine (2008), Hassan et al. (2014) and Boolaky et al. (2020) have shown that the IFIs such as the WB and the IMF have a coercive power to press developing countries for the adoption of IFRS as issued by the IASB or the development of national accounting standards based on IFRS. In Bangladesh, Mir and Rahaman (2005) demonstrated that the decision of IFRS adoption was the result of the pressure exerted by key international donor/lending institutions on the Bangladeshi Government and professional accounting bodies. This result was confirmed three years later in the Egyptian context. Hassan (2008) found that external coercive pressures from foreign aid provided by the IMF and the WB were influential in Egypt's IFRS adoption. In the same sense, Judge et al. (2010) examined the relevance of isomorphic pressures for a sample of 132 developing, transitional and developed economies. They found that the foreign aid is a significantly coercive predictor of a country's decision to adopt IFRS. In emerging economies, Ritsumeikan (2011) found also a significant association for coercive isomorphism.

Using data from 71 countries, Alon and Dwyer (2014) found that countries with poor governing structures and lower level of economic development are more likely to adopt IFRS earlier with the aim of researching legitimacy and resources from IFIs such as the WB and the IMF. In the same sense, Hassan et al. (2014) demonstrated in the Iraqi context, that the decision to adopt IFRS resulted especially from pressures from the WB and the IMF. Ben Othman and Kossentini (2015), by using the neo-institutional theory,

examined the isomorphic pressures for a sample of 50 emerging economies. They found that the coercive isomorphism, measured by the foreign aid and the use of ROSC reports, is positively associated with the country's IFRS adoption. Recently, Tahat et al. (2018) showed in the Jordanian context that pressure from international donors has pushed Jordan to adopt IFRS at the national level. More recently, Boolaky et al. (2020) examined the institutional drivers of the national IFRS adoption in 54 African countries. They found a significant impact of ROSC (AA) on the national IFRS adoption. We can therefore formulate this first hypothesis.

*H1. There is a positive effect of external debt on national IFRS adoption in the MENA region.* 

#### 3.2 Mimetic isomorphism

DiMaggio and Powell (1983, p. 152) explained that mimetic isomorphism arises because "organisations tend to model themselves after similar organisations in their field that they perceive to be more legitimate or successful". In this context, Touron (2005) found that the US GAAP adoption by large French companies in the 1970s was due especially to the mimetic pressures in order to align with the global market trend. Among the mimetic pressures, we find the opening of the economy. Cooke and Wallace (1990) demonstrated that countries with opened economies are more exposed to international pressure from foreign partners and investors to adopt certain reforms such as IAS adoption. In the UAE, this result was confirmed by Irvine (2008). This researcher found that mimetic pressures arise from trade partners have contributed to IFRS adoption at the national level. In the same sense, Judge et al. (2010) found that the import penetration is a significantly mimetic predictive of the degree to which IFRS standards are adopted across 132 countries. Recently, and based on sample of 50 emerging economies, Ben Othman and Kossentini (2015) found that the mimetic isomorphism, measured by the trade freedom and the density of the Big Four auditing firm offices, is positively associated with the IFRS adoption decision. More recently, Khlif et al. (2020) found thet algeria has higher IFRS convergences than Morocco and Tunisia because it have a strong commercial relationship with the EU. This hypothesis can be formulated.

H2. There is a positive effect of openness of the economy to the outside world on national IFRS adoption in the MENA region.

#### 3.3 Normative isomorphism

The normative isomorphism is defined by DiMaggio and Powell (1983) as "the collective struggle of members of an occupation to define the conditions and methods of their work, to control the production of the future member professionals, and to establish a cognitive base and legitimisation for their occupational autonomy". In the accounting field, some researchers indicate that the professional accounting organisations (PAOs) are considered as an important source of isomorphism. The educational level is considered as a pillar for the development of all professions including accounting professions. Gernon et al. (1987) confirmed a positive relationship between the level of education and the competence of professional accountants. Undoubtedly, understanding and using IFRS standards requires a high level of education, competence and professional expertise. In the same sense, and based on a sample of 32 countries that have adopted IAS and 32 countries that have not

adopted IAS in 2003, Zeghal and Mhedhbi (2006) found that the education-level variable has a significant positive effect on the adoption of IAS. These results were confirmed by Judge et al. (2010). They demonstrated that the level of education achieved within a national economy is a significantly normative predictor of a country's decision to adopt IFRS across 132 countries. In addition, Ritsumikan (2011) found the same results in 46 developing countries. We can therefore formulate this hypothesis.

H3. There is a positive effect of educational level on national IFRS adoption in the MENA region.

## 4 Methodological framework

The following sub-sections describe the sample (2.1) and the measurement of the research variables (2.2).

## 4.1 Sample

Contrary to previous research, the sample of this study is composed of almost all countries of the MENA region. It is composed of 14 countries:

- 5 North African countries (Algeria, Egypt, Mauritania, Morocco and Tunisia)
- 5 Arab GCC (the Gulf Cooperation Council) countries (Kuwait, Oman, Qatar, Saudi Arabia and UAE)
- 4 other Middle Eastern countries (Iran, Iraq, Jordan and Lebanon).

In this research, we will use a secondary data. For this reason, our sample is selected for the availability of information in the websites of the international organisations (World Bank, Deloitte ias.plus, etc.).

## 4.2 Measurement of variables

## 4.2.1 National IFRS adoption (dependent variable)

In this research, the "national IFRS adoption" (IFRSADOP01) is a dummy variable that takes value of "1" if a country has adopted IFRS as issued by IASB and value of "0", otherwise. According to several previous studies, "adopt" means national mandatory adoption of IFRS by the country for all or some companies. As some previous research, we have chosen a binary dependent variable (adoption vs. non adoption) (Lasmin, 2012; Shima and Yang, 2012; Zeghal and Mhedhbi, 2006; etc.).

To test the robustness of our results, we have chosen to measure the IFRS adoption on the ordinal scale (IFRSADOP012), with 0: "countries that do not require IFRS"; 1: "countries that require IFRS for some companies"; 2: "countries that require IFRS for all companies". Tables 4 and 5 present the degree of IFRS adoption in the selected MENA countries (for more details see Appendix A).

Countries that have not adopted IFRS	Countries that have adopted IFRS
Algeria	Iraq (2016)
Egypt	Jordan (1997)
Iran	Kuwait (1990)
Mauritania	Lebanon (1996)
Tunisia	Morocco (2008)
	Oman (1998)
	Qatar (2002)
	Saudi Arabia (2017)
	UAE (2003)

 Table 4
 National IFRS adoption in the selected MENA countries

*Source*: www.iasplus.com & www.ifrs.org

 Table 5
 Level of IFRS adoption in the selected MENA countries

IFRS not required	IFRS required for some companies	IFRS required for all companies
Algeria	Iraq (sine 2016)	Jordan (since 1997)
Egypt	Morocco (since 2008)	Kuwait (since 1990)
Iran	Saudi Arabia (in 2017)	Lebanon (since 1996)
Mauritania	UAE (from 2003 to 2015)	Oman (since 1998)
Tunisia		Qatar (since 2002)
		Saudi Arabia (since 2018)
		UAE (since 2015)

Source: https://www.iasplus.com and www.ifrs.org

## 4.2.2 Independent variables and sources of data

In this research, we have retained three independent variables, namely the external debt, the openness of the economy to the outside world and the educational level. Table 6 presents their measurement and sources of data.

Variable	Measurement	Source of data
External debt (EXTEDEBT)	Total external debts as % of GDP	International Monetary Fund https://fred.stlouisfed.org/
Openness of the economy to the outside world (OPENECON)	(Import of goods and services (% GDP)+Export of goods and services (% GDP))/2	Website of the WITS (World Integrated Trade solution: https://wits.worldbank.org
Educational level (EDUCLEVL)	Literacy rate, adult total (% of people ages 15 and above). It is used by several researchers (Larson, 1993; Zeghal and Mhedhbi, 2006; etc.).	World Development Indicator (WDI)database published by World Bank https://data.worldbank.org/indicator/SE. ADT.LITR.ZS

 Table 6
 Variable description, measurement and source of data

## 5 Results and discussion

The results relating to the national IFRS adoption are summarised in Table 7 and Graph 1.

	Groups of countries	IFRS- adopters	IFRS-non adopters	Total
Geographic	North African Countries*	20%	80%	100%
location	Middle Eastern Countries**	89%	11%	100%
Oil exports	MENA oil exporters***	75%	25%	100%
	MENA non-oil exporters****	50%	50%	100%
All selected MENA countries		64%	36%	100%

 Table 7
 National IFRS adoption in the selected MENA countries

\*North African countries (Algeria, Egypt; Mauritania; Morocco and Tunisia); \*\*Middle Eastern countries (Iran; Iraq; Jordan; Kuwait; Lebanon; Oman; Qatar; Saudi Arabia and UAE); \*\*\*MENA Oil-Exporters (Algeria; Iran; Iraq; Kuwait; Oman; Qatar; Saudi Arabia and UAE); \*\*\*\*MENA non-oil exporters (Egypt; Jordan; Lebanon; Mauritania; Morocco and Tunisia).

Graph 1 National IFRS adoption in MENA region



64% of our sample adopt IFRS as issued by IASB. This rate is only 20% in the North African countries and 89% in the Middle Eastern countries. Also, 75% of oil exporting countries and 50% of non-oil exporting countries adopt IFRS. To explain these differences by the three institutional pressures, we present in this section firstly the main descriptive statistics and correlation matrix of our variables (4.1). Secondly, we highlight the univariate analysis results (4.2) and thirdly, we examine the multivariate analysis results and validation of the research hypotheses (4.3).

## 5.1 Descriptive statistics and matrix correlation

The main descriptive statistics of the research variables are summarised in Table 8.

					Std.		
Variable			Obs	Mean	dev	Min.	Max.
External debt (% GDP)	Geographic location	North African Countries	80	0.3324	0.2304	0.01	0.94
(EXTEDEBT)		Middle Eastern Countries	144	0.6482	0.7097	0.01	5.64
	Oil exports	MENA oil exporters	128	0.3866	0.3873	0.01	2.21
		MENA non-oil exporters	96	0.7337	0.7656	0.12	5.64
	All selected M	IENA countries	224	0.5354	0.6039	0.01	5.64
Openness of the economy to	Geographic location	North African Countries	80	0.3733	0.1012	0.145	0.565
the outside world (OPENECON)		Middle East Countries	144	0.4632	0.1562	0.190	0.885
	Oil exports	MENA oil exporters	128	0.4398	0.1614	0.19	0.885
		MENA non-oil exporters	96	0.4195	0.1206	0.145	0.735
	All selected M	IENA countries	224	0.4311	0.1454	0.145	0.885
Educational level	Geographic location	North African Countries	80	0.6843	0.1073	0.46	0.81
(EDUCLEVL)		Middle East Countries	144	0.8944	0.0621	0.73	0.98
	Oil exports	MENA oil exporters	128	0.8667	0.0736	0.70	0.98
		MENA non-oil exporters	96	0.7561	0.1580	0.46	0.98
All selected MENA countries			224	0.8193	0.1293	0.46	0.98

Fable 8	Main	descriptive	statistics

North African countries (Algeria, Egypt; Mauritania; Morocco and Tunisia); Middle Eastern countries (Iran; Iraq; Jordan; Kuwait; Lebanon; Oman; Qatar; Saudi Arabia and UAE); MENA Oil-Exporters (Algeria; Iran; Iraq; Kuwait; Oman; Qatar; Saudi Arabia and UAE); MENA non-oil exporters (Egypt; Jordan; Lebanon; Mauritania; Morocco and Tunisia).

For the full sample (all selected MENA countries), EXTEDEBT has a mean of 53.54%, with a minimum of 1% and a maximum of 564%. This mean for Middle Eastern countries is higher than that for North African countries (64.82% vs. 33.24%), and it is higher for MENA non-oil exporters than that for MENA oil exporters (73.37% vs. 38.66%). The mean of OPENECON for the full sample is 43.11%, with a minimum of 14.5% and a maximum of 88.5%. The economies of the Middle Eastern countries are more open to the outside world than those of the North African countries (46.32% vs. 37.33%). This rate is respectively 43.98%% and 41.95% for MENA oil exporting countries and MENA non-oil exporting countries. For all selected MENA countries, EDUCALEVL has a mean of 81.93%, with a minimum of 46% and a maximum of 98%. This average of literacy rate is higher for Middle Eastern countries (89.44%) than that for

North African countries (68.43%), and it is respectively 86.67% and 75.61% for MENA oil exporters and MENA non-oil exporters.

Table 9 presents the Pearson pairwise correlations. For full sample, IFRSADOP01 has a significant positive association with EXTERDEBT (0.35; p < 1%), OPENECON (0.49; p < 1%) and EDUCLEVL (0.61; p < 1%). These findings that are consistent with the results of previous researches suggest that the three institutional pressures impact positively and significantly the national IFRS adoption in the MENA region. However, these three correlations are not significant for North African countries. The coefficients of correlations among the variables are less than 0.8, thus there aren't any multicollinearity issues (Tabachnick and Fidell, 2007; cited by Boolaky et al., 2020).

		IFRSADOP01	IFRSADOP012	EXTEDEBT	OPENECON	EDUCLEVL
All	IFRSADOP01	1				
selected	IFRSADOP012	0.94*	1			
countries	EXTEDEBT	0.35*	0.42*	1		
(n = 224)	OPENECON	0.49*	0.46*	0.17*	1	
	EDUCLEVL	0.61*	0.6*	0.25*	0.28*	1
North	IFRSADOP01	1				
African	IFRSADOP012	1	1			
(n = 80)	EXTEDEBT	-0.07	-0.07	1		
	OPENECON	0.12	0.12	0.65*	1	
	EDUCLEVL	0.03	0.03	-0.12	-0.14	1
Middle	IFRSADOP01	1				
Eastern	IFRSADOP012	0.93*	1			
(n = 144)	EXTEDEBT	0.34*	0.38*	1		
	OPENECON	0.5*	0.41*	0.04	1	
	EDUCLEVL	0.67*	0.7*	0.19**	0.26*	1
MENA	IFRSADOP01	1				
Oil	IFRSADOP012	0.94*	1			
(n = 128)	EXTEDEBT	0.44*	0.54*	1		
	OPENECON	0.59*	0.35*	0.44*	1	
	EDUCLEVL	0.72*	0.77*	0.27*	0.39*	1
MENA	IFRSADOP01	1				
non-oil	IFRSADOP012	0.94*	1			
(n = 96)	EXTEDEBT	0.41*	0.45*	1		
	OPENECON	0.30*	0.51*	0.03	1	
	EDUCLEVL	0.65*	0.73*	0.48*	0.27*	1

Table 9Correlation matrix

\*Significant at 1% level \*\*Significant at 5% level.

To have a preliminary idea on the validation of our research hypotheses, the Student-t test of difference in means between two samples will be used (Table 10).

As shown in Table 10, for full sample, countries adopting IFRS are characterised by a high level of external debt (average 73.94%) compared to other MENA countries (average 30.83%). the difference between the two means (+0.43) is statistically significant at 1% level, these findings support the confirmation of the hypothesis H1. The difference between the two means of EXTEDT is also positive and significant in Middle Eastern countries (difference +0.54; p < 1%), MENA oil exporters (difference +0.34; p < 1%) and MENA non-oil exporters (difference +0.63; p < 1%). however, in North African countries, the difference between these two means is negative and not significant (difference -0.04; p > 10%).

				IFRS -			
			IFRS-	non	D.100	t-	
			adopters	adopters	Difference	value	Sig.
EXTEDEBT	Geographic location	North African Countries	0.2938	0.3399	-0.046	-1.355	0.179
		Middle Eastern Countries	0.7946	0.2541	0.5404	5.361	0.000
	Oil exports	MENA oil exporters	0.5355	0.1891	0.3463	5.569	0.000
		MENA non-oil exporters	1.0702	0.4369	0.6333	4.172	0.000
	All selected M countries	MENA	0.7394	0.3083	0.4311	5.698	0.000
OPENECON	Geographic location	North African Countries	0.4000	0.3681	0.0318	2.075	0.041
		Middle Eastern Countries	0.5107	0.3356	0.1750	8.375	0.000
	Oil exports	MENA oil exporters	0.5233	0.3290	0.1942	9.068	0.000
		MENA non-oil exporters	0.4582	0.3853	0.0728	3.080	0.003
	All selected M countries	MENA	0.4985	0.3561	0.1423	8.370	0.000

 Table 10
 Results of Student's t test of difference in means

			IFRS- adopters	IFRS - non adopters	Difference	t- value	Sig.
EDUCLEVL	Geographic location	North African Countries	0.6908	0.6830	0.0077	0.238	0.813
		Middle Eastern Countries	0.92	0.8254	0.0946	11.029	0.000
	Oil exports	MENA oil exporters	0.9132	0.8051	0.1080	11.409	0.000
		MENA non-oil exporters	0.8649	0.6602	0.2046	8.289	0.000
	All selected M countries	MENA	0.8947	0.7354	0.1593	11.475	0.000

 Table 10
 Results of Student's t test of difference in means (continued)

North African countries (Algeria, Egypt; Mauritania; Morocco and Tunisia); Middle Eastern countries (Iran; Iraq; Jordan; Kuwait; Lebanon; Oman; Qatar; Saudi Arabia and UAE); MENA Oil-Exporters (Algeria; Iran; Iraq; Kuwait; Oman; Qatar; Saudi Arabia and UAE); MENA non-oil exporters (Egypt; Jordan; Lebanon; Mauritania; Morocco and Tunisia).

For all MENA selected countries, IFRS-adopters are characterised by a high level of openness of the economy to the outside world (mean = 49.85%) compared to non-IFRS adopters (mean=35.61%). The difference between the two means (+0.14) is statistically significant at 1% level. This difference is also positive and significant for North African countries (difference +0.03; p < 5%), Middle Eastern countries (difference +0.17; p < 1%), MENA oil exporters (difference +0.19; p < 1%) and MENA non-oil exporters (difference +0.07; p < 1%). These results support clearly the validation of the second present research hypothesis (H2).

The results show some positive relationship between education level and national IFRS adoption. For the full sample, the average of the educational level in IFRS-adopters (mean = 89.47%) exceed largely that in non-IFRS adopters (mean = 73.54%). The difference between the two means is positive (+0.15) and statistically significant at 1% level. This difference is positive and significant for Middle Eastern countries (difference +0.09; p < 1%), MENA oil exporters (difference +0.10; p < 1%) and MENA non-oil exporters (difference +0.20; p < 1%). However, in North African countries, this difference (+0.007) is not significant. Therefore, the present findings support the validation of the third hypothesis (H3). The present results are consistent with some prior research findings. Zehria and Chouaibi (2013), based on sample of 74 developing countries, found that the educational level, measured by the general literacy rate, in countries adopting the IFRS (84.87%) is higher than that in other developing countries (67.51%). The difference in means is significant at 1% level.

#### 5.3 Logistic regression results and test of the robustness of models

For the present research, the dependent variable (IFRSADOP01) is binary, logistic regression analysis (Logit model) is appropriate and it will be used to examine the statistical relationship between the three institutional pressure and the national IFRS adoption. We will use therefore the following association between the three independent variables and the national IFRS adoption.

Logit (p) = Log 
$$[p/(1-p)] = \beta_0 + \beta_1 \text{EXTEDEBT} + \beta_2 \text{OPENECON} + \beta_3 \text{EDUCLEVL} + \varepsilon t$$

- p/(1-p) is called the "odds ratio"
- log [p/(1-p)] is "log odds ratio" or "logit"
- "p" is the probability that a country adopts IFRS.

We can calculate "*p*" as follows:  $p = 1/[1 + e^{(\beta 0 + \beta 1 \text{ EXTEDEBT} + \beta 2 \text{ OPENECON} + \beta 3 \text{ EDUCLEVL} + \alpha)}]$ 

Table 11 contains the results of the binary logistic regression models for our five panels (M1: full sample; M2: North African countries; M3: Middle Eastern countries; M4: MENA oil exporters and M5: MENA non-oil exporters). To test the robustness of our models, the dependent variable is measured on the ordinal scale of 0 to 2. The results of the ordered logistic regression are presented in Table 12.

Independent variables	M1	M2	М3	<i>M</i> 4	М5
Constant	-14.621* (-7.17)	-4.901*** (-1.79)	-32.843* (-5.36)	-32.650* (-5.40)	-9.373* (-4.48)
EXTEDEBT	0.973*** (1.98)	-3.902*** (-1.77)	1.867** (1.98)	1.612 (1.52)	0.673 (0.97)
OPENECON	8.142* (3.86)	10.271*** (1.90)	12.685* (3.23)	13.125* (3.29)	1.977 (0.77)
EDUCLEVL	13.139* (5.72)	0.769 (0.26)	31.715* (4.87)	31.316* (4.84)	10.393* (3.41)
Obs.	224	80	144	128	96
Chi-square	148.165*	5.047	112.264*	119.173*	51.824*
Hosmer-Lemeshow test	35.508*	10.024	3.568	1.526	33.282*
Cox & Snell R Square	0.484	0.061	0.541	0.606	0.417
Nagelkerke R Square	0.646	0.104	0.786	0.813	0.557

 Table 11
 Binary logistic regression results

This table reports estimates of binary logit models for the five panels: M1: All selected MENA countries; M2: North African countries (Algeria, Egypt; Mauritania; Morocco and Tunisia); M3: Middle Eastern countries (Iran; Iraq; Jordan; Kuwait; Lebanon; Oman; Qatar; Saudi Arabia and UAE); M4: MENA Oil-Exporters (Algeria; Iran; Iraq; Kuwait; Oman; Qatar; Saudi Arabia and UAE); M5: MENA non-oil exporters (Egypt; Jordan; Lebanon; Mauritania; Morocco and Tunisia). EXTEDEBT: Total external debt as % of GDP; OPENECON: the openness of the economy to the outside world; EDUCLEVL: educational level measured by the literacy rate. Z-statistics in parentheses. Stars indicate statistical significance: \*p < 1%; \*p < 5%; \*\*\*p < 10%.

Independent variables	<i>M6</i>	M7	<i>M8</i>	M9	M10
EXTEDEBT	1.912* (3.61)	-3.902*** (-1.77)	3.029* (3.55)	2.792* (3.13)	1.235*** (1.67)
OPENECON	2.579*** (1.93)	10.271*** (1.90)	0.725 (0.44)	0.852 (0.51)	2.076 (0.80)
EDUCLEVL	16.851* (6.96)	0.769 (0.26)	33.356* (6.16)	32.598* (6.08)	14.339* (4.06)
Obs.	224	80	144	128	96
Chi-square	180.904*	5.074	118.513*	113.926*	85.744*
Cox & Snell R Square	0.554	0.061	0.561	0.589	0.591
Nagelkerke R Square	0.644	0.104	0.673	0.685	0.689
McFadden	0.410	0.071	0.460	0.453	0.459

 Table 12
 Ordered logistic regression results

This table reports estimates of ordered logit models for the five panels: M6: All selected MENA countries; M7: North African countries (Algeria, Egypt; Mauritania; Morocco and Tunisia); M8: Middle Eastern countries (Iran; Iraq; Jordan; Kuwait; Lebanon; Oman; Qatar; Saudi Arabia and UAE); M9: MENA Oil-Exporters (Algeria; Iran; Iraq; Kuwait; Oman; Qatar; Saudi Arabia and UAE); M10: MENA non-oil exporters (Egypt; Jordan; Lebanon; Mauritania; Morocco and Tunisia). EXTEDEBT: Total external debt as % of GDP; OPENECON: the openness of the economy to the outside world; EDUCLEVL: educational level measured by the literacy rate. Z-statistics in parentheses. Stars indicate statistical significance: \*p < 1%; \*p < 5%; \*\*\*p < 10.

Overall, the model M1, M3, M4 and M5 are highly significant with respectively a Chisquared of 148.165 (p < 1%); 112.264 (p < 1%); 119.173 (p < 1%) and 51.824 (p < 1%). Also, the Nagelkerke pseudo-R<sup>2</sup> values are very high for M1 (64.6%), M3 (78.6%), M4 (81.3%) and M5 (55.7%). For all selected MENA countries (M1), the three institutional pressures explain 64.6% of the variance in IFRSADOP01.

For all selected MENA countries (M1), the main results show that the all three institutional pressures are significant in their positive association with national IFRS adoption (IFRSADOP01). The coefficient of 0.973 at 10% significance level for EXTEDEBT indicates that countries that have more external debt are more likely to adopt IFRS than other countries. These results are confirmed by the ordered logistic regression (M6; coefficient 1.912; p < 1%) and they support the validation of the hypothesis H1 according to which the external debt affects positively and significantly the mandatory of FRS adoption at a national level in the MENA countries. These findings are consistent with those of several prior researchers such as Mir and Rahaman (2005), Hassan (2008), Irvine (2008), Hassan et al. (2014), Ben Othman and Kossentini (2015), Tahat et al. (2018), Boolaky et al. (2020), etc. However, these results should be interpreted with caution. The external debt impacts negatively the national IFRS adoption in North African countries (M2). For Tunisia and Mauritania which do not adopt IFRS as issued by IASB have respectively external debts of 61.18% of the GDP (average) and 51.1% of the GDP (average) over the period 2005–2020. These rates are higher than that for Morocco that has adopted IFRS for some companies in 2008 (average: 28.12% of the GDP). Also, the EXTEDEBT has a non-significant impact on IFRSADOP01 for MENA oil-exporting countries (M4) and MENA non-oil-exporting countries (M5).

Concerning mimetic pressure, for the full sample, the coefficient of the variable OPENECON, 8.142, is positive and statistically significant at a p-value <1%. These results are conforms to those of the ordered logistic regression in M6 (coefficient 2.57; p < 10%). These findings suggest that countries characterised by more openness of their economies to the outside world are more likely to adopt IFRS at a national level than other countries. Therefore, the hypothesis H2 is validated by our analysis. OPENECON is statistically significant in its positive association with IFRSADOP01 for North African countries (coefficient 10.27; p < 10%) (M2), Middle Eastern countries (coefficient 12.68; p < 1% (M3) and MENA oil exporters (coefficient 13.12; p < 1%) (M4). These findings are consistent with the results of several previous researches like those of Irvine (2008). Ben Othman and Kossentini (2015), etc. According to Judge et al. (2010), the import penetration, is a significant predictive of the degree to which IFRS standards are adopted across 132 countries. Akisik et al. (2020) found that African countries "that are open to international trade are more likely to adopt IFRS". However, Zahid and Simga-Mugan (2019), based on data from 145 countries between 1995 and 2015, found that countries with "lower market openness are more likely to adopt IFRS earlier, and vice versa". In the present research, the positive relationship between OPENECON and IFRSADOP01 is not significant for MENA non-oil exporters (M5). The average rates of the economic openness between 2005 and 2020 are very similar between adopters and non-adopters of IFRS. For countries adopting IFRS, this average rate is 55.31% for Jordan, 41.1% for Lebanon and 39.18% for Morocco. On the other hand, for countries not adopting IFRS, the average rate is 48.78% for Tunisia, 43.96% for Mauritania and 23.4% for Egypt.

The results obtained for all selected MENA countries show that the variable of national IFRS adoption (IFRSADOP01) is positively impacted by the educational level (EDUCLEVL). The coefficient (13.139) is statistically significant at a p-value < 1%(M1). In addition, for ordered logistic regression, EDUCLEVL is significant in its positive association with national IFRS adoption (coefficient 16.85; p < 1%) (M6). The hypothesis H3 is validated by our analysis. This relationship between the two variables is positive and significant for Middle Eastern countries (coefficient 31.715; p < 1%) (M3), MENA oil exporters (coefficient 31.316; p < 1%) (M4) and MENA non-oil exporters (coefficient 10.393; p < 1%) (M5). These results confirm that found by Zeghal and Mhedhbi (2006). These researchers demonstrated "that developing countries with the highest literacy rates [...] are the most likely to adopt international accounting standards". Judge et al. (2010) found that the level of education is a predictive of the degree to which IFRS standards are adopted. Similarly, Zehri and Chouaibi (2013) demonstrated, with a sample of 74 developing countries, that a country with a more high educated population is more likely adopt IFRS (coefficient 0.044; p < 1%). In addition, Shima and Yang (2012) found same results. Akisik et al. (2020) find that educational level, measured by the average years of secondary schooling, is positively and significantly associated with IFRS adoption in the African context. However, for North African countries, the relationship between IFRSADOP01 and EDUCLEVL is not significant. On the one hand, the average of literacy rate between 2005 and 2020 in Morocco that has adopted IFRS is 65.87%. On the other hand, for other North African countries that have not adopted IFRS as issued by IASB, this rate is 52.37% in Mauritania, 70% in Egypt, 75.56% in Algeria and 78.31% in Tunisia.

## 6 Conclusion

The objective of this paper was to examine the national IFRS adoption in the MENA region. 14 countries were selected for this research (Algeria, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Tunisia and UAE). By using the institutional theory, we have chosen to use the three isomorphisms: coercive, measured by the external debt; mimetic, measured by the openness of the economy to the outside world; and normative isomorphism, measured by the national educational level. Using a panel data from the period 2005 to 2020 and employing the Student-t test of difference in means between two samples and binary and ordinal logistic regression; we found that external debt, openness of the economy to the outside world and educational level are significant in their positive association with the national IFRS adoption for the full sample. Therefore, our results support that coercive, mimetic and normative isomorphism influence significantly the decision of national IFRS adoption in the MENA region. However, these results must be interpreted carefully given the specificities of the countries of the MENA region. According to the geographic location criterion, in Middle Eastern countries, the three relationships are positive and significant, but in North African countries, the external debt impacts negatively the national IFRS adoption. This result can be explained by the fact that the North African countries not adopting IFRS as issued by the IASB have adopted local accounting strongly inspired by IFRS standards such as Algeria (the New Financial and Accounting System), Egypt (the Egyptian Accounting Standards) and Tunisia (Tunisian Accounting Standards). Concerning oil export criterion, on the one hand, openness of the economy to the outside world and educational level are the two significant determinants of the IFRS adoption in MENA oil-exporting countries, on other hand, educational level is the principal determinant of IFRS adoption in MENA non-oil exporting countries.

This research has several practical implications. Firstly, it provides strong evidence that the decision to adopt IFRS at the national level in MENA region is substantially affected by some pressures of international agencies like the World Bank, the International Monetary Funds and the World Trade Organisation. To have a certain international legitimacy and to benefit from international sources of financing and trading, national regulators and policymakers in MENA countries should adopt certain reforms recommended by the World Bank and the IMF. Among these reforms, the IFRS adoption is generally recommended in the Reports on the Observance of Standards and Codes on Accounting & Auditing (AA) published by international financial institutions. Secondly, the results of this study confirm that educational level is positively and significantly associated with IFRS adoption. Akisik et al. (2020) found that education is a strong determinant of effective adoption and implementation of IFRS. However, the adoption of IFRS is not an end in itself, but it must contribute to the improvement of economic growth, FDI, etc. in a country. Therefore, regulators and policymakers should consider their country's level of education before deciding to adopt IFRS. These findings are confirmed in the African context by Akisik (2020). These researchers "assert that as education level increases, so will the ability and willingness of African countries to effectively utilise IFRS, which will in turn attract FDI and fuel economic growth".

Finally, we present the study limitations alongside the directions for further research. Indeed, three main limitations should be discussed in the present investigation. First, this empirical study focused on 14 MENA countries as a whole. Therefore, to better understand the relationship between IFRS adoption and its principal determinants, it's

necessary to study each country. Second, this study did not account for countries that have adapted their local accounting with IFRS (for example the New Financial and Accounting System in Algeria, the Egyptian Accounting Standards in Egypt and Tunisian Accounting Standards in Tunisia), these countries are considered as "non-IFRS adopters". Future studies may be conducted to examine the principal determinants of this adaptation. Third, in this research, we haven't examined the compliance level of firms with IFRS. Therefore, it's appropriate to complete our present study by another including the compliance level of firms with IFRS.

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#### Appendix

#### Appendix A. Level of IFRS adoption in the MENA countries adopting IFRS

Iraq	IFRS required for banks only. In 2016, Central Bank of Iraq (CBI), "issued a special instruction to banking institutions in Iraq mandating the use of IFRS Standards from 2016 as the form of 'international accounting standards' to be used by the Iraqi banking sector" (www.ifrs.org)
Jordan	IFRS required for all listed companies. "IFRSs required for some (banks, insurance companies), all other companies have the choice between IFRSs and the IFRS for SMEs" (www.iasplus.com)
Kuwait	IFRSs required for all listed and unlisted companies (www.iasplus.com)
Lebanon	IFRSs required for all listed and unlisted companies (www.iasplus.com)
Morocco	Since 2008, all Banks and other financial institutions must use IFRSs (Circular 56/G/2007 issued by Bank Al Maghrib). Listed companies other than banks and financial institutions may choose IFRSs or Moroccan GAAP. For unlisted companies, Moroccan GAAP must be used (www.ifac.org)

Oman	IFRSs required for all listed and unlisted companies (www.iasplus.com)
Qatar	IFRSs required for all listed and unlisted companies (www.iasplus.com)
Saudi Arabia	Listed companies must use "national standards that are closely converged with full IFRSs» starting at 1 January 2017, For unlisted entities, IFRS for SMEs are required starting at 1 January 2018 (www.iasplus.com)
UAE	Since 2003, all companies listed are required to publish IFRS financial statements. In 2015, the new UAE Commercial Companies Law (UAE Federal Law No. 2 of 2015) required all companies with public accountability to use full IFRS as issued by the IASB. "In addition, the new law permits small and medium-sized entities to use either the IFRS for SMEs or full IFRS" (www.iasplus.com)

Source: https://www.iasplus.com and www.ifrs.org