International Journal *of* Euro-Mediterranean Studies

International Journal
of Euro-Mediterranean Studies
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Various Aspects of History: The Present and Future in Euro-Mediterranean Research

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In this new issue the *International Journal of Euro-Mediterranean Studies*, we are proud to present five articles with very diversified content. Two articles focus on past historical periods, two deal with the business reality of today and the last is centred on one of the most important questions concerning the future: our fresh water supply.

Meshal Alenezi (Kuwait), in his article 'Loyalty and Affiliation of the Andalusian Elites Towards Mulūk Al-Ṭawā'if During the 11th Century/Fifth AH' explores how 11th century Islamic rule in the Iberian Peninsula (*al-Andalus*) witnessed political and military disintegration caused by its division into twenty-two Arab and Berber states. In the presence of intellectual and scientific prosperity, scholars and historians were also prompted to examine the cultural prosperity of the Islamic states in *al-Andalus,* the domination of Christians in these states as well as the conflict between the Islamic states. This research clarifies the loyalty of Andalusian elites to the 11th century Muslim rulers in the Iberian Peninsula. It delves into the political positions and ambitions of these elites, particularly those of famous poets and jurists since many scholars concentrate on how the political weakness of the Iberian Muslim rulers impacted the cultural contributions of poets and jurists without examining how it affected their political ambitions and loyalty to those rulers in question during this century.

Adjoba Audrey Paule Nze and Abderrahman Tenkoul (Morrocco),

in her article 'Exploring State Effectiveness in Sustainable Development: Development and Use of a Measurement Tool for the Fez-Meknes Region' investigates the application of sustainable development, which has evolved into a fundamental tenet that is incorporated into numerous laws and frameworks for governing bodies. The paper presents a tool for measuring and comparing internal governance capacity for sustainability and operationalisation in the Mediterranean region, such as the provinces and prefectures of the Fez-Meknes region, which aims to be a reference for the sub-region as a smart, resilient, and sustainable city. Using this tool reveals the variety of governance arrangements and their various capacities. It also shows where and how our modes of cultural management, which can be further reinvented and better organised, can be improved in terms of governance of the sustainability of governments and administrations.

Hebatalla Emam, Nagwa Samak, and Israa Abd Elaziz (Egypt) focused on modern day finance in their article 'Measuring the Transparency of the Central Bank of Egypt as a Prerequisite for Adopting Inflation Targeting Policy.' It has been almost two decades since the Central Bank of Egypt (CBE) initially announced its intention to adopt the IT regime once the fundamental prerequisites were met. The transition towards the IT policy has been part of the complete revamping and reform of monetary policy in Egypt following the various challenges in the Egyptian economy that have been underway since the late nineties (AlMashat 2008). Thus, the CBE has paid continuous attention in complying with the preconditions of the IT policy. The purpose of this paper is to assess the degree of transparency of the CBE over the period 2005–2021. The study relies on the most recently developed index for Central Bank Transparency (CBT) for inflation-targeting central banks, designed by Al-Mashat et al. (2018) to quantify the degree of transparency of the CBE. The analysis reveals that CBT in Egypt is advancing, but with a relatively reasonable path of change. Still, the CBE has a large void to fill, especially pertaining to the transparency related to the Forecasting and Policy Analysis System and policy-making process.

Predrag Ljubotina and Jaka Vadnjal (Slovenia), in their article

'Career Decisions in the Mediterranean: To Be or Not to Be an Entrepreneur?,' discuss recent research on family business succession, which has primarily focused on the importance of individual and family factors; nevertheless, regional influences have often been disregarded. This study investigates the influence of regional circumstances on the career choice intentions of family company heirs with respect to employment, beginning their own entrepreneurial endeavour, or family firm succession using individual level cross-country data. The authors have found that there are several distinctions between the European and non-European Mediterranean countries. Even beyond circumstances, such as the university setting, entrepreneurship in the curriculum, entrepreneurial mindsets, locus of control, power distance and subjective standards, individual characteristics of the family business and start-up time are important determinants. Policies regarding company succession and related firm survival should be particularly based on various macroeconomic and youth labour market factors in order to reduce succession failures.

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Yousra Ezzghari, El Khalil Cherif, Ayman Bnoussaad, Hamza El Azhari and Hakim Boulaassal (Morrocco) in their article 'Assessment of Coastal Water Quality by Testing a Linear Model Using Landsat 8 sst data: Exploratory Study,' discuss the richness of the ecology of the Mediterranean Basin, which lies off the coast of Tangier, Morocco, considered one of the most valuable waters. However, pollution is a growing problem along this coastline. In order to determine the northern Mediterranean coastal water quality in fifteen selected sites along the coast from Tangier to Ksar-Sghir, a linear model was developed for the Atlantic western coastal waters of Tangier using a sea surface temperature estimated from Landsat 8 images and Escherichia coli concentration. According to the findings, the cities around the Souani and Mghogha Rivers, and Tangier Med Port, had the highest measurements, which is indicative of low quality and extremely high levels of hazardous contamination. The tested model is useful for estimating the quality of coastal water on the Mediterranean side of Tangier, and in the future, as a means of potentially monitoring pollution in this region.

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We hope you will enjoy reading these articles. Please feel free to recommend them to your colleagues for use in their own research and to refer them to IJEMS for future submissions for potential publication.

Loyalty and Affiliation of the Andalusian Elites towards *Mulūk Al-Ṭawā'if* during the 11th Century/Fifth AH

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11th century Islamic rule in the Iberian Peninsula (*al-Andalus*) witnessed political and military disintegration caused by its division into twenty-two Arab and Berber states. However, there was still cultural, intellectual, and scientific prosperity, prompting scholars and historians to examine the cultural prosperity of the Islamic states in *al-Andalus,* the domination of Christians in these states as well as the conflict between the Islamic states. This research clarifies the loyalty of Andalusian elites to the 11th century Muslim rulers in the Iberian Peninsula. It delves into the political positions and ambitions of these elites, particularly those of famous poets and jurists since many scholars concentrate on how the political weakness of the Iberian Muslim rulers impacted the cultural contributions of poets and jurists without examining how it impacted their political ambitions and loyalty to these rulers during this century. The methodology of this study is historically centred which analyses several primary sources in the 11th century, thus providing arguments to fill gaps in the existing literature.

Key Words: Jurists, Poets, *al-Andalus,* loyalty, *Mulūk Al-Ṭawā'if*

INTRODUCTION

In the first two decades of the 11th century, the Umayyad Caliphate in *al-Andalus* weakened due to internal fighting for rule, which resulted in a state of chaos. The weakness of the last Umayyad caliphs gave the rulers of the Andalusian provinces the opportunity to secede. In the third decade of the 11th century, the Umayyad Caliphate

in the Iberian Peninsula (*al-Andalus*) collapsed. Consequently, *al-Andalus* was divided into twenty-two Arab and Berber states, among which were: Sevilla (*Ishbīliya*) under the rule of Banī ʿAbbād, Cordoba (*Qurṭubah*) under Banī Jahwar, Granada (*Girnāṭa*) under Banī Zīrī, Badajoz (*Baṭalyaws*) under Banī al-Afṭas, Toledo (*Ṭulayṭilah*) under Banī Thī Anūn, Zaragoza (*Saraqusṭa*) under Banī Hūd and Valencia (*Falansyah*) under Banī ʿAmir. This era was called the era of *Mūlūk al-Ṭawāʾif*. These states had reached a stage of weakness against the Christians in the Peninsula, and had lost their legitimacy. However, The era of *Mūlūk al-Ṭawāʾif* witnessed cultural, intellectual, and scientific prosperity, because the Andalusian rulers sponsored and interested in scientific and cultural aspects of society (Palencia 1955, 78). Consequently, many scientists excelled in various sciences, including Ibn Ṣāʿid al-Andalusī (d. 462 AH/1070) from Toledo, who specialised in astronomy, religions, and history (Al-Ḥatāmlah 2000, 98). In addition, in this era, eminent jurists included poets, such as Abū al-Walīd al-Bājī (d. 476 AH/1084), Ibn Ḥazm (d. 456 AH/1064), Abū Ḥafṣ al-Hawzanī (d. 460 AH/1068), and Ibn ʿAbd al-Bir (d. 463 AH/1071).

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Accordingly, this research delves into the political positions and ambitions of jurists and poets to analyse their loyalty to *Mulūk al-Ṭawāʾif* during the eleventh century. The aim of this investigation is to clarify the impact of the weakness of *Mulūk al-Ṭawāʾif* on the loyalty of the Andalusian elites towards the latter, as well as the ambitions of these elites during this period.

LITERATURE REVIEW

Many scholars and historians concentrate on cultural prosperity in *al-Andalus*. For example, in his article, Ṣalāḥ Jarār discusses the scientific and literary contributions of ʿAbbās b. Firnās (d. 273 AH/887). Jarār (1990) urges that Ibn Firnās wrote certain poems to praise particular Umayyad emirs in Andalus to obtain financial gains. Anwar Chejne (1982), in his book entitled, *Ibn Ḥazm,* concentrates on the scientific aspects of Ibn Ḥazm's life. Chejne discusses Ibn Ḥazm's education, teachers, and his scientific and literary contributions.

Additionally, theses scholars examine the impact of the political

weakness of *Mulūk al-Ṭawā'if* on Andalusian literature. For example, Khawlah Mīsī (2015) and Laylá Jughām (2009), discuss the weakness of Islamic rule in *al-Andalus* and the fall of the Andalusian cities during the 11th century, which resulted in the increase in poems of lament, which described the loss of the Andalusian cities, such as Toledo and Valencia. In addition, in her master thesis, the scholar Rasmā' 'Abd al-Raḥmān (2011) discusses the impact of the political conditions of *al-Andalus* in the 11th century on the style of Andalusian poetry. She affirms that these circumstances contributed to the development of poems of lament in *al-Andalus* during this century.

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Other scholars look at various aspects of *al-Andalus* during the 11th century. Karīmah Naqāz (2017) and al-Shaykh bū qarbah list the poems that described Andalusian architecture in the 11th century. In his book, Muḥammad Saʿīd (2020) discusses the status of Andalusian poets, such as Ibn Zaydūn (d. 463 AH/1071) and Aḥmad b. 'Abd al-Malik (d. 426 AH/1035), who became ministers among the 11th century Andalusian rulers. In addition, Saʿīd examines the poetry of al-Muʿtamid b. 'Abbād (461–484 AH/1069–1091) to his father al-Muʿtaḍid (434–461 AH/1042–1069) after his failure to annex Malaga to Sevilla. Henry Peres (1983) studies various topics of 11th century Andalusian poetry, such as nature, animals, promiscuity, wine, praise, sports, marriage, masculinity, asceticism and mysticism.

THE ANDALUSIAN CULTURAL COMMUNITY AND THE WEAKNESS OF *MULŪK AL-ṬAWĀ'IF*

In the last year of the 10th century, the King of Navara, Garcia Sanchez II (384–390 AH/994–1000), died, and his son, Sanchez III (390–426 AH/1000–1035), ascended the throne of Navara (Ibn Kardabūs 1971). The latter was married to Elvira (d. 458 AH/1066), the sister of the King of Castile, Garcia Sanchez (408–420 AH/1017–1029). The latter was assassinated in 420 AH/1029 in the Church of the Crown of Leon during his marriage ceremony to Dona Sancha ('Anān 1997). Consequently, Sanchez III became the King of Navara and Castile. Sanchez III appointed his son Fernando I (420–457 AH/1029–1065) as the King of Castile. Furthermore, Sanchez III

conquered the Crown of Leon and annexed it to his crown. In 426 AH/1035, Sanchez III died, and his son Fernando I inherited the three kingdoms in the north. Therefore, it can be noted that the Christian kingdoms united under the rule of one king, Fernando I, whereas at that time, there were twenty-two Islamic states of the southern Iberian Peninsula.

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Fernando I exploited the division of Islamic rule into twenty two states in the south of the Peninsula by attacking and capturing many Andalusian states. In 448 AH/1057, he captured the city of Vizeu from Banū al-Afṭas in Badajoz, and killed many of its inhabitants ('Anān 1997). In addition, between 454 AH and 456 AH/1062 and 1064, Fernando I attacked the states of Toledo and Sevilla, but he did not seize any towns from them. However, in 456 AH/1064, he captured the city of Coimbra from Banū Dānīs in the west of *al-Andalus* (Bleye 1963).

Before these attacks, a few intellectual elites appeared and warned of the division of *al-Andalus* into several states, because they thought that this situation would encourage the Iberian Christians, who had united under the rule of one king, to capture the Andalusian states. The weak point of these elites was that they had not been supported and directed by the political elites, particularly ministers. Abū 'Abd Allāh al-Bazlyānī (d. 445 AH/1054) was the lone minister who warned about the political situation of Iberian Islamic rule (Al-Ḥatāmlah 2000). He was a minister for the ruler of Granada, Bādīs b. Ḥabūs (429–465 AH/1038–1073), before becoming the minister for the ruler of Sevilla, Abū 'Amr 'Abbād al-Muʿtaḍid (434–461 AH/1042–1069). Al-Bazlyānī was aware of the danger of the situation of Islamic rule in *al-Andalus,* as a result of which, al-Muʿtaḍid had him killed. In addition, the Muslim inhabitants in *al-Andalus* supported and preferred certain Andalusian rulers (Ibn 'Abbūd 1983, 27), out of fear that some of these rulers harboured wishes to maintain the political status quo. Some of these rulers relied on cruelty and violence against any attempt by political, cultural, and public elites to change the situation (Al-Kaḥlūt 2010). However, the intellectual elites in the Iberian Peninsula were divided into two parties. The first party included a few jurists, who

were from different parts of *al-Andalus* (Al-Kaḥlūt 2010). They were against the Andalusian rulers' acts that weakened the prestige of Islamic rule in the Iberian Peninsula and put it at risk of collapse. This political situation affected the cultural activities, lives and careers of these jurists, and some exploited their careers and cultural capabilities, such as teaching, poems, the judiciary, and their expertise in *al-amr bi al-Maʿrūf wa al-Nahy ʿan al-Munkar* (enjoining what is right and forbidding what is wrong) to urge these rulers to unite under one strong and efficient ruler (Al-Ḥatāmlah 2000). It can be argued that some of these jurists abandoned some of their interests, particularly historiography and the teaching of Islamic law for the public due to their movements to convince the Andalusian rulers to unite. The members of the first party were Abū al-Walīd al-Bājī, Ibn Ḥazm, Abū Ḥafṣ al-Hūzanī, Abū al-Walīd al-Waqshī (d. 488 AH/1095), and Ibn ʿAbd al-Bir (Al-Maqqarī 1843; Ibn ʿAbbūd 1983).

The other party included those poets who did not care about the division of Islamic rule in the Iberian Peninsula into twenty-two states. They continued to practise their cultural activities in their favour instead of focusing on the fate of Islamic rule due to security and financial reasons as well as their political ambitions and positions.

THE JURISTS' POLITICAL EFFORTS AND LOYALTY

Abū al-Walīd al-Bājī was from Beja (*Bājah*), which was part of Badajoz under the rule of Banū al-Afṭas, and Abū Ḥafṣ al-Hawzanī was from Sevilla under the rule of Banū ʿAbbād (Adang, Fierro, and Schmidtke 2012, 5). In addition, Ibnʿ Abd al-Bir was from Cordoba under the rule of Banū Jahwar. In the fourth decade of the 11th century, Ibn ʿAbd al-Bir began to move from the east to the west of the Andalusian territories to ask the most prominent Muslim rulers to unite with each other under one ruler. Consequently, he remained in Badajoz and took over the judiciary, probably because he probably believed Banū al-Afṭas to be the most efficient ruler for the southern Iberian Peninsula (Ibn Khallikān 1972). By taking control of the judiciary, he most likely thought this position would urge the inhabitants of Badajoz and other Andalusian states to unite un-

der the rule of Banū al-Afṭas through issuing *fatwā* (legal opinion). Thus, he left his interests represented in the teaching of the *Qurʾān, al-Ḥadīth,* and jurisprudence, areas in which he was a scholar (Abū ʿAbbās 2020).

[164]   In 463 AH/1071, Ibn ʿAbd al-Bir visited Xativa (*Shāṭaba*), which had been part of Valencia under the rule of Banū ʿAāmir, to try to convince the state to come under the rule of Banū al-Afṭas. However, Ibnʿ Abd al-Bir failed in this matter. He then died and was buried in Xativa (Ibn Khallikān 1972).

Ibnʿ Abd al-Bir was the leader of these jurists in improving the status of Islamic rule in the Iberian Peninsula, because these jurists, including al-Bājī, considered him the most learned jurist in *al-Ḥadīth* (the Prophet Muḥammad's statements) in the Iberian Peninsula (Ibn Khallikān 1972).

This contradicts the claim of ʿAbd al-Raḥmān al-Ḥajī (2014, 375) that there were disagreements between Ibnʿ Abd al-Bir and al-Bājī. Al-Ḥajī has referred to disagreements between al-Bājī and Ibnʿ Abd al-Bir due to the latter's following of al-Ẓāhirī doctrine. Al-Ḥajī's claim was based on a non-contemporary source, Ibn ʿUmayrah, who died in 599 AH/1203 (Ibn ʿUmayrah 1967, 71).

With regard to Abū al-Walīd al-Bājī, he directed his efforts in improving the status of Islamic rule in the Iberian Peninsula after he returned from his scientific trip from al-Mashriq, which lasted for 13 years, from 425 to 438 AH/1034 to 1048 (Al-Shantarīnī 1979). It can be assumed that al-Bājī did not write down and teach the explanations of jurisprudence that he had learned from the jurists of al-Mashriq following his return due to the political situation in *al-Andalus.*

ʿAbd al-Raḥmān al-Ḥajī (2014, 375) argues that al-Bājī commenced his efforts in 477 AH/1084 after the ruler of Badajoz, al-Mutawakil b. al-Afṭas (437–487 AH/1045–1094), requested him given that the King of Castile, Alfonso VI (457–503 AH/1065–1109), had attacked many states in *al-Andalus,* including Badajoz; the latter had also requested a large tribute. This may be refuted by arguing that in 477 AH/1084, Alfonso VI mobilised his army to besiege Toledo, which was his primary aim (Ibn Kardabūs 1971).

Abū al-Walīd al-Bājī, during his movement to eastern, western, northern and southern *al-Andalus,* adapted the teaching profession as a mean to invite Muslim students to unite in the cities in which he taught ('Abbās 1971). Many of his students were poets, and they described this effort in their poems (Al-Maqqarī 1968). Al-Bājī was a [165] famous poet in the 11th century. He used poetry in different ways, including to praise some of the jurists and judges whom he visited in al-Mashriq, to grieve his sons who died and to invite Muslims to join the movement of asceticism. However, he did not utilise poetry to invite the rulers in *al-Andalus* to unite. He was strict with them; he used clues from *al-Qur'ān* and the statements of the Prophet Muḥammad (*al-Ḥadīth*) to warn these rulers about plots, advising them to unite. Consequently, most rulers respected and welcomed him (Al-Shantarīnī 1979).

Many historians, such as 'Abd al-Raḥmān al-Ḥajī (2014) and Muḥammad 'Abd Allāh 'Anān (1997), believe that after the Viking conquest of Barbastro (*Barbashtar*) in 456 AH/1064, during which many Muslims were killed in Barbastro, which had been part of Zaragoza state under the rule of Banū Hūd, the movements of jurists among the most prominent Andalusian rulers and their inhabitants to encourage them to unite under one ruler increased (Al-Ḥajī 2014, 367, 390; 'Anān 1997, 374–379). Al-Ḥajī (2014) and 'Anān (1997) were probably referring to the poets Abū 'Abd Allāh al-Asāl from Toledo (d. 487 AH/1094) and Abū Isḥāq al-Albīrī (d. 459 AH/1067) from Granada who wrote poems to encourage the Muslims of *al-Andalus* and their rulers to unify to recapture Barbastro (Ibn Al-Khaṭīb 1956, 2:231). These two poets did not join Abū al-Walīd al-Bājī, Ibn Ḥazm, Abū Ḥafṣ al-Hūzanī, and Ibn 'Abd al-Bir in their movements to ask the Iberian Muslim rulers to unite and stop plotting against one other that pre-dated the fall of Barbastro. However, it can be considered that these two poets were Islamicists, because they interacted with the fall of an Andalusian city to which they did not belong and applied the Islamic principle that Muslims should help each other.

The fall of Barbastro did not increase the movements of Abū al-Walīd al-Bājī, Ibn Ḥazm, Abū Ḥafṣ al-Hawzanī, and Ibn 'Abd al-Bir to request the Andalusian rulers to unite. It is possible they realised

that their summons for unity before the fall of Barbastro had not achieved any result. Consequently, the scholar of al-Ḥadīth, Abū Ḥafṣ al-Hawzanī, critiqued Abū ʿAmr ʿAbbād al-Muʿtaḍid, the ruler of Sevilla (ʿAbbās 1971).

[166]   Al-Hawzanī wrote poetry expressing the negligence of al-Muʿtaḍid in recapturing Barbastro from the Vikings (Mīsī 2015). Consequently, this criticism angered al-Muʿtaḍid, who killed al-Hawzanī in 460 AH/1068 (Al-Quḍāʿī 1985, 2:41). The latter used poetry instead of *al-Ḥadīth* for his criticism of al-Muʿtaḍid, because he believed that poetry would affect al-Muʿtaḍid, who was interested in literature, particularly poetry. Al-Hawzanī's poems to al-Muʿtaḍid, including touching words about the great incidents against Muslims, did not provoke the jealousy of the Muslim ruler (Al-Quḍāʿī 1985, 2:41). Thus, Sevilla lost its most important scholar in *al-Ḥadīth*.

After the fall of Barbastro, Ibn Ḥazm did not use poetry against al-Muʿtaḍid, because Ibn Ḥazm died in 456 AH/1064. However, he used poetry against al-Muʿtaḍid after the latter burned the former's books in Sevilla. This act caused *al-Andalus* to lose approximately 400 intellectual works that had been created by Ibn Ḥazm (Halverson 2010). Ibn Ḥazm expressed in his poems that burning his books would not stop him from telling the truth, because the contents of his books were preserved in his chest (Al-Ḥamādah 2011, 77).

Some scholars believe that al-Muʿtaḍid burned Ibn Ḥazm's books because the latter was a follower of the al-Ẓāhirī doctrine, which was at odds with all al-Mālikī jurists in *al-Andalus* (Gleave 2012, 169). Consequently, al-Mālikī jurists in Sevilla incited al-Muʿtaḍid against Ibn Ḥazm, who was present there in this period (Al-Ḥamādah 2011, 77). This may be refuted by arguing that there was a relationship of respect and admiration between Abū al-Walīd al-Bājī and Ibn Ḥazm, in which the latter said that Abū al-Walīd al-Bājī was one of the most efficient al-Mālikī jurists in the Iberian Peninsula (Al-Thahabī 1998, 1:56). Ibn Ḥazm met al-Bājī on Mallorca Island on the eastern coast of the Iberian Peninsula that had been ruled by the Muslim ruler of Dānyah state, ʿAlī Iqbāl al-Dūlah (436–468 AH/1044–1075) (Al-Maqqarī 1968, 2:67). It is possible that their meeting was of a cultural nature or to discuss the fate of Islamic rule on the Iberian Peninsula.

The prime reason which led al-Muʿtaḍid to burn Ibn Ḥazm's book is that Ibn Ḥazm's origins were in Cordoba, and he had combatted the attempts of Banū ʿAbbād to annex Cordoba. Banū ʿAbbād claimed that they found Hishām al-Muʾayyad, a missing Umayyad Caliph in 424 AH/1033, when the inhabitants of Cordoba thought that he had disappeared in 403 AH/1013. Banū ʿAbbād wanted to appoint him as a fictitious caliph of Sevilla and Cordoba, so they could control him (Al-Andalusī 1987, 2:97).

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Ibn Ḥazm was not convinced of the efficiency of Banū ʿAbbād, especially al-Muʿtaḍid's rule of *al-Andalus* in a unified manner, because of his plots against the Andalusian rulers, particularly the Andalusian Berber rulers, as well as al-Muʿtaḍid's weakness against the Christian kings (ʿAnān 1997, 493). An example to support this view is that al-Muʿtaḍid made great efforts and sent a lot of money to annex the western and southern states of *al-Andalus* to Sevilla, and created many plots to annex Granada, which was under the rule of Banū Zīrī, belonging to the Ṣinhājah, a Berber tribe. At the same time, he was so weak against Fernando I, the King of Castile, Navara and Leon, that al-Muʿtaḍid was subject to him, paid him tribute and promised him all his demands (Casewit and Böwering 2015, 3; ʿAnān 1997, 48). It can therefore be deduced that the plots of al-Muʿtaḍid were a vital obstacle, which hindered the efforts of the jurists from uniting *al-Andalus* under one ruler. According to Ibn Bassām al-Shantarīnī (d. 541 AH/1147), a contemporary historian of this era, al-Muʿtaḍid was a source of strife and disintegration among the Muslims of *al-Andalus* (Al-Shantarīnī 1979).

With regard to the efforts of al-Bājī in recapturing Barbastro, he met Abū Ḥafṣ al-Hawzanī in Zaragoza in 1064 to encourage the Muslims to fight to recover Barbastro (ʿAayāḍ 1965, 4:825; Ḍayf 1989, 379). Consequently, they mobilised 6,000 fighters under the leadership of the ruler of Zaragoza, al-Muqtadir Aḥmad b. Hūd (441–475 AH/1049–1082), who succeeded in recapturing Barbastro in 457 AH/1065 (Pau and Ramirez 2004, 160).

After the recapture of Barbastro, Abū al-Walīd al-Bājī stayed for a while in Zaragoza (ʿAnān 1997, 282). It is possible that the ruler of Zaragoza, al-Muqtadir Aḥmad b. Hūd, requested al-Bājī to stay in

Zaragoza due to the latter's efforts in recapturing Barbastro. In addition, al-Bājī probably believed that Banū Hūd was the most qualified to rule *al-Andalus* since in the seventh decade of the 11th century, the ruler of Zaragoza, al-Muqtadir Aḥmad b. Hūd, annexed Denia
[168] (*Dānyah*) state in the east of *al-Andalus* that had been established in 404 AH/1014 by al-Mujāhid al-ʿĀmirī. In addition, Zaragoza had not been attacked by Fernando I nor his son Alfonso VI, the kings of Castile (Ibn Khaldūn 1999, 4:354; Luis Corral 1998, 155–156). Consequently, Abū al-Walīd al-Waqshī left his native city Toledo for Dānyah (Al-Quḍāʿī 1994, 1:136). It can be assured that al-Waqshī believed that al-Muqtadir b. Hūd would be the most efficient ruler (Badīʿ 2006, 370). He had been considered the best astronomer under the rule of Banū Hūd (ʿAbbās 1971). In addition, it can be assumed that the ruler of Zaragoza al-Muqtadir Aḥmad b. Hūd earned legitimacy, because al-Bājī was the leading Mālikī jurist of the period of *Mulūk* Al-Ṭawāʾif (Jenkins 2011, 131).

THE POETS' AMBITIONS AND LOYALTY

Poetry was one type of literature that flourished in *al-Andalus* in the 11th century, during which the status of Andalusian poets reached a climax within Andalusian society and among political authorities. Some Andalusian rulers were famous poets, such as the rulers of Almeria, al-Muʿtaṣim b. Ṣumādiḥ (443–484 AH/1051–1091) and al-Muʿtamid b. ʿAbbād. The latter used his ingenuity of poetry to describe his social life, including his love for his wife Iʿtimād al-Ramīkiyah (d. 487 AH/1095), who was also a famous poet.

The poets who became ministers in Andalusian states, did not employ their ingenuity of poetry to urge the Andalusian rulers to stop the plots and to unite under one ruler, because these poets wanted to maintain their political positions. For example, before he was appointed a minister in Cordoba by Banū Jahwar, Ibn Zaydūn had mourned the collapse of the Umayyad Caliphate in *al-Andalus* (Palencia 1955, 80.). It is possible he realised that the division of *al-Andalus* into many states following the fall of the Umayyad Caliphate would subject Islamic rule in the Iberian Peninsula to potential collapse. However, he wrote poems to praise Banū Jahwar, who also had

appointed him an ambassador to negotiate with certain Andalusian rulers ('Anān 1997, 26; Palencia 1955, 84). In addition, Ibn Zaydūn employed his poetic prowess to express his love for Walādah b. al-Mustakfī (d. 483 AH/1091), a daughter of the Umayyad Caliph in *al-Andalus,* al-Mustakfī bi Allāh (415–416 AH/1024–1025). This political position, as well as the romantic relationship with Walādah b. al-Mustakfī, increased haters and envious people against Ibn Zaydūn (Menocal, Scheindlin, and Sells 2000). For example, the minister Ibn 'Abdūs (d. unknown), who loved Walādah, had incited Banū Jahwar against Ibn Zaydūn. The latter was therefore, jailed in Cordoba (Palencia 1955, 82). However, he was able to flee to Sevilla and become the minister of al-Mu'taḍid in 466 AH/1054 (al-Zarkalī 2002, 158). Ibn Zaydūn did not dare to discuss with al-Mu'taḍid the latter's plots against the Andalusian rulers. He probably feared being killed like Abū 'Abd Allāh al-Bazlyānī had been, on the orders of al-Mu'taḍid. Consequently, Ibn Zaydūn praised the plots of al-Mu'taḍid against the Andalusian rulers (Palencia 1955, 85), justifying them for the purpose of unifying Islamic rule in *al-Andalus.*

Another example worth citing is that of the poet Abū Bakr b. 'Amār (d. 477 AH/1085), who had been a minister of al-Mu'tamid b. 'Abbād. Abū Bakr b. 'Amār used his poetic skills for his own personal interests. At the beginning of his life, he was poor, so he relied on poetry to earn money from rich people in *al-Andalus* (Ecker 2004, 56). He then used his poetic prowess in spinning to retain his position and friendship with al-Mu'tamid, who was interested in spinning poetry ('Anān 1997, 68). In addition, due to the political ambitions of Abū Bakr b. 'Amār, he did not use his ingenuity of poetry to urge the Andalusian rulers to unite under one ruler, rather aiming to rule a spot of *al-Andalus* (Al-Ḥatāmlah 2000, 497). He succeeded in convincing al-Mu'tamid to prepare a campaign for Murcia (*Mursiyah*) in south-eastern *al-Andalus,* which resulted in the annexation of Murcia to Seville. He then ruled Murcia and announced its independence from Seville (Palencia 1955, 92). Consequently, al-Mu'tamid killed him in 477 AH/1085 (Crompton 2006, 168).

With regard to the poets who did not hold any political position in the palace of the Andalusian rulers, there was Abū Isḥāq al-Albīrī

from Granada. He criticised the internal political situation of his state, Granada, through poetry focusing on the ruler of Granada, Bādīs b. Ḥabūs, because the latter had appointed a Jewish minister, Yūsif b. Nigrālah (d. 458 AH/1066). Bādīs b. Ḥabūs had appointed

[170]   Yūsif b. Nigrālah due to the efforts of his father, the minister, Ismāʿīl b. Nigrālah (d. 447 AH/1055), who had participated in appointing Bādīs as the ruler of Granada after the death of Bādīs' father, Ḥabūs b. Māksin (410–429 AH/1019–1038), the second ruler of Granada (Stillman 1979, 56). In his poems, Abū Isḥāq al-Albīrī expressed that the master of Ṣinhājah, a Berber tribe to which Bādīs b. Ḥabūs belonged, committed a sin when he appointed an infidel a minister in Granada, which resulted in apparent ´gloating´ over the Muslims of Granada (Balqīn 1955, 54). These words led the inhabitants of Granada to kill this particular minister and many Jews in Granada. Consequently, Bādīs b. Ḥabūs jailed Abū Isḥāq al-Albīrī (Balqīn 1955, 54), who died in prison. It can be assumed that this poet expressed his loyalty to his country by rejecting the appointment of Jews as ministers in his nation.

Some poets exhibited no loyalty, because their primary aim was to receive financial gains from the Andalusian rulers. They did not therefore, care about the status of Islamic rule on the Iberian Peninsula. In fact, some Andalusian rulers depended on them to legitimise their fragile rule and to hide their flaws. The role of these poets was to praise these Andalusian rulers whether they were right or wrong. For example, Ibn Ḥamīdis (d. 527 AH/1133), one of the poets of al-Muʿtamid b. ʿAbbād, praised the ruler very much. After the Battle of Sagrajas, Ibn Ḥamīdis described Muʿtamid b. ʿAbbād as a protector of Islam and Islamic rule on the Iberian Peninsula (Ibn Khallikān 1972, 3:214–215). This *Dīwān* of poetry was probably used as a tool to legitimise the rule of al-Muʿtamid in the eyes of the Muslim inhabitants of *al-Andalus* after the rise in popularity of al-Murābiṭūn from al-Maghrib. Consequently, he was financially rewarded by Muʿtamidm (al-Zarkalī 2002, 274). Ibn Ḥamīdis left *al-Andalus* for North Africa after al-Muʿtamid was deposed in 484 AH/1091. There, he praised rulers of North Africa, particularly Banū Zīrī in *Ifrīqya* to receive financial gains (al-Zarkalī 2002, 274).

Some poets, including Abū ʿAlī Idrīs b. al-Yamān (d. 470 AH/1077), preceded Ibn Ḥamīdis and praised certain Andalusian rulers, benefitting from some of them financially. Abū ʿAlī Idrīs b. al-Yamān praised the ruler of Toledo, al-Maʾmūn (d. 1077), although the latter had many weaknesses (Farūkh 1985, 623). Al-Maʾmūn was in constant conflict with al-Andalusian states and was in a state of submission to Fernando I (ʿAnān 1997, 383–384.). Abū ʿAlī Idrīs b. al-Yamān also praised the ruler of Sevilla, al-Muʿtaḍid. The poet Ibn al-Ḥadād al-Andalusī (d. 480 AH/1087) followed in Abū ʿAlī Idrīs b. al-Yamān's footsteps by praising the ruler of Almeria, al-Muʿtaṣim b. Ṣumādiḥ, and the ruler of Zaragoza, al-Muqtadir b. Hūd (Cortes Garcia 2009, 46–48).

Additionally, there was Ibn Abbār al-Khūlānī (d. 433 AH/1042), who praised Banū ʿAbbād, and justified al-Muʿtaḍid's plots against the Andalusian rulers for the purpose of unifying Islamic rule in *al-Andalus* (Ibn Khallikān 1972, 1:142). It can therefore be concluded that these poets contributed to the continuation of the weakness of the Andalusian rulers. In addition, it can be assumed that some of these poets were mercenaries while others feared for their lives from the oppression of the rulers.

Another example is that of the mercenary poet, Ibn al-Bunī (d. 490 AH/1097). He satirised al-Murābiṭūn following the deposition of the Andalusian rulers in the last decade of the 11th century (Maḥmūd 2011, 17). Ibn al-Bunī was brilliant in the spinning poetry that had been a favourite among the Andalusian rulers, particularly al-Muʿtamid. It can be deduced that Ibn al-Bunī benefitted from these Andalusian rulers financially.

CONCLUSION

In the 11th century, there was prosperity across all fields in *al-Andalus* except for the political arena. Fernando I and his successors exploited this situation and imposed their domination on many of the Andalusian states. Consequently, the loyalty of jurists was to the strongest Andalusian ruler, whereas the loyalty of poets depended on their personal interests.

Further research related to this region and period could be under-

taken in the future. For example, studies of the attempts of *Mūlūk al-Ṭawā'if* to legitimise his rule during the 11th century are virtually non-existent, and therefore, warrant further investigation.

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Exploring State Effectiveness in Sustainable Development: Development and Use of a Measurement Tool for the Fez-Meknes Region

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The implementation of sustainable development has become a key guiding principle that has been integrated into many policies and governance models. Governments and administrations have put in place governance arrangements to guide their actions towards sustainability. How can the success of this integration of sustainability into government and administrative activity be assessed? This paper presents a tool for measuring and comparing internal governance capacity for sustainability in the region of Mediterranean area, such as the provinces and prefectures of the Fez-Meknes region, which aims to be a reference for the sub-region, as a smart, resilient and sustainable city. The application of this tool reveals the diversity of governance arrangements and their different capacities and indicates where and how the governance of the sustainability of governments and administrations can be further improved with regard to our modes of cultural management, which can be further reinvented and better organised.

Key Words: territorial collectivity, governance, sustainability, Euro-Mediterranean area

INTRODUCTION

Since the United Nations General Assembly in 2015, all societal actors have adopted the 2030 Agenda to promote sustainable devel-

opment. The essence of this strategy is subdivided into seventeen Sustainable Development Goals with one hundred and sixty-nine specific targets, most of which should be achieved by 2030.

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Through their adoption as a point of reference in international political declarations and in a modified discourse within global institutions, the governance principles underlying the Sustainable Development Goals, including universality, coherence, and integration, have become part of the dominant discourse in institutions. As a result, many countries have begun to integrate these goals into their administrative systems, and some governments such as the Kingdom of Morocco have designated bodies and formed new units for the implementation of the sustainability goals. This executive complex of the state is decisively involved in the preparation and implementation of policy decisions and thus plays a decisive role in the governance of social transformation (Hasan 2018). They initiate models and plans, and establish governmental and administrative coordination bodies focused on sustainability. In other words, they assess the compatibility of projects with sustainability and develop relevant expertise (Dounya and Mbarek 2021; Houdret and Harnisch 2019). Today, sustainability has become a major concern for governments and administrations (Amrani et al. 2021; Raynal 2009). After seven years of implementation, less attention has been paid to understanding whether these goals have had a policy impact within sub-national governance to address such pressing challenges as zero poverty, peace and effective institutions, and the question of how sustainability can be integrated into the actions of government and administration. Given the heterogeneity of the trade-offs, the question arises as to how the sustainability-oriented internal governance capacity of governments and administrations can be systematically recorded and compared: How can the extent to which sustainability is integrated into government and administrative activities be empirically determined?

The present contribution is to design, contextually operationalize, and successfully implement a tool for measuring the governance capacity of the internal state oriented toward tangible development.

As the Sharifian Kingdom (Morocco) has adopted advanced re-

gionalization (Royaume du Maroc 2021a; 2021b; Conseil regional Fès-Meknès 2018), one can expect very little variety of governance arrangements and a sketch of the state of play that allows for systematic comparison. The list of existing measurement tools (Ibourk and Raoui 2021; https://siredd.environnement.gov.ma/fes-meknes /indicateur; https://www.hcp.ma; https://bti-project.org/en/index /political-transformation) should therefore be complemented by an approach that focuses on the domestic domain of government and administrative action on the one hand, and that can take into account the varied, but little-studied national level, on the other. [177]

Based on a review of existing measurement tools, we develop a concept of sustainability-oriented internal governance capacity based on a three-dimensional understanding of governance. We then operationalize it for the context of the Fez-Meknes region in Morocco and present the results of its application. We reflect on the added value and limitations of the measurement tool and conclude with implications for governance practice.

CONCEPTUAL FRAMEWORK AND STRATEGIC APPROACH

Contextual Framework

The Fez-Meknes region is situated in the northern part of Morocco, encompassing a substantial portion of the central-northern territory. This region boasts diverse topography, ranging from the rugged landscapes of the Middle Atlas Mountains to the fertile plains of the Saïss Valley. The region is crossed by several rivers, with the Oued Sebou playing a vital role in irrigating agricultural lands. It is known for its natural resource wealth and significant contribution to Moroccan agriculture. The region's strategic location makes it an important trade and economic hub. Fez-Meknes comprises nine prefectures and provinces, each presenting unique geographical features; Fez: located in the northern part of the region, is known for its rich history, medieval medina, and cultural significance; Meknes: situated to the west, is another historically significant city, offering insights into Morocco's imperial past; Taounate: positioned in the north, is known for picturesque landscapes and agricultural activi-

ties; El Hajeb: nestled in the Middle Atlas Mountains, is characterized by mountainous terrain and agricultural practices; Boulemane: located to the east of the region, is marked by diverse landscapes and natural beauty; Taza: is found in the north-eastern part of the region, known for its proximity to the Rif Mountains; Sefrou: situated south of Fez, is renowned for its agricultural heritage and traditional practices; Ifrane: often referred to as 'Little Switzerland,' is known for its alpine architecture and lush green surroundings; Moulay Yacoub: recognized for its thermal springs and spa resorts.

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The Fez-Meknes region in Morocco has a complex institutional architecture that comprises several levels of governance, namely the regional and prefectural/provincial levels. The Regional Council, governed by the Organic Law on Moroccan Regions, serves as the legislative body, empowered to deliberate, adopt policies, and make decisions on regional development, economic planning, education, healthcare, and more. It formulates development plans, regional budgets, and oversees policy implementation. The Wali, appointed by the King, represents the central government in the region, implementing national policies as per the law. They coordinate regional authorities and enforce national laws and regulations. Prefectures and provinces have local responsibilities, including urban planning, education, healthcare, and public services, with governors exercising decision-making authority. Municipalities are autonomous entities with powers defined by the General Code of Local Authorities. Elected municipal councils address local needs, especially in urban planning and resource management. Decentralized agencies handle specific areas like agriculture and culture, operating under legislative and regulatory texts, making decisions in their domains. Social partners, such as professional organisations and unions, engage in regional development decisions, adhering to labour and association laws.

Approaches to Measuring Sustainable Development Governance
Measuring sustainability is not a new topic. Many approaches focus on specific concepts and rely on different measurement methods. Some aim to measure the effectiveness of the management of

sustainable development policies using outcome indicators while others focus on assessing ecological footprints by measuring energy consumption, greenhouse gas emissions, waste management and other key environmental factors. Thus, this tool is used to monitor environmental conditions and to diagnose environmental conditions and their variability in cooperation with regional actors participating in regional networks to collect and exchange data and information (see https://siredd.environnement.gov.ma/fes-meknes/indicateur).

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However, there are no indicators that actually assess the capacity for action of governments and administrations. For example, the Rokhas index used by Morocco is a tool for assessing the operational performance of local authorities in obtaining urban planning permits (see https://www.collectivites-territoriales.gov.ma/fr/rokhas). Other approaches focus explicitly or implicitly on the capacity to act. 'Capacity' is conceptualised in a narrow sense, either by focusing on sustainable development (Kaufmann, Kraay, and Mastruzzi 2008) or on design options for specific practices such as sustainability strategies (Bertelsmann Stiftung 2017). The Bertelsmann Foundation's Sustainable Governance Indicators (SGI) approach is probably the most important instrument for measuring sustainability governance and is conceptually more comprehensive compared to the African Development Bank's governance rating, which assesses the quality of the institutional framework.

Governance capacity, together with democratic quality and political effectiveness, is one of the three pillars of the SGI approach and is defined as the political leadership to lead processes successfully (Bertelsmann Stiftung 2017). Governance is examined on the basis of two categories: that of governmental performance, and competence of participation of external actors. This perspective is not merely a simple analysis of the instrument, but also goes beyond the internal governance of governments and administrations, which is of particular interest here.

Methodologically, the Sustainable Governance Indicators (SGI) examine governance and decision-making processes in all OECD member countries and the EU, with the aim of assessing the need for

reforms in each country and the capacity to achieve them (Schraad-Tischler and Seelkopf 2015). The indicators are constructed from quantitative data collected by international organisations, complemented by qualitative analysis by recognized national experts.

This combination provides a detailed picture of policy outcomes, the quality of democracy and steering capacities. However, whether experts have sufficient visibility into internal administrations to reliably assess capacity remains doubtful. These doubts are likely to affect in particular, the sub-national level, which is much less subject to expert observation than the national level, given the difficulty of determining the measure of internal governance capacity of governments and administrations focused on sustainability, which is also under the spotlight here. To arrive at a more authentic alternative, we propose an approach that is conceptually based on a differentiated understanding of internal governance capacity and methodologically based on objective data. We emphasise, in this regard, the need to integrate sustainability as a fundamental reference point to guide actions and engage various stakeholders in policy development. Furthermore, the interactions among different factors provide a more comprehensive and holistic understanding of how governance capacity functions in a sustainability-focused context. In summary, our approach distinguishes itself through the redefinition of governance capacity, the introduction of governmental and administrative capabilities, the provision of a comprehensive model of governance capacity, and the emphasis on the institutional anchoring of sustainability.

METHODOLOGY

*Conceptualisation: Internal Governance Capacity
for Sustainability*

Our approach is based on an understanding of governance capacity as the ability of a governance arrangement to steer social problem-solving action towards a collectively shared goal. To this end, sustainability must first be integrated into the mechanism in question, i.e., it must become an obligatory and significant reference point for its action. Governmental and administrative capacity thus

describes the ability of a state government to include various actors to make sustainability a guideline for executive management of issues and policy making. Building on the existing understanding of governance, we conceptualise internal governance capacity in a sustainability-oriented way as the interaction of institutional factors, content or idea factors and the power factor. The governance of an entity is based on a multidimensional framework that requires in-depth exploration for a comprehensive understanding. Firstly, the structural dimension of governance focuses on internal organisation, hierarchy, and the distribution of responsibilities. It encompasses the rules, policies, procedures, and formal mechanisms that shape the entity's operation. This dimension reveals how decisions are made and how responsibilities are allocated, playing a central role in governance (Mériade 2019). The content dimension of governance emphasises the substance of decisions and policies within the entity. It involves evaluating the content of policies, laws, regulations, and organisational practices, examining what is actually decided and how these decisions align with the entity's objectives, values, and standards. Lastly, the political power dimension of governance concerns the influence and control exerted by political actors within the entity. This includes the analysis of power relations, political coalitions, decisions driven by specific interests, and how power is exercised and distributed among stakeholders. This dimension highlights the political and social aspects that influence decisions and policies within the entity, completing the governance landscape (Treib, Bähr, and Falkner 2007). By combining these dimensions, a comprehensive and nuanced view of the governance of an entity emerges, showing how its structure, content, and political power interact to shape its operation. For sustainability to be realised in the actions of a government, it must first be embedded in the institutional architecture. Organisational structures, rules and norms stabilise the expectations of actors. They ensure that sustainability issues receive the attention of the government and administration and become decisive for their thinking and actions (Wang, Van Wart, and Lebredo 2014).

For example, the specialised sustainable development units in-

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TABLE 1   List of Factors

F1	Administrative unit specialised in humanitarian aid
F2	Institutions anchored in sustainability
F3	Interdepartmental coordination institution
F4	Legitimacy
F5	Comprehensive and binding sustainability models
F6	Sustainability strategies
F7	Treatment of cross-cutting issues climate, biodiversity, sustainable nutrition
F8	Ex-post evaluation tools
F9	Pre-event evaluation tools
F10	Sustainable development expertise
F11	External legitimacy
F12	External networking
F13	Commitment of government leadership

NOTES   See Annex 1 for additional information.

dicate who is responsible (factor 1). Other policy-related factors are the reference to sustainable development in other areas of the organisation (factor 2) and interdepartmental coordination (factor 3).

Constitutional and legal bases oblige governments and authorities to address sustainability issues or take into account sustainability standards and provide the basis for legitimising the respective actions (factor 4).

The ability to integrate sustainability into governmental and regulatory action relies secondly on its anchoring in the conceptual foundations of executive action (Hartley and Zhang 2018). The visions, goals, problem analysis, structural metrics and indicators, and action orientation of subjects from a cognitive perspective are also important sources of motivation and debate. Sustainability engagement in content and ideas leads to comprehensive and binding sustainability guidelines (factor 5), sustainability strategies that include several policy areas as a programmatic commitment to sustainability (factor 6), as well as addressing cross-sectoral and cross-cutting topics such as climate change protection and adaptation, biodiversity, sustainable food, digitalisation or a circular or green economy (factor 7). Evaluation tools (e.g., post-monitoring and pre-evaluation based on sustainability indicators; factors 8 and 9) as

well as sustainability expertise enable administrative agencies to orient their actions according to this guiding idea (factor 10). Finally, the internal governance capacity of the government and the sustainability-oriented administration is based on elements of political power (political dimension) that politically legitimise the actions of sustainability-oriented change agents within the government and regulators, while reinforcing this action against other political concerns. Administrative actors can strengthen their internal performance capacity by providing external support for their concerns (Bouzoubaa 2009). This is done, for example, by receiving subsidies (factor 11) or by mobilising professional and political networks (factor 12). In addition, the mass media towards sustainability and the voluntary commitment of political leaders to government signal a corresponding political preference and willingness to politically support internal sustainability issues (factor 13). From this three-dimensional concept, this tool has to be designed progressively. Thus, the institutional position of an administrative department responsible for sustainable development (factor 1) determines its capacity to act. If it is positioned in direct proximity to the government, this promises a greater capacity to influence and steer decisions towards sustainability than at a lower hierarchical level (e.g., in a department).

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Operationalisation: Indicators and Measurement in the Example of Provinces and Prefectures of Fez

In order to be able to measure the capacity for internal sustainability-oriented governance in the context of specific political institutions, we operationalised the factors described at the Fez region in Morocco. To optimise comparisons between provinces, we selected indicators that could be recorded on the basis of objective data for all nine provinces and prefectures of the Fez-Meknes region. This was not possible for factors 2 and 3, so they were excluded from the analysis. Table 2 presents the 11 metrics and their associated measurement operations.

Based on this system of indicators, we carried out in December 2022 a measurement focusing on the sustainability of the internal

TABLE 2 The Multidimensional Measurement Tool: Conceptualisation (Factors) and Context-Specific Operationalisation (Indicators) of Sustainability-Oriented Internal Governance Capacity

Structural dimension			
F 1	F 2	F 3	F 4
I Department of Sustainability	Administrative body for social assistance social assistance	No operationalisation and measurement	Sustainability in constitutional and legislative texts
0 No sustainability department			No legal base
1 Sustainable Development Department at Office level			Grounded in the substantive law
2 Sustainable development department in the regional council			Anchored in the constitution/the law of administrative organisation
3 Department of Sustainability close to the Head of Government			Rooted in the constitution and the law on administrative organisation

Continued on the next page

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governance capacity of the Fez-Meknes region. To do so, we first compiled publicly available policy documents, such as regional land use strategies, legal compendiums, monitoring reports of the High Commission for Planning, and administrative descriptions (organigrams) on regional websites. We also identified events in which the prefectures would participate, as well as funding instruments proposed by the Ministry of National Planning, Urban Development, Housing and Urban Policy and the Ministry of Energy Transition and Sustainable Development.

We have searched the administrative documents on the databases of the High Commission for Planning as well as the regional reports of the Fez-Meknes region for relevant information, which we have recorded. We then quantified the results for each indicator, generally using a four-point scale to assess the strength of each factor. This measure is based on the assumption that the more globally differentiated and explicit sustainable development is in the internal

TABLE 2 *Continued from the previous page*

	Content dimension					
	F5	F6	F7	F8	F9	F10
I	Understanding of sustainability	Policy strategy for sustainable development	Handling of cross-cutting issues	Sustainability monitoring and reporting	Sustainability assessment	Participation in external knowledge events
0	No understanding of sustainability	No policy strategy related to sustainability	Activities on 0–1 cross-cutting issue	No sustainability monitoring	No sustainability assessment	0–4 participation in the Sustainable Development Forum
1	Sectoral understanding of sustainability	A point for: The general requirement of social assistance in policy strategy; long-term horizon (>4 years); integration of development assistance in policy planning	Activities on 2–3 cross-cutting questions	One point each for: Participation in SIREDD; Monitoring that goes beyond SIREDD indicators; Sustainable development report integrated into the political control process	Occasional assessment of sustainability without its own instrument	5–9 participation in the Sustainable Development Forum
2	Comprehensive and simple understanding of sustainability		Activities on 4–5 cross-cutting issues		Regional sustainability assessment instrument without commitment	10–14 participation in the Sustainable Development Forum
3	Comprehensive and differentiated understanding of sustainability		Activities on 6 transversal themes		Structured and mandatory sustainability assessment process	≥14 participation in the Sustainable Development Forum

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governance of prefectural executives, the greater their capacity to act for sustainable development. We created the index by combining eleven metrics. We first calculated the average of the unweighted measures for each governance dimension and divided the sum of the averages by the number of dimensions.

$$Weighted\ Average = \frac{Sum\ of\ (Measures \times Dimension)}{Sum\ of\ Dimensions}$$

In contrast to the simple average, this method takes into account the conceptual equality of the governance aspects. The weighted average is a statistical measure where different values are assigned spe-

TABLE 2 *Continued from the previous page*

	Dimension of political power		
	F 11	F 12	F 13
I	Applications to the funding programme	Engagement in the national sustainability network.	Government commitment to sustainability
o	No application to the Sustainable Development Funding Programme.	o participation in the network	No commitment to sustainability
1	1–2 applications to the Sustainable Development Funding Programme	Occasional participation	
2	3–4 applications to the Sustainable Development Funding Programme	Regular participation	Commitment to sustainability
3	≥4 applications to the Sustainable Development Funding Programme	Management function in the network of regional sustainability offices	

NOTES F1–F13 – factors, I – indicators of context-specific internal sustainability governance capacity, 0–3 capacity measurement.

cific weights based on their relative significance in the dataset, and is used to obtain an overall picture while emphasising diversity within the sample (López-Penabad, Iglesias-Casal, and Silva Neto 2022).

RESULTS

Table 3 presents the indices for each province in the Fez-Meknes region. Using the index of internal governance capacity for sustainability that is placed in the very last row of our table, we distinguish two levels of capacity: three provinces with an index of at least 2 have high capacity. Six other provinces with an index between 1 and 1.9 indicate medium capacity. The inventory confirms that a variant of the sustainability governance prototype can be found in the region and at all capacity levels (Bartle and Leuenberger 2006; Fukuyama 2013; Keskitalo and Preston 2019). Even for the high index locations, no uniform pattern emerges (Bajpai, Stratton-Short, and Adelekan 2022).

Sefrou is the only province that scores in all three dimensions of governance with an average value above 2 points. The other high-capacity localities achieve at least average values. On the one hand,

this underlines the fact that high capacities cannot be achieved only by high values in the individual dimensions. On the other hand, it also shows that there is no successful model of internal sustainability governance (Peters et al. 2022; Tils 2007).

Despite this diversity, certain patterns can be discerned. For example, achieving a high index (over 2 points) requires a sustainability department. To achieve a high index, a province must therefore assign responsibility for sustainability to a single department. However, it does not matter where and at what level in the administrative organisation this position is located. Sustainability expertise is therefore, an important precondition for acting sustainably.

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If we compare the expressions of the factors, we notice that the indicators F5 'Understanding of sustainability' (3 points), F6 'Sustainability strategy' (3 points), F11 'Application to the funding programme' (3 points) and F13 'Government commitment to sustainability' (3 points) achieve the highest average values. Indicators F1 'Dedicated service to sustainability' (1.1 points), F4 'Sustainability in constitutional and legal texts' (1 pt) and F9 'Sustainability assessment' (1.3 points) have the lowest average values.

This suggests that provinces tend to build internal governance capacity for sustainability through factors that determine their legitimacy through institutional and legal texts on sustainable development (factor 4) or sustainability models (factor 5). Factors that directly affect the individual capacity of governmental and administrative actors are only developed in a subordinate way, namely the acquisition of sustainability expertise (factor 10), external legitimacy and networking (factors 11 and 12) or political commitment (factor 13). In order to align their own actions with sustainability, governments and administrations tend to create structural conditions for action. On average, these provinces have higher values for the factors relating to the specific capacity of government actors and administrative agencies to act sustainably than for the factors relating to the condition for action. Therefore, the ability to steer government action towards sustainable development is not only reflected in the operating conditions of the provinces with high indices, but also in the individual competences of the administrative and gov-

TABLE 3 Internal governance capacities of the provinces and prefectures of the Fez-Meknes region focused on sustainability

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Internal governance capacities	Fez-Meknes	Ifrane	Meknès	Boulemane	Fes	Moulay Yacoub	Sefrou	Taounate	Taza	El Hajeb
Sustainability Department	3	0	0	1	2	0	3	0	2	2
Sustainable administrative and legal texts	2	1	1	1	1	2	1	2	0	0
Understanding of sustainability	3	3	3	3	3	3	3	3	3	3
Sustainability policy strategy	3	3	3	3	3	3	3	3	3	3
Activities on transversal issues	3	1	2	3	3	1	1	2	1	1
Monitoring and reporting on sustainability	2	0	3	3	3	0	3	0	2	0
Sustainability evaluation	3	3	0	0	1	1	1	0	3	3
Participation in external knowledge events	1	3	3	3	3	3	3	0	3	2
Applications to the funding programme	3	3	3	3	3	3	3	3	3	3
Involv. in the national sustain. network	2	2	3	2	3	2	2	2	1	2
Province's commitment to sustainability	3	3	3	3	3	3	3	3	3	3
Average	2.5	1.7	1.9	2.1	2.4	1.8	2.3	1.6	1.9	1.8

ernmental actors focused on. This result may be partly influenced by the objective approach, which focuses more on factors that reflect externally visible conditions for action than on those that reflect the individual capacities of actors. Yet it can also be understood as the logical expression of government and administrative action in general. These clearly tend to shape the conditions of action such as establishing an administrative organisation, enacting laws, and forming models, rather than directly building the capacities of their actors.

The Fez-Meknes region is characterised by substantial variations in internal capacity within its prefectures and provinces concerning the promotion of sustainability. Each of the prefectures and provinces has its own characteristics, resources, and priorities in terms of sustainable development. Consequently, administrative capacities vary based on these local factors. Similarly, the specific skills of administrative personnel and existing collaborations with local or international partners influence the ability of prefectures and provinces to achieve sustainability goals. Understanding these

FIGURE 1

Map of the Fez-Meknes Region According to Internal Governance Capacities Focused on Sustainability of the Provinces and Prefectures

regional variations and neighbouring effects is crucial for designing effective policies aimed at promoting sustainability across the entire Fez-Meknes region. This can be observed through Figure 1, which presents the performance mapping of the capacity index, and can be attributed to the new administrative configuration in the Fez-Meknes region in 2015. This restructuring facilitated geographic proximity between these administrative entities, resulting in significant regional variations in terms of the internal capacity of administrations to promote sustainability. However, it is essential to note that regional variations can also lead to inequalities in sustainable development. Some prefectures or provinces may lag in terms of internal capacity, necessitating additional support to strengthen their efforts in this domain.

REFLECTION

Potential and Limitations of the Measuring Instrument

The exemplary application of the measurement tool to the provinces of the Fez-Meknes region shows that it can be used to build a comprehensive and nuanced picture of how governments and administrations behave towards the population. Public administrations promote sustainability in their actions (Benkada et al. 2018). 11 indicators are used to show differentiated patterns of differently developed structural (political), substantive or content (political) and

power (political) governance capacities. In addition, the aggregate capacity index makes it possible to assess the extent to which sustainability is embedded in government and administrative activities in general. On the one hand, the instrument is therefore, suitable for recording the diversity of sustainability-oriented governance arrangements that exist at sub-national level to determine their capacity and to compare them. On the other hand, the innovation of the measurement instrument lies less in the presentation of new factors. It is indisputable that the presence of sustainability strategies or sustainability assessment tools enhances the administration's capacity to direct its efforts towards sustainability (Meadowcroft and Steurer 2018; Ousaa and Fasly 2023; Santoro 2019) but rather, the conceptual contribution of the measurement instrument lies in the combination of known factors (and the plausibility of some new ones) based on a well-founded, comprehensive and at the same time, differentiated understanding of the internal governance capacity for sustainability. Most existing approaches focus on outcome and impact measures (Maldonado and Corbey 2016; Sueyoshi and Ryu 2021), whereas this methodology distinguishes itself in the way governments and administrations are structured and organised to promote sustainability. The article highlights the diversity of governance arrangements for sustainability, allowing for a better understanding of the various approaches adopted by governmental administrations. This in turn, facilitates a more precise delineation of the different strategies in place to promote sustainability at an administrative level, and the determination of which practices yield the best results. The identification of areas where sustainable governance can be strengthened constitutes a significant contribution, as it goes beyond merely identifying shortcomings to provide practical recommendations for enhancing government sustainability. Finally, instead of offering a generic approach, the article customises the measurement instrument to a specific geographical and political context, thus enabling an in-depth analysis of sustainable governance at regional level. The combination of institutional, content-related and process-related factors goes beyond the existing analytical perspectives on the region. From an empirical point of view, the

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measurement instrument provides the possibility of distinguishing the characteristics of the capacity factors. Instead of considering departments or sustainability strategies as capacity building, it is possible to measure the capacities of different forms of departments and strategies. This allows for a detailed and reliable comparative analysis of the capacities of different governance arrangements under similar contextual conditions (e.g., the capacities of sub-national entities within a state). While the models identified and their implications initially apply to the local level in Morocco, the geographical basis of the measurement tool – the three-dimensional understanding of governance – allows the approach to be transferred to other political and institutional contexts. This has necessitated a context-specific adaptation of the indicators. Thus, in other contexts that are distinguished by their own competencies and resources, other models of governance for sustainable development are to be expected and should be represented by modified indicators.

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To further strengthen sustainable development governance and promote state capacity in this area, it is insufficient to simply reorganise the public administration; it is also necessary to reorient the minds and hands that work in it. At the same time, the limits of the approach become visible. On the basis of the measurement instrument, no statement can be made as to whether the capacities are actually reflected in the results. For example, if external networking in other governmental and administrative systems (e.g., at local level or in other federal states) tends to be organised in informal sustainability networks, this must also be reflected in the indicators and measurement operations. Quantitative and qualitative analyses can also show how specific contextual conditions affect the functioning and capacities of the corresponding governance arrangements.

The fact that it was not possible to measure two main factors, such as interdepartmental coordination facilities and administrative bodies related to sustainability, reveals the methodological limitations of the measurement instrument or even the fact that this region is not fully open to the disclosure of information. These are located where the public visibility of governmental and administrative organisations ends. It is precisely at sub-national level that

the approach increases traceability compared to expert assessments such as the 'SGI'; this shows us the missing link between local and global scales and the lack of coordination between departments. This opens up new possibilities, so time series analyses can be used to capture the evolution of the capacity to identify explanatory factors for high or low capacity. The data for the Fez-Meknes region allows us to assume that external socio-economic conditions, such as the degree of urbanisation, the relative level of prosperity, the Ramsar convention, and the administrative size or political opportunities could act as explanatory factors for the level of internal governance capacity for sustainability. In addition, the National Human Development Initiative programme could be used as the means by which each department should work towards the smooth running and implementation of sustainability in each locality.

Implications for Governance Practice

In this article, we present and discuss an instrument for measuring the internal governance capacity of governments and administrations for sustainability and apply it as an example to the region of Fez-Meknes. Using this approach, a differentiated picture can be drawn, which is based on a thorough and comprehensive understanding of governance on the one hand, and objective data on the other. It appears that the governance arrangements of the provinces and prefectures differ considerably in their ability to steer government and administrative action towards sustainability. A high index can be achieved with different arrangements. Even if certain models are recognisable, it is not possible to identify a successful model for internal sustainability governance.

Observations on the relationship between factors that target the conditions for action and factors that concern the empowerment and capacity of government and administrative actors themselves are revealing for the practice of governance. While the former tends to be more pronounced, the latter generally receives medium values. However, a small number of provinces and prefectures with a high index give relatively more importance to factors related to the mode of operation. Governments and administrations, therefore, seem to

focus on factors that refer to the conditions for action – for example, the establishment of a sustainability department and the creation of a legitimacy base, as the national policy of the kingdom aims to develop a good understanding of sustainability to achieve a high-capacity index. However, the administrative and governmental actors themselves also need to be empowered. In this respect, the development of expertise in the field of sustainability seems particularly effective. It would be a major asset to strengthen this whole system with the participation of certain stakeholders such as civil society.

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These results should also be interesting for the debate on the governance of sustainable development in general. They show once again, that it is not just a question of rigid, but rather flexible conditions for action.

ANNEX 1

Additional information for operationalisation: Indicators and measurement of internal governance capacity for sustainability in the context of the Fez-Meknes region.

Political Dimension: Structural Factors

Factor 1: Specialised administrative unit for sustainable development → Sustainable development department.

Key Question: Has a regional sustainable development department been institutionalised and where is it located organisationally?

The administrative bodies responsible for sustainability raise awareness of sustainability within government and administration and ensure that sustainability concerns are considered by government and administrative actors. The governance capacity for sustainable development is higher (1) the closer an administration is designated as the lead for sustainable development and (2) the closer it is to the decision-making centre, i.e., the higher it is in the administrative hierarchy.

Factor 2: The institutional embedding of sustainability → Administrative offices linked to sustainability.

Factor 3: Cross-cutting coordination structures → no operationalisation and measurement.

Factor 4: Legal anchoring of sustainability → Sustainability in constitutional and legal texts.

Key Question: How is sustainability anchored in regional law?

A legal anchoring of sustainability creates legitimacy and commitment for government and administrative action. The more generally binding the legal anchoring of sustainability, the greater the capacity for governance of sustainability. It is assumed that the general binding nature of simple substantive laws, ranging from administrative organisation laws to constitutional articles, will increase.

Policy Dimension: Content Factors

Factor 5: Sustainability mission statement → understanding of sustainability.

Key Question: Does the locality have a transversal and differentiated understanding of sustainability?

Global sustainability models are an expression of the fact that sustainability is embedded in terms of content and ideas in government and administrative action. The governance capacity for sustainability is greater the more (1) an understanding of sustainability is formulated across government and (2) the more differentiated it is. A less differentiated, but globally formulated understanding of sustainability indicates a greater capacity than a more differentiated understanding of sustainability formulated at the department or office level.

Factor 6: Sustainability strategy → Policy strategy related to sustainability.

Key Question: Does the region have a comprehensive, long-term, strategic action plan for sustainability?

The existence of cross-sectoral strategic policy planning for sustainability increases the binding nature and effectiveness of sustainability for government and administrative action. The sustainability governance capacity associated with a sustainability-oriented policy strategy is all the greater if (1) an overall sustainability claim is made in the policy strategy, (2) a long-term perspective is adopted and (3) the sustainability-oriented strategy is integrated into (real) policy planning.

Factor 7: Higher level treatment: Sustainability issues → Activities on cross-cutting issues.

Key Question: How many cross-cutting sustainability issues (climate protection, climate adaptation, biodiversity, sustainable food, digitalisation, circular economy or green economy) are addressed?

The preoccupation of government and administration with cross-cutting sustainability issues indicates whether the issues are potentially addressed in a comprehensive and integrated manner. Sustainability governance capacity is higher the more strategies and programmes are developed and communicated on specific and cross-cutting sustainability issues. Activities on the following cross-cutting issues were recorded: climate protection and adaptation, biodiversity, sustainable nutrition, digitalisation and circular or green economy.

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Factor 8: Post facto (ex-post) evaluation of sustainability → Sustainability monitoring and reporting.
Key Question: Does the region have a sustainability monitoring system?

Ex-post sustainability assessments are instruments for aligning government action with sustainability. The capacity for sustainability governance is enhanced if (1) sustainability-oriented development monitoring, e.g., on the basis of the Indicator Circle (IC), (2) this is carried out regularly, (3) monitoring is based on a differentiated basis and (4) reporting is integrated into the canton's control process (e.g., basis of the policy strategy).

Factor 9: Prior (ex-ante) sustainability assessment → sustainability assessment.
Key Question: Does the region have binding instruments and processes for ex-ante sustainability assessment of projects?

The instruments and basis for carrying out ex-ante sustainability assessments of plans and projects strengthen the integrative consideration of sustainability concerns in government and administrative action. The capacity for sustainability governance is all the higher if (1) there is a specific sustainability assessment instrument, (2) it is based on a conceptually differentiated basis and (3) there are binding regulations for the application of sustainability assessment.

Factor 10: Sustainability expertise → Participation in external knowledge events.

Key Question: Is the region developing sustainability expertise by participating in knowledge events (participation in the region's Sustainable Development Forum)?

The sustainability knowledge of the administrative staff is a prerequisite for competent handling of sustainability issues. The capacity for sustainability governance is higher the more frequently prefectural staff participate in external events with an explicit reference to sustainability, e.g., the nationally oriented Sustainability Forum.

Political Dimension: Political Power Factors

Factor 11: External legitimacy → Application to the federal funding programme.

Key Question: Does the region participate in forward-thinking, projects to initiate innovative activities for sustainability (funding programme)?

If administrative actors acquire external resources for projects and activities, they strengthen their legitimacy and internal assertiveness. The more provinces and prefectures participate in innovation-oriented funding programmes, the higher the capacity for sustainability governance. The number of entries of provincial and prefectural authorities in the development assistance programme serves as an indicator.

Factor 12: External networking → Participation in national sustainability network.

Key Question: Does the region participate in the interregional network of sustainability specialists?

Participation and exchange in external sustainability networks strengthen the internal assertiveness of administrative actors. The capacity for sustainability governance increases as sustainability officers become involved in the national network for sustainable development.

Factor 13: Commitment of senior government → Regional government commitment to sustainability.

Key Question: Does the government make a public commitment to sustainability in strategic policy documents?

Public communication and political leadership commitment to sustainability signals political importance and willingness to support and promote sustainability concerns internally.

Sustainability governance capacity is higher the clearer it is.

The regional organisation has committed itself to sustainability in strategic policy documents. The government's visible and official statements on sustainability, for example in the legislative programme, serve as indicators.

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Measuring the Transparency of the Central Bank of Egypt as a Prerequisite for Adopting Inflation Targeting Policy

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It has been almost two decades since the Central Bank of Egypt initially announced its intention to adopt the IT regime once the fundamental prerequisites were met. The transition towards the IT policy has been part of the complete revamping and reform of monetary policy in Egypt following the various challenges in the Egyptian economy has been undergoing since the late nineties (Al-Mashat 2008). Thus, the CBE has paid continuous attention to comply with the preconditions of the IT policy (Youssef 2007). The purpose of this paper is to assess the degree of transparency of the CBE over the period 2005–2021. The study relies on the most recently developed index for Central Bank transparency for inflation-targeting central banks, designed by Al-Mashat et al. (2018) to quantify the degree of transparency of the CBE. The analysis reveals that CBT in Egypt is advancing, but with a relatively reasonable path of change. Still, the CBE has a large void to fill, especially pertaining to the transparency related to the Forecasting and Policy Analysis System and policy-making process.

Key Words: central bank transparency, inflation targeting, central bank transparency for inflation-targeting central banks index, Central Bank of Egypt

INTRODUCTION

The inflation targeting (IT) regime refers to the monetary policy framework that several central banks have adopted since the late

1990s. It assigns the ultimate priority to the price stability objective which any other potential goals should be in line with and subordinate to (Bernanke et al. 1999). A considerable part of literature on the IT regime focuses on specifying the important preconditions for the adoption of such a regime (Eichengreen et al. 1999; Savastano, Masson, and Sharma 1997; Khan 2003; Batini and Laxton 2006). Basically, these prerequisites could be categorized as institutional and technical prerequisites.

On the institutional side, central bank independence, high levels of transparency, and well-defined decision-making arrangements are among the main prerequisites. Technical prerequisites incorporate the existence of an appropriate price index for measuring the inflation target, an effective transmission mechanism between the monetary policy instrument and inflation, the timely availability of high-quality data, and sophisticated forecasting models for inflation forecasting. It is notable that the transparency prerequisite of IT has gained momentum since the early stages of adopting IT as it is highly related to the effectiveness and success of each one of the abovementioned preconditions (Eichengreen et al. 1999; Peter, Heenan, and Roger 2006).

Therefore, central bank transparency has become one of the key features of monetary policy of most central banks that adopt the IT regime (Crowe and Meade 2008). This increasing importance of CBT entails both theoretical and empirical rationales (Eijffinger and Cruijsen 2007). Theoretically, CBT could promote the central bank's ability to build its reputation, decrease the inflation bias, and provide the central bank with greater flexibility to adjust to unexpected shocks (Woodford 2005; Freedman, Klaus, and Broaddus 2002). Moreover, CBT fosters the effectiveness of monetary policy and sets the basis for central-bank accountability (Geraats 2000). Empirically, it has been proved that greater levels of CBT are associated with lower levels of inflation and unemployment and accordingly, stable economic performance. This is attributed to well-anchored inflation expectations, which in turn help to fulfil the ultimate objective of the IT regime of price stability (Siklos 2002; Dincer and Eichengreen 2007; Łyziak, Mackiewicz, and Stanisławska 2007;

Crowe 2010; Dincer and Eichengreen 2010; Capistrán and Ramos-Francia 2010; Dincer and Eichengreen 2014).

Consequently, there has been an international trend towards enhancing monetary policy transparency. However, transparency is a qualitative concept that is not easily measurable. Yet, without robust measures of CBT, it is impossible to assess the economic impacts of different degrees of CBT across various countries or even for one country across time. Thus, there has been a continuously increasing number of studies that attempt to quantify CBT by constructing several indices and updating them regularly to incorporate changes in the different aspects and definitions of CBT. Most of the CBT indices focus on disclosed information about monetary policy process: objectives, policy decisions, the implementation of these decisions, and their rationale (such as Fry et al. (2000) and Eijffinger and Geraats (2006)).

Other CBT indices consider dimensions, such as clarity and actual comprehension of the central bank's disclosed information (like de Haan, Amtenbrink, and Waller (2004) and Fracasso, Genberg, and Wyplosz (2003)). In addition, the methods by which central banks convey their key messages are of utmost significance as they have a crucial role in the understandability of the released information. Thus, the analysis of different communication tools of central banks (i.e., monetary policy report (MPR) or inflation report, monetary policy committee (MPC) meeting minutes, and financial stability reports) has gained greater attention in order to comprehensively tackle both released information and its quality (Blinder et al. 2001; Jeanneau 2009).

Notwithstanding the various indices developed to measure CBT, there is only one study presented by (Al-Mashat et al. 2018) that tries to construct a specific CBT index for IT monetary policy. Given that the IT regime is considered the most transparency-requiring monetary policy regime compared to others, it is of paramount significance to develop a particular CBT index to account for the required sophisticated forms of information disclosure and communication by any IT central bank. The index of (Al-Mashat et al. 2018) of three main categories; transparency regarding monetary policy ob-

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jectives, transparency regarding the Forecasting and Policy Analysis System (FPAS), and transparency regarding the monetary policy-making process. These categories are the crucial underpinnings of a fully-fledged IT system (Svensson 1997). Moreover, Egypt has been out of the scope of most studies that either construct CBT indices or assess the impacts of different levels of CBT. The empirical studies on assessing Egypt's CBT remain thin on the ground. Only few studies endeavour to analyse some aspects of Egypt's CBT (Farrag and Kamaly 2007; Emam, Fayed, and Fouad 2021) as part of their attempts to quantify the degree of independence of the Central Bank of Egypt (CBE). Therefore, it is important to present recent studies that could provide a thorough assessment of the transparency of the CBE, with particular attention paid to its vital role in the successful transition towards a fully-fledged IT regime.

Therefore, this study attempts to quantify the transparency of the CBE from 2005 to 2021 by applying the CBT-IT index. It provides a comprehensive analysis of how the CBT-IT of the CBE has evolved since the early announcement of the CBE's intention to adopt a fully-fledged IT regime in 2005, taking into consideration the various reforms and changes that monetary policy and the entire Egyptian economy have witnessed since then. Accordingly, the study presents an inclusive elaboration of the CBE's performance on each component of the CBT-IT index during this period. It concludes that the CBE's transparency has kept improving since 2005 till 2021; still, the CBE has a large void to fill, especially in the FPAS and policy process transparency.

LITERATURE REVIEW

The seminal work of (Dincer and Eichengreen 2007) is the first to include the CBE in its cross-country sample. Their study applies the methodology of the Eijffinger and Geraats (EG) index[1] (2002) for 100 central banks over the period (1998–2005). It has reported that the degree of Egypt's CBT is modest and profoundly lower than the average transparency of both the entire sample and that of the whole African region in 2005[2] (Eijffinger and Geraats 2002). Thereafter, Dincer and Eichengreen (2010; 2014) updated their earlier study by

expanding the dimensions of time and countries. They have found that the transparency of the CBE has experienced a remarkable increase since 2005. For instance, in 2010, Egypt's score on the EG index of CBT (5) exceeded the African average CBT score (4.4). Besides, the difference between the average CBT score of the total sample (which was 5.5 in 2010) and CBE's score has decreased (Dincer and Eichengreen 2010; 2014).

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In the aftermath of the global financial crisis, Dincer, Eichengreen, and Geraats (2019) have presented a modified version of their previous index of CBT. The CBE was among the 112 central banks for which have measured CBT. According to their calculations, the transparency of the CBE continued to increase even after the crisis and reached a score of 6 out of 15 in 2015, which is, fortunately, higher than the African average score (4.9). Another study that measured transparency of the CBE was that of Horvath and Vasko (2016). They quantified the financial stability transparency (FST) of 110 countries during the period (2000–2011). Although they have reported a worldwide trend towards higher transparency about financial stability issues, the CBE has received the lowest score on their FST index, because it did not publish a financial stability report during the study period (Horváth and Vaško 2016).

The main void of the abovementioned cross-country studies is that they have not provided an in-depth country analysis of CBT in Egypt, in addition to ignoring the most recent changes in the Egyptian monetary policy context. Furthermore, other relevant studies covering Egypt are mainly related to the Central Bank Independence (CBI) literature. They have dealt with CBT only as a component of the CBI indices, hence tackling only part of the transparency criteria contributing to CBI.

Among the CBI studies, studies by Farrag and Kamaly (2007) and Emam, Fayed, and Fouad (2021) have measured the transparency of the CBE as a sub-index of CBI. First, Farrag and Kamaly (2007) assessed CBT in line with applying the legal CBI index of Jácome (2001)[3] for the CBE over the period (1961–2004). In the context of this index, CBT is tackled only by the frequent publishing of financial statements verified by external auditor. Their study concludes

that the CBE reached the maximum score of CBT (i.e., it scored 1 out of 1 in the CBT sub-index from 1972 until 2004) due to its legal commitment to regularly disclose its externally certified financial statements.

[206]   Second, Emam, Fayed, and Fouad (2021) evaluated the de jure and de facto CBI of the CBE, and tried to measure the gap between them during the period (1993–2017). Both indices involve CBT as one of their sub-indices. The CBT sub-index of the de jure index focuses on policy and procedural transparency in terms of publishing regular reports and notes on policy changes with their justifications. They have pointed out that the legal CBT score is very modest and constant at 0.25 out of 1 throughout the study period, because of the deficient legal obligation of the CBE to release periodic reports. Meanwhile, their de facto CBI index incorporates a wider range of CBT pillars. Namely, economic transparency in the form of the dissemination of macroeconomic forecasts and forward-looking analysis. Besides, it has expanded procedural transparency practices to comprise the proclamation of MPRs (or inflation reports) and MPC meetings' minutes. Unlike the de jure CBT score, the de facto transparency of the CBE has improved gradually since 2011 and reached the highest score of 1 in 2017. The study indicates that the remarkable difference between both measures of CBT (i.e., a de facto score of 1 compared to a de jure score of 0.25 in 2017) is justified by the insufficiency of the legal provisions to enhance CBT.

METHODOLOGY

This study employs the CBT-IT index proposed by Al-Mashat et al. (2018). This index is divided into three main elements: transparency about monetary policy objectives, transparency about the Forecasting and Policy Analysis System (FPAS),[4] and transparency about the monetary policymaking process. Each element of the index is further divided into several criteria. The total number of criteria included in the index is 20. Each of the 20 criteria is coded by a uniform scale from zero to one, with zero representing the lowest degree of transparency and one for the highest degree of transparency. The transparency score within each criterion varies according to the rele-

TABLE 1   Main Components of the CBT-IT Index

Component	Criteria
Transparency about monetary policy objectives	Statement of the central bank objective(s). Clear communication of the central bank announced objective(s). The role of financial stability in monetary policy communication. Communication of the achievement of the central bank objective(s).
Transparency about the FPAS	Public availability of the pivotal economic databases used within the FPAS. Publication of the core monetary policy model. Publication of the reaction function or loss function. Publication of all key central-bank forecasts produced by the FPAS. Publication of fan charts for all key central-bank forecasts. Publication of underlying methodology used to produce the fan charts. Publication of forecast revisions of all key central-bank projected macroeconomic variables. Publication of alternative scenarios. Publication of the historical data and forecasts of the financial variables.
Transparency about Policy Process	Publication of press releases. Webcasting of the press conferences and the public availability of their presentations. The public availability of the Q&A sessions with the regular forecast updates. Publication of the minutes of the MPC meetings. Explicit communication of the role of staff and policymakers in the baseline forecast process. Public availability of periodic review of the forecasting performance. Public availability of an external and independent evaluation of the policy framework and the FPAS.

NOTES   Adapted from Al-Mashat et al. (2018).

vant transparency practice(s). The maximum score of the CBT-IT index is 20, reflecting the highest degree of central bank transparency for inflation targeting. The CBT-IT index is calculated as the sum of the scores of each criterion.

MEASURING THE CBT-IT OF THE CBE

Although the Egypt-focused studies have provided quantification for some dimensions of CBT, they have not presented a comprehensive measure of CBT. Moreover, they have not paid the appropriate

[208]   attention to the CBT practices that are of utmost significance to the IT policy. Therefore, this study fills the void in literature by measuring the CBT for IT policy for the CBE from 2005 to 2021. These 17 years can be categorized into three sub-periods according to the contemporaneous substantial variations that the monetary policy and the entire economy have witnessed. *The first sub-period* (2005–2010) started with the official announcement of CBE's intention to switch towards the IT policy, accompanied by thorough economic, monetary, and banking reforms. This period also reflects the early beginning of the CBE's efforts for fostering CBT. *The second sub-period* (2011–2016) witnessed remarkable political and economic changes in Egypt that have impacted CBT practices. *The third sub-period* (2017–2021) marks Egypt's adoption of an economic and monetary reform programme. Besides, the CBE has disclosed its inflation forecast – for the first time – which is considered a serious step towards promoting the CBT-IT. Therefore, it is important to track how each element of the CBT-IT index has evolved across the three sub-periods.

Transparency about Monetary Policy Objectives

The only transparent practice followed by the CBE in the first period has been the explicit disclosure of the price stability overriding (Central Bank of Egypt 2005). Therefore, it begins with a score of 1 out of 4 in the first period. The CBE has emphasised the priority of price stability objective on its official website and each issue of its periodic publications (e.g., annual reports and MPC press releases) throughout the 3 sub-periods of the study. In addition, the CBE spares no effort in expressing its keenness on sustaining the output and investment growth without jeopardizing its primary objective of price stability. Yet, neither law no. 88 of 2003 nor law no. 194 of 2020 have declared such a priority. On another note, the CBE has turned out to be more open about its financial stability concerns and introduced its macroprudential toolkit in the second sub-period

(Central Bank of Egypt 2011; 2014), therebyscoring double in transparency regarding objectives (i.e., 2 out of 4) in the second period. Additionally, the CBE has been sharing publicly quantitative inflation targets with well-defined target horizons since 2017 (Central Bank of Egypt 2017). This in turn allowed the CBE to gain a higher score in the third period, which was 2.5 out of 4. On the contrary, there exists some ambiguity about the achievement of CBE's policy objectives (i.e., the management of the short-run output-inflation trade-off)whereby there has not been any published quadratic loss function tackling how the CBE assigns penalties to the deviations of inflation from its target and output from its potential level in any of the sub-periods.

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Transparency about the FPAS

The CBE has exerted various efforts to improve its performance within this dimension. In the first sub-period, The CBE paid due attention to the process of building and the ongoing amelioration of various inflation forecasting models (Al-Mashat 2008). Moreover, it created the monetary policy sector to provide a regular objective evaluation of the monetary policy to the MPC before each meeting (Central Bank of Egypt 2004). In addition, the technical infrastructure of the monetary policy sector has been enhanced through hiring well-educated and specialised staff, as well as developing the skills of the existing staff via training courses in cooperation with international central banks and institutions (Central Bank of Egypt 2013). In addition, the CBE has worked on promoting the quality and accuracy of its macroeconomic databases, especially inflation and GDP (Al-Mashat 2008). It also became a participant in the IMF's Special Data Dissemination System (SDDS)[5] in January 2005. Furthermore, the CBE inaugurated its core CPI inflation measure[6] in 2009. Starting from September 2009, the CBE has embarked on publishing a monthly inflation note to provide the public with a regularly updated analysis on the main inflationary dynamics.

In the second period, for the first time, there was a separate section in the CBE's official website for the key time-series datasets, such as different interest rates of various frequencies, core and head-

line inflation rate, GDP, and miscellaneous macroeconomic and financial variables. Moreover, all these time series are available for the public in an Excel downloadable format and can be customized according to various frequencies and timespan. Thus, the CBE is assigned a score of 0 in most of this category's criteria, except for the part related to the publishing of few macroeconomic and financial datasets, which allows for achieving a score of 0.8 out of 9 in the first and second periods.

During the third period, inflation forecasts and their achievement horizons have been quarterly published in the MPRs since June 2017. The CBE has published fan charts for inflation forecasts to highlight the uncertainty surrounding them and the conditionality of these disclosed forecasts on the available information, explaining why the CBE has gained a higher score (1.2 out of 9) in the FPAS category in the third period of the study. Nevertheless, the underlying methodology of those fan charts has not been elaborated upon in any of the MPRs. Although the CBE has not published alternative scenarios to its inflation forecasts, the upside and downside risks to the announced inflation forecasts are reviewed and discussed in the inflation outlook section of the MPRs. Yet, such discussions of risks are relatively brief and need to be supported with an econometric alternative scenario simulation.

On the other hand, the deficiencies in the CBE's transparency performance in the FPAS regard, which are inherent in all the subperiods, have included the obscurity of the core forecasting model to draw baseline forecasts, the unavailability of the main macroeconomic and financial variables forecasts, and the absence of any forecast revisions.

Transparency about Policy Process

The CBE has exerted remarkable efforts to explain its policy framework and decision-making process via publishing miscellaneous reports and bulletins at various frequencies such as via a monthly statistical bulletin, quarterly economic review, annual report, and quarterly external position of the Egyptian economy (Central Bank of Egypt 2004). The CBE has continuously tried to improve the

quality and understandability of its publications by incorporating charts and analytical indicators into its analysis and promoting the macroeconomic analysis (Central Bank of Egypt 2012). In addition, a communication unit has been set up to improve CBT about the policy process (Serrao 2017). Besides, a new user-friendly website for the CBE was initiated in 2016, with thorough informational content on each sector of the CBE, a wide range of datasets, and the CBE's periodic publications (Central Bank of Egypt 2016). The CBE has also aimed at delivering its vision and efforts to various audience via the most user-friendly techniques. In particular, it launched an official YouTube channel in 2018 to share swiftly and easily the CBE's initiatives, its participation in various international and domestic conferences, and the multimedia interviews with the CBE's top management. The CBE's board members and staff have exerted great efforts in enhancing dialogue with all stakeholders by expanding their contribution to educational presentations and media interviews. Recently, the new Central Bank Act (no. 194 of 2020) committed the CBE to more transparent and accountable practices, such as the obligation of the CBE to release on its official website and the official Egyptian Gazette each decision related to the conduct of its monetary policy, banking supervision, and regulatory framework (Abulnaga 2021). Moreover, the CBE instituted an electronic portal for the Investor Relation (IR) on its official website in 2021. The goal of that portal is to build bridges of trust and communication between the CBE and all investors (Central Bank of Egypt 2021).

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Despite the variety within the CBE's communication toolkit, this category has been assigned a constant score of 1 throughout the three periods under study. The CBE's transparency about the policy process still lags behind the best practices of the CBT-IT. Among the main shortcomings are the absence of a periodic press conference with a Q&A session after each scheduled MPC meeting to discuss and explain its policy decisions or upon the publication of key forecasts. Instead, CBE only publishes a brief press statement in English and Arabic immediately after every MPC meeting. However, the CBE has occasionally held some press conferences with Q&A sessions for specific purposes (e.g., presenting the draft of law no.

TABLE 2 Evolution of the Components of the CBT-IT Index for the CBE (2005–2021)

Component	2005–2010	2011–2016	2017–2021
CBT-IT score for the CBE	2.8	3.8	4.7
Transparency about the objectives	1.0	2.0	2.4
Transparency about the policy process	1.0	1.0	1.0
Transparency about the FPAS	0.8	0.8	1.2

NOTES Calculations based on the CBT-IT index for the CBE.

194 of 2020). On another note, it is not clear to the public how MPC decisions are taken, as neither the MPC meeting minutes with its attributed voting outcomes nor the forecast role in the decision-making process are published. Lastly, the CBE has not disclosed any information about the potential revision or assessment of FPAS internally or externally.

Overall, the CBT-IT score for the CBE has improved over the three sub-periods. The most notable improvement in the CBT-IT score was found in the last sub-period (2017–2021) due to improvement embedded in the objectives and the FPAS category scores, respectively, compared to the first sub-period. Still, the score of transparency about policy process category has not exceeded one throughout the three sub-periods. It is evident that the CBE still has a long way to go, especially concerning the FPAS and policy process categories. The coming section provides a way forward for the CBE to follow to reach the frontiers of the CBT-IT.

THE WAY FORWARD

Transparency about Monetary Policy Objectives

The CBE should incorporate explicitly the precedence of the price stability objective into its legal statute. This can eliminate the mismatch between the CBE's legal framework and its official website regarding the statement of the CBE's prioritization of objectives. In addition, as with most IT central banks, the inclusion of a price stability goal and a quantitative inflation target in the legal framework could help the CBE demonstrate its commitment to achieving such a goal. Another criterion of the CBT-IT that the CBE should work

on is the communication of the quantitative inflation target and its bands. Further elaboration is needed on the interpretation of the bands around the target to reinforce CBE's credibility and steer inflation expectation whereby the CBE must disclose to the public that it targets a specific point of inflation and there can be some variation in the actual inflation. In other words, the CBE should assure its keenness to attain the midpoint of the inflation variation band despite any possible deviation. Finally, the publication of the loss or reaction function could strengthen the communication channel between the CBE and all stakeholders, especially the academic community. It could therefore, act as a quantitative assessment of the CBE short-run inflation-output trade-off management.

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Transparency about the FPAS

While no central bank has attained the full score of this category, the CBE has missed most of the transparent criteria adopted by other IT central banks. First, a wider set of historical and forecasts of macroeconomic and financial variables should be available and downloadable on the official website of the CBE or at least the links of those datasets in other statistical institutions. Second, the CBE needs to release its core projection model along with generating codes and assumptions in a working paper format that gets updated every five years. Third, the risk and uncertainty analysis should gain greater attention in the CBE's periodic publications, particularly in its quarterly MPRs, and not just be merely expressed through words as is currently the case, Each disclosed forecast (not only inflation) should be associated with fan charts to display the uncertainty intervals along with a detailed explanation for the underlying methodology. Besides, the CBE must regularly incorporate alternative scenarios into its core forecasts to explain any potential risks.

Transparency about Policy Process

Notwithstanding the CBE's efforts to institute a comprehensive communication process, more is needed from the CBE side to be better aligned with the transparency criteria required for the IT policy (Emam 2021). First, holding frequent and live-streamed press

conferences, especially after each meeting of the MPC and the publication of core forecasts must be a convention. In addition, the presentations and the Q&A sessions of those conferences should be accessible online in both Arabic and English. Second, the CBE could start gradually disclosing the discussions and opinions of the MPC members on the announced decisions. Third, the whole policy process, including the FPAS, must be evaluated periodically by both the CBE's economists and external experts or institutions. Their outcomes could be published on the CBE official website.

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Furthermore, just as the shift to a fully-fledged IT policy cannot be accomplished overnight and requires steady preparation, the optimal performance of the CBT-IT might take some time as well. The real concern, however, is the continual efforts to shorten that transition period by adopting the best practices. It is also worth emphasising that each central bank has its own vision of the acceptable level of CBT, which is defined by the central bank's assessment of various stakeholders' social, political, and economic circumstances.

CONCLUSION

To measure the transparency of the CBE as a prerequisite for adopting the IT policy, the present study highlights the most recently developed CBT index by Al-Mashat et al. (2018), known as the central bank transparency index for inflation-targeting central banks (CBT-IT), which has been especially developed to account for the best practices of CBT required for a fully-fledged IT regime. The CBT-IT index is composed of three main elements; transparency about monetary policy objectives, transparency about the FPAS, and transparency about the monetary policy-making process.

The study assesses the transparency of the CBE throughout the three studied sub-periods (2005–2010, 2011–2016, 2017–2021) by employing the CBT-IT index within each sub-period. The study finds that the performance of the CBE in the three categories of the CBT-IT index has witnessed a relatively reasonable path of progress across the studied periods. Regarding the objectives, the CBE's transparency has improved significantly over the course of the study. First, it started with the clear disclosure of the price sta-

bility overriding, in the first sub-period. Following that, the CBE became more open about financial stability concerns in the second sub-period. Then, it eventually disclosed quantitative inflation targets with well-defined target horizons, starting in 2017. However, the CBE neither discloses its preferences nor its short-term trade-off between inflation and output.

On the FPAS side, the CBE has exerted various efforts to improve this dimension: the most remarkable features of efforts are the CBE's subscription to SDDS in 2005 to ensure the timeliness, accessibility, integrity, and quality of its published databases, the inauguration of the CBE's core CPI inflation measure in 2009, and the release of a monthly inflation note to provide updated information on the key inflationary dynamics. Moreover, in the third sub-period of the study, the CBE initiated many transparent practices, such as the disclosure of the CBE's numeric inflation target, and the publication of inflation forecasts and their uncertainty bands (i.e., their associated fan charts). Still, there remain some inherent shortcomings in this regard such as the obscurity about the core forecasting model to draw the baseline forecasts, the unavailability of the main macroeconomic and financial variables forecasts, and the absence of any forecast revisions.

Pertaining to transparency about the policy process, the CBE has taken many steps towards reinforcing communication with all stakeholders via publishing miscellaneous reports and bulletins at various frequencies, establishing a specialised unit of communication inside the CBE, diversifying its communication channels such as its user-friendly official website, its YouTube channel, and other educational and multimedia presentations. Nonetheless, more measures are still missing as the CBE has not held any periodic press conference with a Q&A session, neither after each scheduled MPC meeting to discuss and explain its policy decisions nor when publishing its key forecasts. Furthermore, the public has not been provided a clear picture of how the MPC reached major policy choices, because neither the MPC meeting minutes with attributed voting outcomes nor the forecast role in the decision-making process are publicly disclosed. Lastly, the CBE has provided little information about its in-

ternal or external initiatives to revise and assess its FPAS. Thus, the
CBE's transparency performance is still in need of further reforms
to be compatible with the required swift transition towards a fully-
fledged IT regime.

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NOTES

1 The EG index is the first monetary policy transparency index that assesses
the political, economic, procedural, policy, and operational aspects of CBT.
Their index is calculated from the scrutiny of actual information disclosure
related to each stage of the decision-making process of monetary policy.

2 While the CBT score of Egypt was 2 in 2005, the (unweighted) average score
of the whole sample and the African region were 5.2 and 3.9, respectively
(Dincer and Eichengreen 2007).

3 For further information about this legal CBI index, see (Jácome 2001).

4 The FPAS is the organisational framework that provides the regular flow
of macroeconomic information to policymakers for their decisions on the
policy instrument path (e.g., the policy interest rate) (Clinton et al. 2015).

5 The aim of the CBE's subscription to SDDS was to ensure the timeliness,
accessibility, integrity, and quality of its published databases by the appli-
cation of international best criteria (International Monetary Fund 2005).

6 This measure of CPI is different from the headline one in terms of dropping
the temporary noise (i.e., price fluctuations in the highly volatile goods
such as foodstuff and subsidized goods) from the permanent price move-
ments.

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Career Decisions in the Mediterranean: To Be or Not to Be an Entrepreneur?

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The significance of individual and family traits has been the main focus of recent studies on family business succession; nevertheless, regional effects have frequently been overlooked. Using individual level cross-country data, this study examines the effects of regional circumstances on the career choice intentions of family business heirs regarding employment, starting their own entrepreneurial venture, or family firm succession. By employing data from the 2018 GUESS survey and applying binominal logistic regression, we have discovered that two groups of several nations (European and non-European Mediterranean countries) have several differences. We also show that individual features in the family firm, and start-up time, are significant factors, even beyond conditions such as university environment, entrepreneurship in the curricula, entrepreneurial attitudes, locus of control, power distance and subjective norms. Policies regarding company succession and related firm survival should be particularly based on various macroeconomic and youth labour market factors in order to reduce succession failures.

Key Words: entrepreneurship, business succession, family business, career choice intention, Mediterranean region

INTRODUCTION

The family context of businesses is typically included in the entrepreneurship study field, which has expanded over the past few decades from traditional studies of start-up operations and expand-

ing business concerns as a part of entrepreneurial dynamics through to its lifecycle. Consequently, within the conventional family company cycle, family business succession has recently been considered as a potential new venture cycle.

This paper seeks to examine the problem of students' career decisions, which also includes family business succession as an option. Various inputs, both internal and external, contribute to the process' complexity, making its procedures difficult and demanding. However, before the Global University entrepreneurial Spirit Student's Survey (GUESSS) research was introduced in 2003, potential successors and their own positions were largely disregarded, depriving them of the chance to speak out on this, in their opinion, important issue.

As may be predicted, the first few decades of family business study were mostly carried out at US universities. A number of paradigms have been established for textbook thinking and university courses on family company management that are based on American business and living culture. These include traditional corporate governance norms and family values. The notion that family and family values are a very real foundation for operating a common interest in business has only lately been confirmed by studies in the sector that have been extended to other nations and cultures, beginning in Europe but quickly moving to other regions. As a result, conventional research paradigms have begun to focus more on the unique cultural characteristics of many nations and areas of the world, such as the Mediterranean, which has so far been a topic of common research in different socio-economic fields (Mongelli, Scardigno, and Merico 2012).

The state of the economy and whether it is growing or stagnating are topics of frequent discussion in national development programmes, politics, and among the general public. Economic scenario analyses have resulted in the development of a number of policy initiatives with the goal of boosting the economy and raising the average person's standard of living.

Additionally, it is well acknowledged that entrepreneurship is one of the primary global drivers of value creation, employment cre-

ation, innovation, and social change. In order to investigate the potential influence of circumstances on the profession choice intentions of family business heirs, a new study framework has been developed. The overall dearth of research linking the diverse categories and taxonomies of entrepreneurial endeavours, including the various family business succession models, to the activity and development of the economy in a given region, served as the impetus for writing this article.

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A clear geographic division characterises the economy of the Mediterranean region. According to (Glassmann 2016), government modernisation initiatives in some areas gave rise to the 'family welfare model,' which was based on labour contracts from big businesses or the civil service, and provided substantial welfare benefits. In some areas, the 'family business model' is prevalent. This model developed as a result of the male breadwinner sacrificing social rights in favour of less protected employment alternatives (small firms).

On the other hand, family members that make this decision are more likely to pursue formal employment and higher educational goals, which may improve economic performance compared to areas where the 'family welfare model' is still prevalent. In accordance with these findings, the motivation emerged to verify the broader data set model, focused on the geographical area of the Mediterranean with its specific cultural, economic and historical characteristics.

In order to provide a theoretical framework and context for the research, we begin with a review of the pertinent research literature. In this chapter, hypotheses are also derived for empirical investigation. The next chapter presents and explains the field study conducted in some countries of the Mediterranean region that provided the primary data, along with the methods, sampling and data collection procedures. Results from applying multinomial regression to the data are shown in order to help determine whether the hypotheses are accepted or rejected. We examine the results and their implications for potential real-world applications in the final section.

Predrag Ljubotina and Jaka Vadnjal

THEORETICAL BACKGROUND AND HYPOTHESES
DEVELOPMENT

Finding a Job Or Self-employment

Finding a job or pursuing self-employment is a significant aspect of individuals' lives, and it has implications for various factors such as health, mental wellbeing, career development, and economic benefits. Several studies have explored these topics and shed light on the benefits and challenges associated with finding a job or engaging in self-employment.

A study that examined the barriers and benefits of self-employment on health found that self-employment can have both positive and negative effects, suggesting that further research is needed to understand this complex relationship (Rietveld, van Kippersluis, and Thurik 2015). Career development is an essential aspect of finding a job or pursuing self-employment. A recent study proposed a conceptual model for evaluating the professional development of women. The model can be applied to various fields and provides insights into the factors influencing career advancement (Magrane et al. 2012).

The role of public policies in promoting self-employment is also a topic of interest. Kumar (2012) developed a model of self-employment that incorporates transitions between unemployment and self-employment. The model can inform policymakers in designing effective strategies to support individuals in their entrepreneurial endeavours (Kumar 2012). Furthermore, the impact of unemployment insurance benefits on self-employment has been investigated. A study which examined the relationship between social security and self-employment suggests that more self-employment is created when more social security is provided (Camarero Garcia and Hansch 2020).

Creativity and innovation are also crucial for entrepreneurship development, especially among young people. Juliana et al. (2021) investigated the relationship between creativity, innovation, and entrepreneurship development. The study highlighted the positive impact of creativity and innovation on entrepreneurship (Juliana et al. 2021).

Finding a job or pursuing self-employment has implications for individuals' lives, especially at the beginning of their careers. For this reason, it is essential to know the factors that shape young people's career decisions as precisely as possible, especially among the student population. In this regard, today's demanding socio-political environment is even more unforgiving towards both the individual and society, which pays insufficient attention to this issue.

Mediterranean Countries

Differences between European and non-European Mediterranean countries can be observed in various aspects, including economic systems, healthcare, societal quality, cultural background, and tourism.

Regarding economic systems, Mediterranean countries are characterised by a higher concentration of savings at the top and consumption at the bottom of the income ranking compared to Northern European countries (Ranaldi 2020). This finding suggests that there may be greater income inequality in Mediterranean countries.

Societal quality is another aspect that differs between European and non-European Mediterranean countries. A study analysing the societal quality of Southern European Mediterranean countries (Spain, Italy, Portugal, and Greece) found that these countries have lower societal quality than other European countries (Bericat and Martín-Gimeno 2020). This suggests that there may be differences in governance, social cohesion, and other societal factors. Cultural background also influences the differences between European and non-European Mediterranean regions. Several studies have observed cultural disparities, with Greece as an example (Petrakis 2011). These cultural differences may influence economic development indicators, other aspects of society, and individuals' career choices. These differences highlight the diverse nature of the Mediterranean region and the need for tailored approaches to address the specific challenges and opportunities faced by different countries within this region.

H1 *There is a difference in students' career intention influencing fac-*

tors between European and non-European Mediterranean regions.

University Environment

Environmental factors can strongly influence the entrepreneurial process (Kolvereid and Isaksen 2012). Individuals would not decide to start a company that is not embedded in the environment, instead preferring to consult their immediate environment, and are thus influenced by others, their intentions and decisions (Aldrich and Zimmer 1986).

Thus, researchers list two important predictors of entrepreneurial intention for the student environment. One of them is the supportive university environment. If the university provides knowledge and inspiration for entrepreneurship, the possibility of choosing an entrepreneurial career will increase (Turker and Selcuk 2009). In a susceptible period, the university environment plays an important, if not one of the key roles in students' lives. At that time, students are expected to make a career decision after their studies. Existing surveys among students from different countries have shown that career preferences are influenced by the reputation of entrepreneurship and the support of the university environment (Autio et al. 2001).

Research has confirmed that encouraging the entrepreneur is critical to promoting economic growth. Indeed, cultural and institutional frameworks influence entrepreneurship (Wennekers and Thurik 1999).

University education affects the career choice of students so that universities can be a potential source of entrepreneurs (Turker and Selcuk 2009). The probability of starting a business is statistically greatest between the ages of 25 and 44 (Wortman 1985). This is exactly why it is so essential to research the student population in this context.

H2 *The more a student perceives support for entrepreneurship in the university environment, the more likely they are to choose an entrepreneurial career right after their studies.*

Entrepreneurship in the Curriculum

Several studies have explored the relationship between university education and students' career decisions and found that entrepreneurship education programmes and university business incubators play a crucial role in shaping students' career choices (Guerrero, Urbano, and Gajón 2020). These programmes provide students with the necessary skills, knowledge, and opportunities to pursue entrepreneurial ventures and entrepreneurship. On the other hand, the same programmes also enhance students' employability options and increase their confidence in areas such as communication, collaboration, opportunity recognition, critical thinking, and problem-solving (Rodriguez and Lieber 2020).

Entrepreneurship education has been found to positively impact students' attitudes towards entrepreneurial careers (Khalid, Islam, and Lee 2019). It increases students' entrepreneurial self-efficacy, which is their belief in the ability to succeed as entrepreneurs. This self-efficacy, outcome expectations, and entrepreneurial interests influence students' career choices (Uskuri and Sesen 2022). Furthermore, entrepreneurship education enhances students' en trepreneurial skills, influencing the decision to become entrepreneurs (Windiarti, Pulungan, and Adnyana 2022). The impact of entrepreneurship education on career decisions is not limited to undergraduate students. It has also been found to influence secondary students' career readiness. Education helps students develop an en trepreneurial mindset and increases their confidence in communication, collaboration, and critical thinking (Rodriguez and Lieber 2020). All mentioned skills are transferable and valuable in various career paths, not just entrepreneurship.

The influence of entrepreneurship education on career decisions is not only limited to the education system, but also extends to the broader ecosystem. Entrepreneurial university ecosystems, which include entrepreneurship education programmes and university business incubators, provide students with the necessary support and resources to pursue entrepreneurial careers (Guerrero, Urbano, and Gajón 2020). These ecosystems facilitate employability options for graduates, including academic entrepreneurship.

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It has been proven that entrepreneurial university education has a significant influence on the career decisions of students. It equips students with the necessary skills, knowledge, and opportunities to pursue entrepreneurial ventures. Entrepreneurship education programmes and university business incubators heavily influence students' career choices and enhance their employability options. University programmes and ecosystems also increase students' self-confidence. We ground our third hypothesis on this basis.

H3 *The more entrepreneurially rich the curriculum, the more likely students are to choose an entrepreneurial career right after their studies.*

Entrepreneurial Attitude

The influence of entrepreneurial attitude on students' career decisions is a topic of great interest in entrepreneurship and education. Several studies have explored the relationship between entrepreneurial attitude and career decisions, shedding light on the factors influencing students' choices.

A recent study found that college students' entrepreneurial self-efficacy significantly and positively affects entrepreneurial attitude and intention. The study also revealed that entrepreneurial attitude is partially intermediary in the relationship between entrepreneurial self-efficacy and entrepreneurial intention (Liu et al. 2019). It is suggested that students with a solid entrepreneurial attitude are more likely to consider entrepreneurship a career option.

Another study focused on Hungarian students found that a positive entrepreneurial attitude increases the chances of choosing an entrepreneurial career (Gubik 2021). The finding supports the idea that entrepreneurial attitude plays a crucial role in career decision-making among students.

Moreover, the role of entrepreneurial mindset in career decisions has been explored in several studies. Burnette et al. (2020) conducted a growth mindset intervention to enhance students' entrepreneurial self-efficacy and found that this intervention predicted career development. So, cultivating an entrepreneurial mind-

set can positively impact students' career decisions and outcomes.

Overall, the literature suggests that entrepreneurial attitude, self-efficacy, and mindset are important factors that influence students' career decisions. Fostering a positive entrepreneurial attitude, enhancing self-efficacy, and cultivating an entrepreneurial mindset can contribute to students' consideration of entrepreneurship as a viable career option. These findings form the basis of our fourth hypothesis.

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H4 *The higher the level of entrepreneurial attitude, the more likely students are to choose an entrepreneurial career right after their studies.*

Entrepreneurial Skills

Several studies have explored the relationship between entrepreneurial skills and career choices, shedding light on the factors influencing individuals' decisions to pursue entrepreneurial careers.

Callanan and Zimmerman discussed the career decision-making process of entrepreneurs and highlighted the need for comprehensive models that consider both endogenous and exogenous influences. While existing models provide insights into the factors influencing entrepreneurial career selection, they do not capture the full complexity of the decision-making process (Callanan and Zimmerman 2016). Further research is needed to understand the influence of entrepreneurial skills on career decisions fully.

Overall, the literature suggests that entrepreneurial skills, such as a growth mindset, entrepreneurial self-efficacy, and entrepreneurial passion can positively influence individuals' career decisions (Burnette et al. 2020). However, the decision to pursue an entrepreneurial career is complex and influenced by various factors, including job satisfaction, cultural values, and career stage (Blaese, Noemi, and Brigitte 2021).

Therefore, further research is needed to understand the relationship between entrepreneurial skills and career intention among the younger generations.

H5 *The higher the level of self-assessed entrepreneurial skills, the*

more likely students are to choose an entrepreneurial career right after their studies.

Locus of Control

The influence of locus of control on career decisions has been extensively studied in psychology. Locus of control refers to an individual's belief about how much he or she has control over his/her life and the outcomes experienced (Lyons, Schweitzer, and Ng 2015). Research has shown that locus of control is positively related to career decision-making, career self-efficacy, and career maturity. Individuals with a high internal locus of control, who believe they have control over their actions and outcomes, tend to be more decisive and proactive in making career choices (Kim and Lee 2018; Siregar 2021; Sholikah 2021; Zellweger, Sieger, and Halter 2011). Those individuals have higher levels of career self-efficacy, which is the belief in one's ability to perform career-related tasks and make effective career decisions successfully (Kim and Lee 2018; Turan 2021). Self-efficacy, in turn, leads to higher levels of career maturity, which is the ability to make informed and realistic career choices (Kırdök and Harman 2018). On the other hand, individuals with an external locus of control, who believe that external factors or luck determine their outcomes, may experience difficulties in making career decisions. They may feel less confident in their ability to make effective career choices and may rely more on external sources of guidance and decision-making (Kim and Lee 2018; Al-Bahrani et al. 2021). This can lead to lower career self-efficacy and maturity levels (Harman and Kırdök 2018). Additionally, research has shown that locus of control is related to other factors that influence career decisions, such as personality traits, career orientations, and socio-economic status (Lyons, Schweitzer, and Ng 2015).

Understanding an individual's locus of control can provide valuable insights into their career decision-making process and inform interventions and support strategies to enhance career self-efficacy and maturity.

H6 *The higher the internal locus of control, the more likely students are to choose an entrepreneurial career right after their studies.*

Power Distance

Power distance, which refers to the extent to which individuals in a society accept and expect power inequalities, has been found to influence career decisions significantly. Several studies have explored the relationship between power distance and various aspects of career decision-making, including career proactivity, career success, career intentions, and career exploration behaviour.

Smale et al. (2018) examined the moderating role of national culture, including power distance, on the relationship between proactive career behaviours and subjective career success. The authors suggested that cultural differences in power distance could affect the meanings attached to career proactivity and subsequently influence career behaviours and outcomes). In another study, Yang and Chau (2016) investigated the relationship between proactive personality, career success, and power distance orientation. The findings indicated that the extent to which leader-member exchange mediates the relationship between assertive personality and career success depends on power distance orientation.

Dalci and Özyapici (2018) explored the influence of cultural values, including collectivism and power distance, on students' intentions when choosing an accounting career. The results revealed that collectivism and considerable power distance were associated with a significant relationship between parental and peers' influence and students' intentions of choosing an accounting career (Dalci and Özyapici 2018). Moon and Choi examined the impact of career management on organisational commitment, with the mediating role of subjective career success. The study found that proactive career behaviours, such as career transition and job change, were less common in high-power-distance cultures (Moon and Choi 2017).

Existing studies suggest that power distance can shape individuals' career decisions and behaviours. In cultures with high power distance, individuals may be less likely to engage in proactive career behaviours and may have different career intentions than in cultures with low power distance. The cultural meanings attached to career proactivity and the influence of power distance on career success and exploration behaviour highlight the importance of considering power distance in understanding career decisions.

H7 *The higher the level of perceived centralisation of society, the more likely students are to choose an entrepreneurial career right after their studies.*

[232]   *Subjective Norms*

Subjective norms play a significant role in career decision-making. Several studies have explored the influence of subjective norms on career decisions and have found that they can have both positive and negative effects (Zellweger, Sieger, and Halter 2011; Vadnjal and Ljubotina 2016).

Muzika et al. (2019) examined the relationship between subjective social status and career decision-making self-efficacy. The study found that a higher personal social level predicted lower career indecision and greater career decision-making self-efficacy. The study concluded that individuals with higher subjective norms are more confident in their career decisions. Amalia, Mayasari, and Ogundajo (2021) found that internship experiences positively affected subjective norms, attitude toward behaviour, and perceived behaviour control, which influenced career intentions. Consequently, positive internship experiences can shape individuals' subjective norms and influence their career decisions.

Overall, studies confirmed that subjective norms significantly influence career decisions. Understanding these influences on young people can help individuals make more informed and authentic career choices in different societies and regions.

H8 *The higher the level of perceived subjective norms, the more likely students are to choose an entrepreneurial career right after their studies.*

Entrepreneurial Parent

The influence of parental factors on career decisions has been extensively studied. Research consistently shows that parents significantly impact shaping their children's career choices. A study conducted on a sample of young people aged 14–18 years old found that parents exert the most significant influence on their child's career

choice compared to other social factors and pressures (Stritch and Christensen 2016). This highlights the crucial role of parental influence in career decision-making.

Moreover, studies have explored the relationship between family influences and career choices across cultural contexts. For instance, a survey of Asian Americans revealed that family influences, such as parental attachment and individualism-collectivism, are associated with career decision-making self-efficacy (Kwong 2018). Cultural factors may therefore, interact with parental influence when shaping career choices. Parental expectations and perceptions of career choices also play a significant role in influencing their children's decisions. Students' perception of parental expectations is an essential factor in career choice as a parental influence (Agarwal, Kumar, and D'Souza 2016). Similarly, parental encouragement, providing information about specific careers, and encouraging consideration of various education and career options significantly influence career choices among students (Okesina 2022).

Specifically, entrepreneurial parents have been found to impact their children's career decisions. A study examining the entrepreneurial intentions and willingness to consider entrepreneurship as a career option revealed that children are influenced by their parents' entrepreneurial background (Costa, Caetano, and Santos 2016). Accordingly, growing up in an entrepreneurial family can shape individuals' attitudes and aspirations towards entrepreneurship as a career path.

The influence of entrepreneurial parents on students' career decisions is a complex and multifaceted topic. Parents significantly impact their children's career choices while cultural factors, parental expectations, and personal predispositions can mediate this influence. Understanding the role of parental influence in career decision-making under different societal conditions can provide valuable insights for career counselling and guidance programmes.

H9 *Students with entrepreneurial parents are more likely to choose an entrepreneurial career path compared to their peers from non-entrepreneurial families.*

METHODS

Participants and Procedures

With the research, we wanted to investigate students' career intentions in the Mediterranean countries, namely in the context of entrepreneurial intentions. We explored particular factors and how they shape students' career intentions. For this purpose, we used the data collected in the framework of GUESSS 2018 (Global University Entrepreneurship Spirit Student Survey) in the research. More than 208,000 valid survey questionnaires from 54 countries were collected as part of the research. We collected data from Mediterranean countries and divided them into two groups for our research. Our goal was to compare European countries (Albania, France, Greece, Italy, Portugal, Slovenia and Spain) with non-European countries (Algeria, Jordan, Lebanon and Turkey).

The identification-based GUESSS survey presented multiple responses and was conducted using the online questionnaire from September 2018 to January 2019. The survey allowed students to remain anonymous. To our knowledge, it is the largest global study of students' career intentions. At the same time, the study focuses precisely on the aspiration levels of entrepreneurship as a career option. The research has been carried out since 2006, every two years. Each implementation is improved based on past experience. The 2018 study already includes a wide range of sociological and personality traits that potentially shape a young person's career intention. Each factor is measured using repeatedly verified instruments that have been proven to be reliable in high-profile research so far. The collected data thus offer wide possibilities for studying correlations between individual factors as well as comparing different geographically or otherwise defined groups of young people.

Students who have already established their own companies are excluded from the analysis to allow a prospective view and avoid so-called survivor bias, from which retrospective studies might suffer when interviewing entrepreneurs about motives after starting a firm (Gartner 1989). Since we focused on students who can already define their career goals immediately after completing their studies, we excluded undefined respondents from the survey. After fil-

tering the data, there were 33,970 respondents from European countries, while the non-European group consisted of 2,839 respondents. 36,806 students are included in the research, of which 38.7% are men and 61.3% are women. Among the respondents, 31% come from entrepreneurial families. As such, we considered families in which at least one parent is self-employed or is the majority owner of the company. In doing so, we relied on one of the definitions of a family business (Barnes and Hershon 1976). Respondents were assured strict confidentiality to avoid the influence of social desirability concerns (Podsakoff et al. 2003).

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Measures
Dependent Variable

We asked students about their career decision (employee or entrepreneur) immediately after completing their studies and five years thereafter. With the second question, the time span was limited to five years after the studies according to the observation that typical entrepreneurs work elsewhere before starting their business (Brockhaus 1987).

Table 1 illustrates the career intention in both observed groups, i.e., for the period immediately after the studies and five years thereafter. We can understand that in both regions, the relationships change significantly over a period of five years, which is in line with previous studies, according to which an individual gains experience as an employee elsewhere before starting his or her entrepreneurial career. From the above results, it can be seen that a small number of students realise their potential entrepreneurial intention immediately after their studies. For this study, we focused on group compar-

TABLE 1   Career Intent in European and Non-European Mediterranean Countries

	European		Non European	
	After study	5 years later	After study	5 years later
Employee	96.20	66.20	92.30	65.90
Entrepreneur	3.80	26.20	7.70	24.40
Do not know	0.00	7.50	0.00	9.70

ison (European and non-European Mediterranean countries) in the period which follows immediately afterstudy. Our dependent variable is therefore, categorical and can take two values: (1) employee or (2) entrepreneur.

Independent Variables

Seven factors were included among the independent variables, measured using a 7-point Likert scale. We measured the university environment's support for entrepreneurship with three items (Franke and Lüthje 2004). The degree of inclusion of entrepreneurial content in the curriculum was captured by five items (Souitaris, Zerbinati, and Al-Laham 2007). Five items were used to measure entrepreneurial attitude (Liñán and Chen 2009) and seven items for self-assessed mastery of entrepreneurial skills (Zhao 2005). The internal locus of control level is also measured with three scientifically verified items (Levenson 1973). The perception of power distance in society is covered with three items taken from the GLOBE survey (House et al. 2004). Three additional items also cover subjective norms (Liñán and Chen 2009).

In addition to the mentioned variables, we included a categorical variable in the analysis, which was used to define whether the student comes from an entrepreneurial family. It is a potentially important factor that can shape a student's career intention, as evidenced by existing research (Zellweger, Sieger, and Halter 2011).

RESULTS

Since we compared two independent samples, a *t*-test was used with the intention of comparing the mean values for individual variables. The results of the *t*-test are given in table 2, from which we can see the observed groups of countries differ in a highly statistically significant way, namely in all the observed factors.

We can understand that students in the European part of the Mediterranean feel greater support for entrepreneurial thinking in their university environment. In this group of students, it is perceived that a greater importance is attributed to subjective norms in connection with their career purposes. The picture is different

TABLE 2 *T*-Test between Groups (Non-European versus European Mediterranean Countries)

Variable	t	DF	Sig.	MD
University support for entrepreneurship	−3.915	3110.81	0.000	−0.402
Entrepreneurship in the curiculum	8.896	36198.00	0.000	1.356
Entrepreneurial attitude	25.070	3223.42	0.000	3.938
Entrepreneurial skills level	9.364	35968.00	0.000	1.783
Level of internal locus of control	6.255	3096.72	0.000	0.493
Perc. level of power distance in the society	11.730	36649.00	0.000	1.124
Subjective norms	−9.628	3121.10	0.000	−0.773

for the other observed factors, where higher average values are observed in the group of non-European Mediterranean countries. In these countries, the study curriculum contains more entrepreneurial content. We also measured a significantly higher level of inclination towards entrepreneurship and self-assessment of entrepreneurial skills. The same applies to the degree of internal locus of control and to the perceived degree of centralisation of society. The results of the *t*-test thus confirm hypothesis H1 with a high degree of statistical significance.

Since the perceived differences between the observed regions are highly statistically significant, with the intention of gaining deeper insight into the relationships between the variables, we continued the analysis with a regression model. A regression model is developed for each of the two regions, thus enabling the comparison of regression coefficients between the two models. Therefore, all hypotheses from H2 to H9 are tested in each of the two groups and results are compared. Since our dependent variable is categorical and can take only two values (employee or entrepreneur), logistic regression is the most appropriate method.

After constructing and testing our logistic regression models, we found that chi-square tests are highly significant (p = 0,000), which shows that our models are significantly upgrading the null-model (intercept only model). A statistically non-significant Hosmer and Lemeshow test additionally confirms that we have a good model fit in both groups (European: p = 0.667, non-European: p = 0.909). The

TABLE 3 Logistic Regression Models

Group	Variable	B	Sig.	Exp(B)
Non European	University support	−0.031	0.105	0.970
	Entrepreneurial curriculum	0.005	0.701	1.005
	Entrepreneurial attitude	0.072	0.000	1.074
	Entrepreneurial skills	0.012	0.294	1.012
	Locus of control	−0.046	0.070	0.955
	Power distance	−0.004	0.818	0.996
	Subjective norms	−0.065	0.002	0.937
	Parents entrepreneurs	0.179	0.268	1.196
	Constant	−2.869	0.000	0.057
European	University support	−0.026	0.005	0.974
	Entrepreneurial curriculum	0.009	0.142	1.009
	Entrepreneurial attitude	0.124	0.000	1.132
	Entrepreneurial skills	0.013	0.006	1.013
	Locus of control	−0.031	0.004	0.970
	Power distance	−0.002	0.781	0.998
	Subjective norms	−0.035	0.000	0.965
	Parents entrepreneurs	0.727	0.000	2.070
	Constant	−5.794	0.000	0.003

results of both regression models are shown in table 3. University support turns out to be an important factor in the European part of the Mediterranean, where higher support statistically and significantly lowers the probability of deciding on an entrepreneurial career immediately after completing studies. It is an interesting finding, which would certainly be worthy of in-depth research with the aim of finding the reasons for such a result. In the non-European part of the Mediterranean, we did not detectstatistically significant influential support from the university environment in relation to the probability of an entrepreneurial career. Our hypothesis H2 is rejected in both regions, although it is worth bearing in mind that in the European part, we detected significant results, but contrary to expectations.

We must also reject hypothesis H3 in both regions, as our sample measurements do not contradict the null hypothesis. Thus, we did

not perceive that the amount of entrepreneurial content in the curriculum would affect the probability of choosing an entrepreneurial career path immediately after completing studies. The finding applies to the entire Mediterranean area.

Hypothesis H4 can be confirmed for the entire Mediterranean area. A more recognised individual's entrepreneurial tendencies increase the probability of choosing an entrepreneurial career compared to employment. The regression coefficients indicate a slightly more pronounced influence in the European part of the Mediterranean, where an increase in the inclination towards entrepreneurship by one degree increases the probability of deciding on an entrepreneurial career immediately after study by 1.132 times. In the Non-European part of the Mediterranean, this factor is 1.074.

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Hypothesis H5 can be confirmed in the European part of the Mediterranean, where a higher self-assessment of entrepreneurial skills significantly increases the probability of an entrepreneurial career after studying. We did not detect a statistically significant impact in non-European regions.

A similar finding was also detected in the analysis of the influence of the internal locus of control. In the non-European part of the Mediterranean, the degree of internal locus of control does not significantly affect the probability of deciding on an entrepreneurial career. Hypothesis H6 is thus rejected in this group. In the European Mediterranean countries, the picture is different. Hypothesis H6 cannot be confirmed, but the observed results are statistically significant. A higher level of internal behavioural control reduces the probability of deciding on an entrepreneurial path immediately after completing studies.

In the analysis of the impact of the centralisation of society, despite the known differences in the socio-political environment of the observed two regions, we did not detect statistically significant impacts on the probability of choosing an entrepreneurial career among students in any region. Hypothesis H7 is therefore rejected for the entire Mediterranean area.

Subjective norms are an important factor in both observed regions. In both cases, a higher level of subjective norms reduces

the probability of a student's decision to pursue an entrepreneurial career path. The aforementioned applies, of course, to the period immediately after the end of studies. The more importance a student attaches to the opinions of those close to him/her, the less

likely he/she is to pursue an entrepreneurial career after completing his/her studies. Here too, the reasons for such results should definitely be investigated more deeply. One could speculate that students want to maintain the positive opinion of those close to them and therefore, find it more difficult to embark on a risky entrepreneurial career path without prior experience.

We detected a greater difference between the groups in the influence of entrepreneurial parents. Parental entrepreneurs in the non-European part of the Mediterranean do not significantly influence their offspring's decision about career paths immediately after completing their studies. It is entirely different in the European part of the Mediterranean, where this factor strongly influences the probability of choosing an entrepreneurial career after completing studies, increasing the said probability by more than two times ($\exp(B)$ = 2.07).

DISCUSSION AND IMPLICATIONS

Students with a familial background in business face a unique dilemma when choosing their career route. Their selection is more complicated and sets them apart from their peers due to the possibility of taking over the family business. Previous research has examined the psychological, emotional, and societal components of this profession choice dilemma. Our study adds to a better understanding of the broader career choice intention perspective by examining the impact of regional cultural issues. The presented work may be seen in part as exploratory, because there are few studies that link the cultural issues of the Mediterranean region to the career choice intentions of young people, particularly when focusing on a specific set of students with a background in family enterprises.

The countries under investigation are fundamentally and extremely different in terms of their economic circumstances and political systems. Some nations were far from western democracy-

based societies at some point in the distant past. Young students might anticipate different job and professional development opportunities in such circumstances. These circumstances have changed or are continuing to change quickly over the past few decades. However, several nations operate stable market economies. Despite spanning such a wide range of European economies, our substantial regression results imply that it may be possible to generalise the findings in other parts of the globe. Table 4 compares our model results from the two set of countries the research observed for debate and implications.

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There are several important findings which can be derived from the table 4. Interestingly and somehow disappointingly, is the fact that according to the analysis of hypothesis H3, which was rejected in the both groups, the inclusion of entrepreneurship in curricula does not have much impact on entrepreneurial decisions in the studied areas. Similarly, the level of perceived centralisation of a society (hypothesis H7) seems not to have any significant meaning for the decision of an entrepreneurial path.

On the other hand, for the whole studied sample, two hypotheses are confirmed for the both sub-samples. These were expected: (i) the importance of the entrepreneurial attitude (hypothesis H4) and (ii) the level of subjective norms (hypothesis H8), which were confirmed with an opposite logic. For both hypotheses, we can find consistent support in previous research. Another study found that a positive entrepreneurial attitude increases (hypothesis H4) the chances of choosing an entrepreneurial career (Gubik 2021). Additionally, another study found that a higher personal social level predicted lower career indecision and greater career decision-making self-efficacy, suggesting that individuals with higher subjective norms are more confident in their career decisions (Muzika et al. 2019).

There are four pairs of hypotheses confirmed only for the European Mediterranean countries and rejected for those outside Europe. First, is the perception of entrepreneurship support in the university environment (hypothesis H2), which can lead to the interpretation that universities of non-European Mediterranean countries do have several challenges in securing the more supportive

TABLE 4   Hypotheses Confirmation for Both Sets of Countries

Hypothesys	(1)	(2)
H2 The more a student perceives support for entrepreneurship in the university environment, the more likely they are to choose an entrepreneurial career right after their studies.	No	Yes–
H3 The more entrepreneurially rich the curriculum, the more likely students are to choose an entrepreneurial career right after their studies.	No	No
H4 The higher the level of entrepreneurial attitude, the more likely students are to choose an entrepreneurial career right after their studies.	Yes	Yes
H5 The higher the level of self-assessed entrepreneurial skills, the more likely students are to choose an entrepreneurial career right after their studies.	No	Yes
H6 The higher the internal locus of control, the more likely students are to choose an entrepreneurial career right after their studies.	No	Yes–
H7 The higher the level of perceived centralization of society, the more likely students are to choose an entrepreneurial career right after their studies.	No	No
H8 The higher the level of perceived subjective norms, the more likely students are to choose an entrepreneurial career right after their studies.	Yes–	Yes–
H9 Students with entrepreneurial parents are more likely to choose an entrepreneurial career path compared to their peers from non-entrepreneurial families.	No	Yes

NOTES   (1) non-European, (2) European. No – non significant result, yes – significant result, yes– – significant, but opposite logic than hypothesised. Result significance < 0.05.

university environment for future promotion and assistance in the career paths of students, which is also consistent with the recommendations from previous research (Turker and Selcuk 2009). Second, is the perception that self-assessed entrepreneurial skills are not linked to a higher attitude towards entrepreneurship in the non-European countries (hypothesis H5), which may be interpreted with a lower level of awareness about the importance of entrepreneurial skills in these countries. This finding is coherent with the proposition that the decision to pursue an entrepreneurial career is com-

plex and influenced by various factors, including job satisfaction, cultural values, and career stage (Blaese, Noemi, and Brigitte 2021). Third, the higher level of internal locus of control (hypothesis н6) does not lead to a higher level of entrepreneurial attitudes in the non-European countries. This seems to be consistent with previous pieces of research that have shown the locus of control is related to other factors that influence career decisions, such as personality traits, career orientations, and socio-economic status (Lyons, Schweitzer, and Ng 2015). Fourth, the role of entrepreneurial parents (н9) does not seem to play an important role in non-European countries, which is hard to explain, but is probably due to cultural differences; however, this may be consistent with the suggestion that growing up in an entrepreneurial family can shape individuals' attitudes and aspirations towards entrepreneurship as a career path (Costa, Caetano, and Santos 2016).

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Limitations of the Study

Cross-sectional data from the GUESSS 2018 survey were used, as observational research at one particular point in time, providing a result. Conversely, the regional landscape of the Mediterranean is subject to vast fluctuations and societal changes that may have an impact on our survey participants. Although a longer study would better address the problem, it would also be more complex and expensive. The potential selection causation bias has been mitigated by removing students who are self-employed.

Possibilities for Future Research

Research on the intended career path of family business heirs is still lacking. Our findings point to the necessity and significance of evaluating the regional impact factors and the profession choice of family business heirs. It would be beneficial to repeat the study and incorporate more countries from both sides of the Mediterranean, as well as a larger sample size of nations. In order to compare with studies that are similar to ours in terms of career choice intention, future longitudinal research ought to focus on actual job choice as well.

By incorporating additional environmental and human data into

the model, explanatory models with a higher level of complexity can be constructed. Studying in a field that offers diverse career options outside of family enterprises in a volatile labour market at a particular moment should be given more weight when evaluating personal [244] characteristics. In comparable geographical and circumstances, this might also affect the heir's intended career choice. Investigating why various factors affect target group job decision intention is possible through qualitative research. Building a more predictive multilevel quantitative model that takes into account various geographic and cultural factors could be aided by preliminary qualitative research. The outcomes of these upcoming research projects could serve as crucial benchmarks for policy, curriculum, and employment.

CONCLUSIONS

Our research establishes a connection between family business succession aspirations and the cultural dimension of different countries of the Mediterranean region. The presence of statistically significant associations is a promising avenue for improving the study models pertaining to the career choice intention of family business heirs. More complex models may be employed in order to provide a better explanation of the correlation between various factors (personal, social, and environmental) and career decision intention, as suggested by statistically significant regression coefficients for control variables and earlier research (Zellweger, Sieger, and Halter 2011). As a result, our study makes a significant contribution to the literature on family business succession.

Our accomplishment of the study's primary objective, which was confirming the relationship between succession intention and the nation's regional position within the Mediterranean, has opened the door to a more thorough examination of the causal relationships between economic conditions and students' career aspirations.

Every young person must choose his/her profession, and students are almost certainly very close to beginning their own careers after completing their education. Students from families that own and operate businesses make up a very distinct, although increasingly significant, group of young people, and they have a major re-

sponsibility for the future viability of family enterprises. Their career decision is highly significant on a national level, as small and medium-sized family-owned enterprises account for the majority of all companies in each country's market, while it is highly complex on a personal and family level. In today's cultures, when family companies play a major role in ensuring economic stability and prosperity, it is imperative to grasp the intention behind their job decision.

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Assessment of Coastal Water Quality by Testing a Linear Model Using Landsat 8 SST Data: Exploratory Study

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The Mediterranean Basin, off the coast of Tangier, Morocco, is one of the most valuable seas, because of the diversity of its ecosystem. However, pollution has become a growing issue along this coast recently. For this reason, we tested a linear model developed for the Atlantic western coastal waters of Tangier using sea surface temperature (SST) estimated from Landsat 8 images and Escherichia coli concentration (E. coli) in-situ measurement to determine the Mediterranean northern coastal waters quality of Tangier in 15 Selected Sites (SS1 to SS15) along the coast from Tangier to Ksar-Sghir. In addition, descriptive statistics, and geographic information systems (GIS) were employed to explore the spatial association of the data. The results indicate that the SST and E. coli distributions have the highest values in the SS4–SS13 and SS15 due to the Souani and Mghogha rivers and Tangier Med Port, reflecting poor quality and a very high level of dangerous contam-

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ination in this area. The SS1, SS2, SS3, and SS14 reflected low levels of SSTS and E. coli concentrations thus, medium, and good-quality water is present around the cities of Tangier and Ksar-Sghir. The relationship between water temperature and E. coli concentration showed a high correlation coefficient, 80% (RMSE = 0.8), while the IDW, helped frame the pollution zone along the shore. Although only values near the shore are valid, the values deeper in the Gibraltar Strait were extrapolated due to the absence of data points at depth. This IDW results showed the negative impact of discharges from estuaries and maritime traffic. As a result, the tested model is useful for estimating the quality of coastal water on the Mediterranean side of Tangier, and in the future, as a means of potentially monitoring pollution in this region.

Key Words: Mediterranean waters, Escherichia Coli, Landsat 8, SST, quality water, Gibraltar Strait

INTRODUCTION

The coastal waters offer some of the best landscape areas (Yi et al. 2022; Gravari-Barbas and Jacquot 2018) and serve other important purposes, such as marine aquaculture, commercial navigation, or as a repository for sewage and industrial waste (Cherif, Salmoun, and Mesas-Carrascosa 2019). Such activities are not always compatible with each other nor the population that lives along the coastal zone, which represents 40 percent of the total population (Maul and Duedall 2019; Sloggett et al. 1995). Furthermore, the expansion of these activities has a serious impact in the environment, putting human health and aquatic life habitats at risk (Lamghari Moubarrad and Assobhei 2005). For sustainable coastal water, water resource management and constant monitoring are required. Furthermore, water treatment requires an awareness of the quality of the water body. Water quality considers the thermal and biological characteristics of a body of water. It is used as an index to determine the suitability of water. Defining seawater quality can be difficult as its usage varies widely (Gong et al. 2019). Remote sensing is widely used for land cover and land use classification and has been shown to be ef-

ficient for use in heterogeneous mesh segmentation (Gómez 2003; Sertel et al. 2022), but water bodies have proven difficult to map due to their homogeneity and high variability in reflectance, and a number of satellite remote sensing products for water resources management are still in their infancy (Yang et al. 2022; Sheffield 2018; Gholizadeh 2016). Nevertheless, there is tremendous potential for the use of remote sensing imagery for monitoring and assessing water quality (Cherif et al. 2020). Relying on the spectral properties of water leaving radiance, it is possible to remotely determine and quantify water quality parameters (Bourouhou and Salmoun 2021b).

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Sea surface temperature was one of the first ocean variables to be studied from earth observation satellites, and the satellite instruments to retrieve and estimate these SSTS have undergone over a half century of development (Cherif, Salmoun, and Mesas-Carrascosa 2019; Govekar et al.; Amani et al. 2022). The SST parameter has demonstrated its association with many bacterial concentrations. For instance, in the infamous John Snow cholera case in London, it was discovered that sea surface temperature, retrieved from satellite imagery, showed an annual cycle similar to the cholera case data collected from 1992 to 1995 in Bangladesh (Alparslan et al. 2007). This association was later confirmed for other bacterial concentrations, such as E. coli, with a high correlation coefficient (R^2 = 0.85) (Anding and Kauth 1970).

The traditional way to calculate E. coli concentrations consists of collecting samples from the site and analyzing them in a laboratory. The results in this case are highly explicit (Cherif et al. 2020; Sikder et al. 2021). In marine environments, E. coli concentration is considered a fundamental parameter of water quality and is used to monitor fecal coliforms (FC) (Odonkor and Mahami 2020; Brando and Dekker 2003). However, although effective, this conventional method is also costly and time-consuming (El-Din et al. 2013). Furthermore, in-situ measurements are sometimes inconsistent and proved to be difficult to use to assess water quality, especially in large areas. Hence, since the 1970s, many researchers have applied remote sensing techniques to assess water quality (Anding and Kauth 1970; Topp at al. 2020; Giardino et al. 2014).

Remote sensing has been applied to monitor different water bodies, such as coasts, lakes, and artificial ponds (Doña et al. 2016; Peng et al. 2022; Hadjimitsis and Clayton 2009). Many of these study areas suffer from different quantitative computational problems. However, the application of remote sensing imagery in forecasting and water quality assessment is progressively improving (Alparslan et al. 2007). The main water quality parameters under consideration are the core objective of many of these studies, such as sea surface temperature (SST), turbidity, chlorophyll-a, Secchi depth, dissolved oxygen, and others. These parameters can be used to determine other water concentrations, such as, in our case, E. coli concentrations, based on thermal data derived from satellite or drone imagery (Kondratyev et al. 1998). The assessment and predictive capability of the developed models are highly argued. Naturally, the accuracy of E. coli concentration estimation captured by small unmanned aerial vehicles (SUAV or drone) is higher than the satellite-based imagery due to its higher resolution (Topp at al. 2020; Giardino et al. 2014).

Our study area is on the northern coast of Morocco, in a Mediterranean region that has historically been a high-traffic volume area with three main estuaries: Oued El Maleh, Oued Lihoud, and Oued Souani (Er-Raioui et al. 2012). Furthermore, the Strait of Gibraltar plays a crucial role in controlling all exchanges and modifications of the biogeochemistry of the marine ecosystem and the circulation between the Mediterranean Sea and Atlantic Ocean (Maillard and Santos 2008). The bathing waters of this coast are particularly frequented by both locals and tourists, which raises concerns considering the health risks.

More than 40% of the world's population lives in coastal areas and along lake or river shores (Cherif et al. 2020). Therefore, any changes in aquatic ecosystems due to human, urbanization, industrial, or touristic activities have grave effects on these areas. Tangier Ksar-Sghir, located on the Moroccan coast at the western entrance to the Strait of Gibraltar, has experienced significant demographic growth and increased industrial activity in recent years, particularly since the new Tangier Med port began service in 2016. This situation directly affects the quality of the coastal water in this region.

Brando et al. (2003) adopted a linear model based on thermal data from Landsat 8 and in-situ measurements of E. coli to estimate the water quality on the western coast of Tangier, Morocco. Their results showed a significant correlation between log E. coli and the temperature difference between water and air.   [255]

The aim of the present work is twofold. First, it describes the performance of testing a linear equation to estimate the concentration of E. coli and the water quality in the Tangier Mediterranean coast (Tangier Ksar-Sghir coastal water). Second, it demonstrates the potential of using remote sensing as an early and effective warning system for coastal water pollution using statistical analysis and GIS.

MATERIALS AND METHODS
Study Area

Tangier Ksar-Sghir coastal water (figure 1) is located in the Strait of Gibraltar between the Mediterranean Sea and the Atlantic Ocean. The coast is famous by its proximity to the capital of northern Morocco, Tangier. Tangier, an area of $17\,262\,km^2$, representing 2.43% of the total area of the Moroccan Kingdom. Over 40 km is comprised of the village of Ksar-Sghir, which covers an area of 50,000 m². This region is well known by Tangier Med Port (Ben Ali and Mahacine 2022). It is a significant link to more than 180 ports in 70 countries and due to its geographical position, it is known as the second busiest sea lane in the world, with more than 100,000 boats per year (El-Din et al. 2013).

The region's climate varies from sub-humid Mediterranean in the mountains to semi-arid along the coastal strip. It is strongly influenced by the Atlantic Ocean, the Mediterranean Sea and the relief (Haut Commissariat au Plan 2020). Due to altitude, latitude and ocean, the climate of study area presents a strongly heterogeneity. The annual average rainfall varies between 400 mm and 700 mm depending on altitude. In general, the temperature remains mild in winter, soft in summer as well on the coasts as in altitude. Moreover, due to geographical localization of Tangier Ksar-Sghir, the coastal area is very windy thanks to coastal currents (East or West) that rush through the Gibraltar lane.
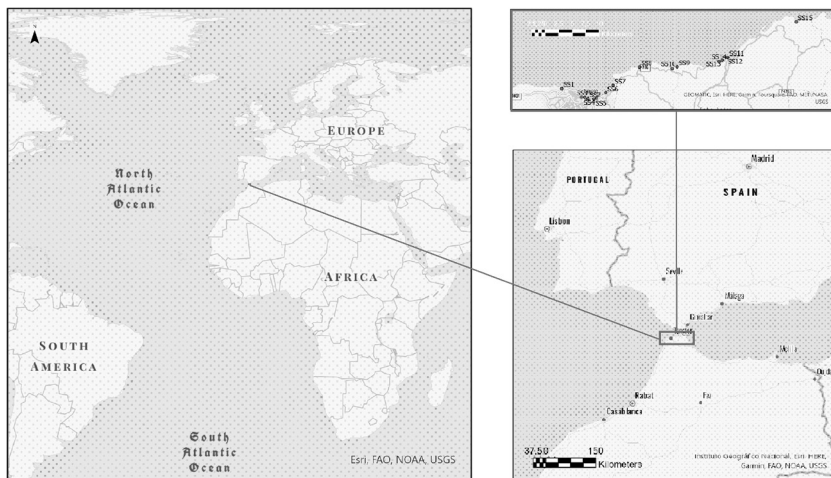
[256]

FIGURE 1   Situation Map of the Study Area

The Tangier Ksar-Sghir is particularly affected by the negative consequences of climate change and marine pollution. It has experienced, in recent decades, a variety of pressures from increasing urbanization. According to the last census in 2015, it had 1,065,601 inhabitants (Bouramtane et al. 2021). Moreover, the coastline between Tangier Ksar-Sghir is characterized by intense port activity based mainly at the level of the Tangier Med Port complex (commercial port) and the port of the city of Tangier (Ben Ali and Mahacine 2022). In terms of industrial activities, most of the industrial units are located along the coastline (Doney 2010). This represents a type of severe impact due to the discharge of liquid effluents into the sea. Additionally, fishing activities and seaside tourism cause pressure on marine ecosystems and have a negative impact on water quality in this region, respectively (Islam and Tanaka 2004).

Selected Sampling Point

In the last few years, the Tangier-Ksar-Sghir region has undergone a significant evolution in terms of industrial, economic, and touristic activities. The main objective of this investigation is to frame the study area and determine the ideal sampling points that will provide a fair estimation of the bacterial propagation of E. coli.

TABLE 1   Selected Sites with Their Geographical Coordinates

SS1	Marqala	SS6	Ghandouri	SS11	Ksar-Sghir
SS2	Tangier city	SS7	Lamrissat	SS12	Port Tangier Med
SS3	Tangier city	SS8	Sidi Kanqouch	SS13	Port Tangier Med
SS4	Tangier Malabata	SS9	Oued Aliane 1	SS14	Port Tangier Med
SS5	Tangier Malabata	SS10	Oued Aliane2	SS15	Oued el Marsa

[257]

In this study, the sampling waters were collected in 2017 at 15 different locations (three samples were collected at each location) for bacteriological parameters. The sampling stations were chosen with uniform spacing and little variation, and were based on the geographical conditions, accessibility, and the most known sites for human activities (urbanism, industry and tourism) and materials of sampling (it is not according to work in depth). Table 1 illustrates the geographical coordinates of each site.

Study Procedure

In this study, the water quality in the Tangier-Ksar-Sghir area was analyzed using data from Landsat 8 images (Thermal Infrared Sensor) and based on the in-situ measurements of E. coli concentrations provided by Bourouhou and Salmoun (2021a). We used a methodology for estimating the concentration of E. coli on the northern coast of Tangier, which was previously used on the Atlantic western cost of Tangier and proved efficient (Cherif et al. 2020).

The statistical approach was conducted in order to analyze and compare the in-situ and estimated data to see if they behaved similarly. The descriptive statistics, the correlation matrix, and the scatterplots are produced using Excel. The use of the spatial aspect of the sites is accomplished through data posting, using arcGIS software to graphically investigate our dataset and gain a better understanding of it.

Sea Surface Temperature Data

The Landsat 8 (L8) satellite can continuously provide a significant volume of data for all landmasses and near-coastal areas on earth with high performance and quality (Bradtke 2021; Wu et al. 2019).

Landsat 8 has two bands of TIRS. The TIRS sensor provides image data for two thermal bands: Band 10 (B10) and Band 11 (B11) with high spatial resolution (100 m), and wavelength (10.0–12.5 μm) (Amani et al. 2022).

[258]   The atmosphere between the satellite and the earth's surface consists of various gases that absorb and/or scatter both incident and reflected sunlight (Grau and Gastellu-Etchegorry 2013). The Landsat instruments do not contain on-board sensors to measure these conditions, so this information is obtained through other observations, called auxiliary data (US Geological Survey 2023b).

More recently, however, the United States Geological Survey aims to improve the Landsat products to prevent this natural reaction and to support Earth's change studies (Roy et al. 2014). Therefore, it has initiated an effort to create a collection of Landsat Level 2 Science Products (L2SP) (Galve et al. 2022). It requires the atmospheric auxiliary data from multiple external sources for surface temperature data processing (Banzon et al. 2016; Donlon et al. 2012). For this, Advanced Spaceborne Thermal Emission and Reflection Radiometer Global Emissivity Dataset (ASTER GED) data are used by the Surface Temperature (ST) algorithm in order to obtain the emissivity auxiliary data. Additionally, for the atmospheric correction, the Goddard Earth Observing System Model, Version 5 (GEOS-5) Forward Process for Instrument Teams (FP-IT) data is used in the Single Channel algorithm (US Geological Survey 2023b). It's important to note that the Single Channel algorithm that generates the ST band requires L1's TIRS Band 10 as an input (US Geological Survey 2023a). Additional details describing the auxiliary file structures can be found on the US Geological Survey website (US Geological Survey 2023a).

The Landsat Level-2 products are derived from the corresponding Level-1 products and additional corrections are applied to remove their temporally, spatially and spectrally varying atmospheric effects (Teixeira Pinto et al. 2020). Compared to the Level 1 products, which the Digital Number (DN) is converted to Top-of-Atmosphere (TOA) through the radiometric calibration process and then into TOA Brightness Temperature, the Level 2 products are atmospher-

TABLE 2   TIRS Images for SST Estimated Details (Path/Row 201/35, B10, and Level2)

LC08_L2SP_201035_20170423_20200904_02_T1
LC08_L2SP_201035_20170626_20200903_02_T1
LC08_L2SP_201035_20170728_20200903_02_T1
LC08_L2SP_201035_20170914_20200903_02_T1
LC08_L2SP_201035_20171117_20200902_02_T1
LC08_L2SP_201035_20171219_20200902_02_T1

ically corrected data (Teixeira Pinto et al. 2020). More information on Landsat 8 Level 2 Science Products (L2SP) band specifications can be found on the US Geological Survey official website (US Geological Survey 2023b).

In this research, the SST values are derived from the Collection 2 Level 2 Science Product (L2SP) B10 Thermal Infrared Sensors (TIRS). Six images covering the Tangier Ksar-Sghir area from 2017 were uploaded (table 2). To achieve a high accuracy of light reflectance from the Earth's surface, cloudy images were not included.

Once the Landsat 8 thermal band (B10) images were downloaded, the estimated SST values corresponding to our points of interest were computed using the Sentinel Application Platform (SNAP) software developed by the European Space Agency (ESA) (Ramdani et al. 2021; Ritchie et al. 2003).

To do this, we first started by converting the temperature values from Kelvin to Celsius. The selected sites were imported according to their geographical coordinates to extract the sea surface temperature of each point using pinning tools, and then the selected pins were exported. The following flowchart presented in figure 2 illustrates the process followed to extract sea surface temperature (SST) from Landsat8 B10.

Water Quality Estimation

In this part of our study, a total of 15 sites were selected from the total concentration in-situ measurements and are available. After deriving the in-situ data from the year 2017 (Bourouhou and Salmoun 2021b), we matched the data with the SSTS and Air Temperatures
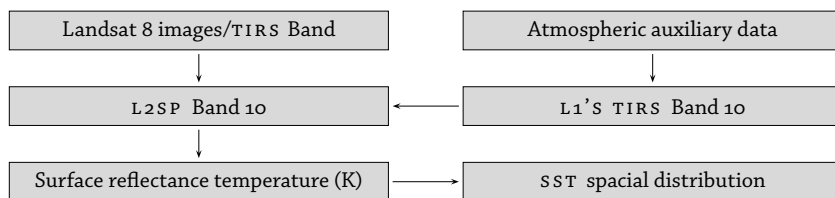
```
┌─────────────────────────────────┐     ┌─────────────────────────────────┐
│   Landsat 8 images/TIRS Band     │     │   Atmospheric auxiliary data     │
└─────────────────────────────────┘     └─────────────────────────────────┘
                │                                         │
                ↓                                         ↓
┌─────────────────────────────────┐     ┌─────────────────────────────────┐
│        L2SP Band 10             │ ←── │        L1'S TIRS Band 10         │
└─────────────────────────────────┘     └─────────────────────────────────┘
                │
                ↓
┌─────────────────────────────────┐     ┌─────────────────────────────────┐
│ Surface reflectance temperature │ ──→ │     SST spacial distribution     │
│              (K)                 │     │                                  │
└─────────────────────────────────┘     └─────────────────────────────────┘
```

FIGURE 2   Flowchart for Extracting Sea Surface Temperature
            from Landsat8 B10

TABLE 3   Quality Classes According to Moroccan Norm NM 03.7.200

Quality classes	A (good quality)	B (medium quality)	C (temp. polluted)	D (poor quality)
E. coli (UFC/100 mL)	≤150	≤250	≤500	≥500

(ATS) of the same date. The concentrations of E. coli in Tangier Ksar-Sghir were determined based on the linear model of (Cherif et al. 2020).

$$y = 0.37x + 2.4,$$

where x = SST − AT, and y = log10 [E. coli (UFC/100 mL)].

As previously mentioned, the SST values of each point were derived from band 10 of TIRS images. The Air Temperature (ATS) was obtained from the Tangier Ibn Batouta airport weather station (Seyhan and Dekker 1986). See Table 3 for further information. The water quality class of each selected site was assigned according to Moroccan quality standards (Moroccan norm NM 03.7.200), represented in table 3 (Mahjoubi 2019; Usali and Ismail 2010).

RESULTS AND DISCUSSION

Exploring the potential of remote sensing for estimating water temperature has drawn many authors to using satellite imagery for this purpose in various regions around the world (Giardino et al. 2014; Wang and Ma 2001; Pyo et al. 2016; Morgan et al. 2020; Cheng et al. 2022) and in Morocco's northern waters (Anding and Kauth 1970; Brando and Dekker 2003; El-Din et al. 2013). We tested a linear equation to determine E. coli concentrations using existing SST and

[260]

FIGURE 3   Location of the Two Statistical Anomalies in the Study Area

Air Temperature data from several locations in the Mediterranean coastal water of Tangier (Anding and Kauth 1970). This equation allowed for the estimation of E. coli concentrations along Tangier's Ksar-Sghir region's coastline in 2017.

Exploratory Data Analysis

Table 4 summarizes the results of the in-situ measurements (sea surface temperature, E. coli concentration, water quality class, and air temperature for each selected site (El-Din et al. 2013; Ritchie et al. 2003) and estimated quantities (sea surface temperature extracted from band 10 of Landsat 8, the concentration of E. coli estimated from the equation (Vanhellemont 2020), and water quality classes (Mahjoubi et al. 2019; Usali and Ismail 2010)).

The estimated water quality classes showed medium to high correlation with in-situ measurements, ss1 and ss6 having relatively lower correlation. The bathing water in ss1 was classified as class B instead of D; this fluctuation can be explained by the presence of the pre-treatment station near the first site (figure 3), that spills periodically. The ss2 and ss3 were classified as good quality (class A) for both in-situ and estimated variables. On the other hand, ss4 and ss5, were class D, C and D, D in-situ and estimated respectively, due to the rejection of the estuary of Souani and Mghogha rivers. The selected sites from ss6 to ss13 were characterized by poor quality water (class D), which reflects a very high level of dangerous contam-

TABLE 4   Bacteriological Results of the Concentration of E. Coli Estimated, Sea Surface Temperature Estimated (SST) and Water Quality Classes

Sites	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
SS1	27.227	27.267	35.622	−0.040116	2.385157	880	242.75	D	B
SS2	22.333	24.254	24.971	−1.921053	1.689210	14	48.89	A	A
SS3	21.277	24.254	24.930	−2.977190	1.298440	20	19.88	A	A
SS4	17.482	16.259	16.310	1.223160	2.852569	920	712.15	D	D
SS5	16.259	16.259	17.226	−0.000028	2.399990	530	251.18	D	C
SS6	16.210	16.259	17.339	0.049475	2.381694	79	240.82	A	D
SS7	30.024	27.267	35.181	2.757278	3.420193	4500	2631.44	D	D
SS8	26.445	24.254	21.926	2.190744	3.210575	1361	1623.96	D	D
SS9	29.752	27.658	32.272	2.094201	3.174854	1871	1495.73	D	D
SS10	26.571	24.254	24.127	2.317000	3.257290	1870	1808.38	D	D
SS11	30.066	27.658	31.708	2.408324	3.291080	1709	1954.70	D	D
SS12	24.436	24.425	24.883	0.011684	2.404323	176	253.70	B	C
SS13	26.832	24.425	27.439	2.406600	3.290442	263	1951.83	C	D
SS14	17.838	18.314	13.039	0.475758	2.223970	22	167.48	A	B
SS15	20.461	18.314	19.636	2.153018	3.196617	1500	1572.59	D	D

NOTES   Column headings are as follows: (1) SST (°C), (2) AT (°C), (3) SST B10 (°C), (4) X (°C), (5) Y (°C), (6) [E. coli] in-situ (UFC/100 mL), (7) [E. coli] estimated (UFC/100 mL), (8) water quality class (in-situ), (9) water quality class (estimated).

ination in this region, which hosts several resorts and public beaches (figure 3). Furthermore, it represents a significant concentration of E. coli. This high concentration of E. coli indicates that the environment is suitable for its survival. According to an environmental impact study carried out by Tangier Mediterranean Spatial Agency (TMSA) (2010), the presence of fecal bacteria (E. coli) could be due to rejections from ships (marine traffic) (US Geological Survey 2019). SS14 was classified as class A and estimated at B, and in SS15, the water quality was poor (class D for both in-situ and estimated) (table 4). This classification reflects the presence of an important level of urbanization in this region.

Univariate Analysis
Sea Surface Temperature

According to the descriptive statistics, sea surface temperature was measured in 15 locations off Morocco's northern coast in 2017. The

TABLE 5 Descriptive Statistics of the In-Situ Measurements of the Sea Surface Temperature

Statistic elements	Values (°C)	Statistic elements	Values (°C)
Mean	23.548	Skewness	−0.197
Standard Error	1.306	Range	13.857
Median	24.437	Minimum	16.210
Standard Deviation	5.057	Maximum	30.066
Sample Variance	25.576	Sum	353.219
Kurtosis	−1.458	Count	15

[263]

distribution of the SST is slightly skewed with a left tail (negatively asymmetric), because the median is slightly greater than the mean. In addition, the regional average of the SST is equal to 23.548 °C, and the typical deviation from this value is equal to 5.057 °C (table 5). From the comparison of the sea surface temperature of each selected site, it was observed that in 50% of the sites, the SST was smaller than 24.437 °C (table 5). It therefore represents a great deal of variability. Table 5 shows the minimum temperature in Ghandouri (16.21 °C) and the maximum temperature in Ksar-Sghir (30.066 °C).

On the other hand, we can deduce the following using the descriptive statistics of sea surface temperature estimated using the TIRS Band 10 (SST Band 10) product over the study area (table 5): First, in 2017, SST Band 10 was estimated over the same 15 sites off the northern coast of Morocco. Second, the SST Band 10 distribution is slightly skewed with a left tail (negative skew) as the median is slightly higher than the mean. Third, the regional mean of SST band 10 is 24.441 °C, and the typical deviation from this value is 7.032 °C. In addition, the SST band 10 is less than 24.883 °C in 50% of the sites. Finally, the SST band 10 has a large variability: the minimum value was estimated at Port Tangier Med (13.04 °C) and the maximum at Marqala (35.62 °C) (table 5).

We can conclude from the above that the distribution of the two sets of sea surface temperatures (measured and estimated) has the same characteristics (figure 4), similar regional values, and variability. Furthermore, because the minimum and maximum values at different locations vary, more spatial exploration is required.

FIGURE 4

Distribution Chart of the Sea Surface Temperatures (Measured and Estimated)
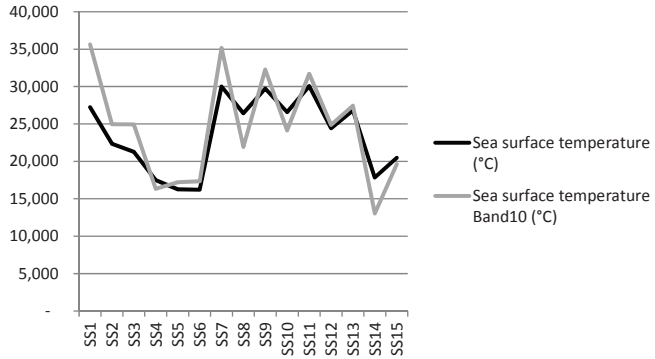
E. Coli Concentrations

The concentrations of the bacteria have been measured in the same locations where the sea surface temperature was measured, and the estimated values were concluded from the same sea surface temperature measurements (Brando and Dekker 2003). Below are the descriptive statistics of the in-situ measurements of E. coli bacteria concentrations over the study region (table 6), from which we can discern that E. coli concentrations were measured in 15 sites off Morocco's northern coast in 2017. The results indicate that the distribution of the concentration is slightly skewed with a right tail (positively asymmetric), because the mean is slightly greater than the median, while the regional average of the concentration is equal to 1047.667 UFC/100 mL and the typical deviation from this value is equal to 1189.707 UFC/100 mL (table 6). Additionally, the concentration is smaller than 880 (UFC/100 mL) in 50% of the sites, and the concentration has a great deal of variability: the minimum value was observed in Tangier City (14 (UFC/100 mL)) and the maximum in Lamrissat (4500 (UFC/100 mL)) (table 6).

Furthermore, table 6 displays descriptive statistics of the estimated concentrations of E. coli bacteria across the study region, from which we can deduce the following: in 2017, the concentration of E. coli bacteria was estimated at 15 sites off Morocco's northern coast. Moreover, the distribution of the concentration is slightly skewed with a right tail (positively asymmetric), because the mean is slightly greater than the median. Additionally, the regional aver-

TABLE 6   Descriptive Statistics of In-Situ Measurements of the E. Coli Bacteria

Statistic elements	Values (UFC/100mL)	Statistic elements	Values (UFC/100mL)
Mean	1047.667	Skewness	1.821
Standard Error	307.181	Range	4486
Median	880	Minimum	14
Standard Deviation	1189.707	Maximum	4500
Sample Variance	1415402	Sum	15715
Kurtosis	4.376	Count	15

FIGURE 5

Distribution Chart of the E. Coli Concentrations (Measured and Estimated)
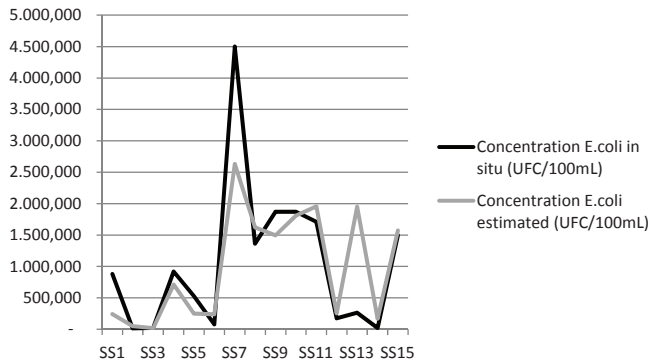
age of the concentration is equal to 998.366 UFC/100 mL, and the typical deviation from this value is equal to 886.569 UFC/100 mL (table 6). In 50% of the sites, the concentration is smaller than 712.146 UFC/100 mL, and the concentration has a great deal of variability: the minimum value was estimated in Tangier City (19.881 UFC/100 mL) and the maximum in Lamrissat (2631.436 UFC/100 mL) in 50% of the sites (table 6). The conclusion that we can draw from this section is that the measured and estimated values' distributions are very similar in terms of proximate range, regional values, and variability. Concerningly, the minimum and maximum value locations are the same and hence, further spatial exploration needs to be conducted.

More generally, both sets of sea surface temperatures and the E. coli concentrations have conformity (figure 5), while the mean is dragged in the direction of the extreme values, and because the sets

are correlated (Brando and Dekker 2003), the distributions are the same even if the sets have opposite skewness.

Bivariate Analysis

[266] From figure 6 (left), where the SST variables' matrix is illustrated, correlation of these variables is extremely high (88.5%), we can conclude that there is an association between them, which is proven by the root mean square error (RMSE = 0.885). Though it was expected to have a positive association, because the correlation had previously been proven (Cherif et al. 2019), temperatures on the shore are being inspected in addition, where E. coli concentrations are probed and are more sensitive. The SST variable increases with the SST Band 10 variable. The scatterplot of these relationships also emphasizes the conclusion that there is a strong association between measured and estimated sea surface temperatures.

While figure 6 (right) showed that the relationship between measured and estimated E. coli concentrations is not quite linear, it could be if the two anomalies (SS5 and SS15) are ignored. Thus, in this situation, the correlation coefficient is not enough to determine the relationship between the measured and estimated concentrations over the northern shore. This means that the adequacy of this coefficient to represent the strength of the relationship is not valid. Even though the relationship is not linear, the bacterial concentrations' association is extremely high (80%); after exploring the matrix correlation of these variables, we conclude that the (RMSE = 0.8), which means that there is an association between them, but the nature of this association is not clear. The concentrations of E. coli are indeed sensitive to water temperature, but further parameters need to be inspected and analyzed before we can draw any conclusions.

Exploratory Spatial Data Analysis
Data Posting and Regional Histograms

The following section illustrates the use of the spatial aspect of the sites, by data posting (arc GIS) to graphically investigate our dataset and gain a better understanding of it. From the data posting maps

SEA SURFACE TEMPERATURE
[ESTIMATED/MEASURED] (°C)

CONCENRTRATION E.COLI
[ESTIMATED/MEASURED] (UFC/100ML)
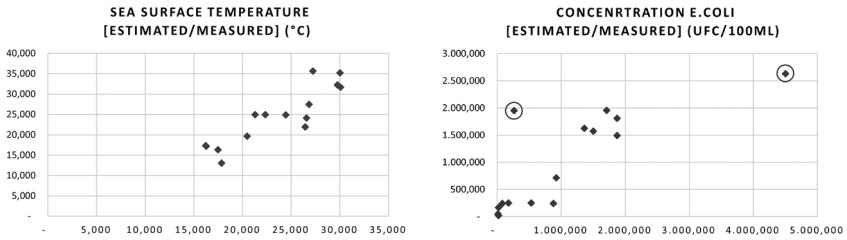
[267]

FIGURE 6   Scatterplot Illustrating the Association of: (left) SST Measured and
Estimated (*x*: Measured, *y*: estimated); (right) Concentration of E.
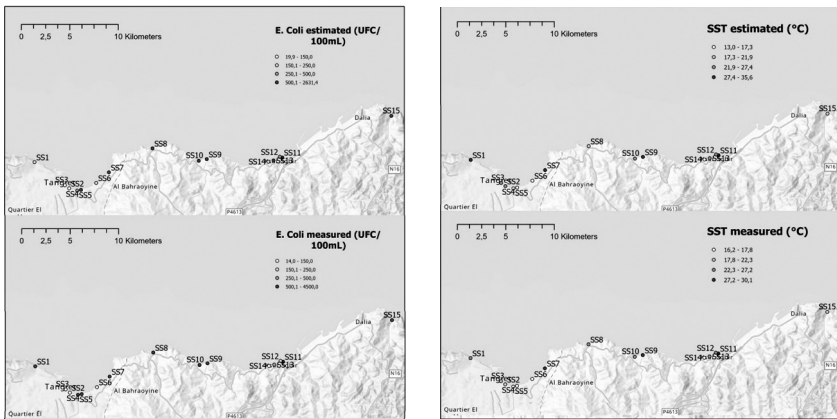Coli Measured and Estimated (Anomalies: Circle)

FIGURE 7   Spatial Distribution of SST and E. Coli Concentration
(Ranges of the Scale Depict the Water Quality Index A–D)

(figure 7), we can extract some spatial distribution information; a relative spatial correlation between the estimated and measured values can be noted. The higher concentrations of the E. coli and temperature were located near the estuaries. Moreover, there is no apparent trend over the study area.

Regional histograms of both sets of variables were produced to further explore the spatial association of the data (figure 8). The range of values for each histogram is separated into eight classes. Histograms indicate that the data is unimodal, asymmetric, and relatively heterogeneous. The left tail of the distribution of the E. coli concentration histograms indicates the presence of a few sample points with low values.
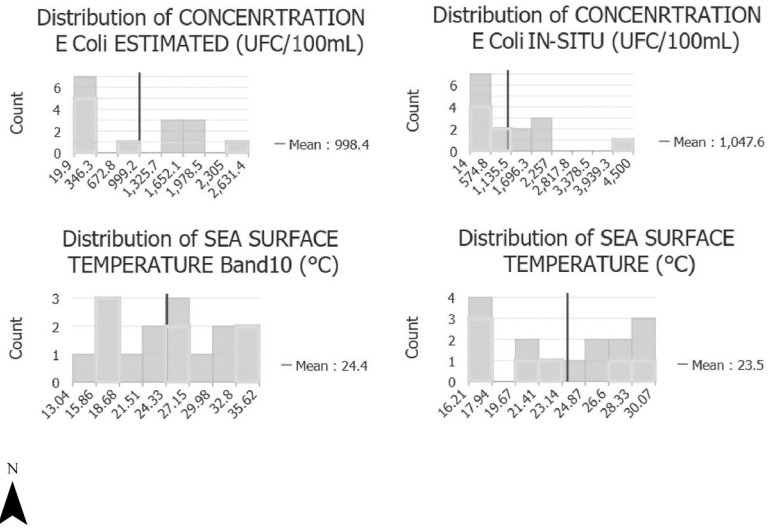
[268]
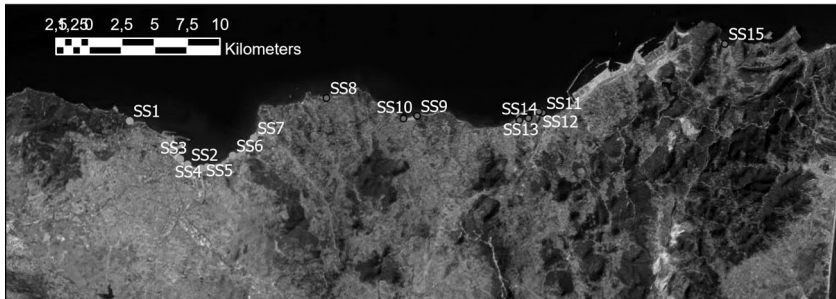
FIGURE 8   Indicator Map of the Selected Sites and Their Distribution Over
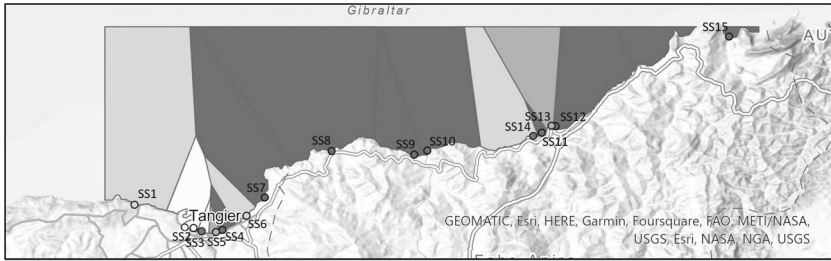the Regional Histograms (Estimated on the Left, Measured
on the Right)

When sites on the map are selected, we can investigate if we have
a spatial regime around the biggest city, Tangier. We can conclude
that we have no proportional effect in the Tangier area, because the
points are spread throughout the histogram.

Voronoï Map and Local Moran's I Statistics

To visualize the variation in E. coli concentration at each point us-
ing the Voronoï map (figure 9), we used it in spatial statistics anal-
ysis to investigate the variation of each point in relation to its sur-
roundings, meaning that instead of depending on the points' loca-

CONCENRTRATION E.Coli ESTIMATED (UFC/100mL)

- 19,9 - 150,0 ● anomalies
- 150,1 - 250,0
- 250,1 - 500,0
- 500,1 - 2631,4

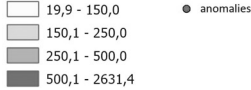0 2,5 5   10 Kilometers
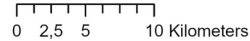
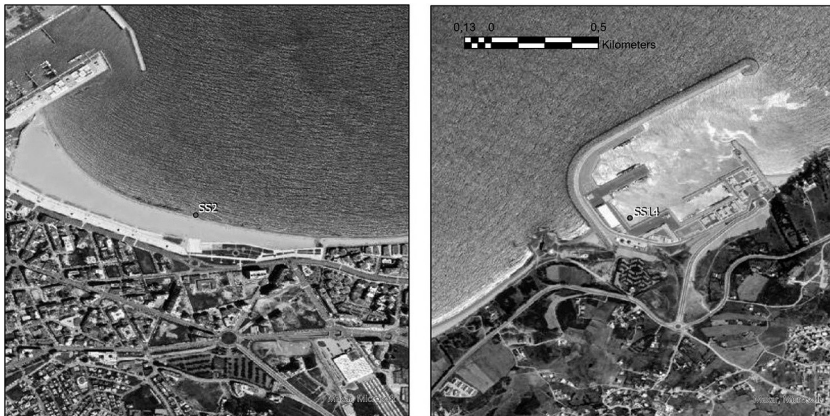FIGURE 9   Voronoï Map of the E. Coli Concentrations in the Study Area

FIGURE 10   Location of the Voronoï Anomalies in the Study Area

tions, it depends on the distance between them. A conclusion can be drawn from visualizing our produced Voronoï map of the estimated E. coli concentrations; the spatial distribution seems homogeneous overall in the study region, where the spatial autocorrelation pattern tends more to anisotropy with the major continuity direction in the east/west. We will assume that the concentrations estimated are isotropic so that we can model the global spatial autocorrelation, because the anisotropy patterns cannot be modeled. The highest values are in the center. The lowest values are near Tangier. No

FIGURE 11

Spatial Autocorrela-
tion of the Estimated
E. coli Concentra-
tions by Distance (z-
Scores of the Local
Moran's I Statistic)
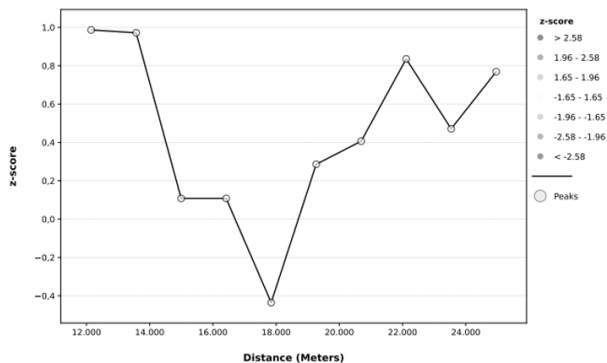
apparent trend is visible over the study domain. There are two out-
liers: the first site is proximate to a small port, and the second falls
directly on a marine outfall (figure 10). The 15 sites selected were
subject to a visual inspection, thus we can assume that the two sites
with anomalies are more susceptible, which explains that the fluc-
tuating variance of the bacterial concentrations is due to proximity
to hazardous emissions. Nevertheless, the data used is very scarce,
and more sample sites are needed to conduct further statistical in-
vestigations and draw a clearer conclusion.

We used inverse distance squared (Maleika 2020) for the concep-
tualization of spatial relationships considering the continuous na-
ture of the concentrations (estimated), and using the incremental
spatial autocorrelation tool to select an appropriate threshold dis-
tance, we constructed a line graph of the distances and their corre-
sponding z-scores of the local Moran's I statistic. The peak z-scores
indicate distances where spatial processes promote clustering; these
are the appropriate values to use in tools that require a distance band
or threshold distance parameter.

As a result, we got 3 statistically significant peaks (figure 11); clus-
tering is pronounced at each of those distances, which correspond to
a statistically significant peak at 12000 m, 12800 m, and 22000 m,
respectively. According to these values, we can indicate that there
were no spatial outliers nor clusters of low or high values (though
we considered taking the second peak); all the points are not sta-
tistically significant, which means that we do not have enough evi-

FIGURE 12

Semi-Variogram Model of the Estimated E. Coli Concentrations by Distance

Model : 560010*Nugget+256610*Gaussian(0,04419)
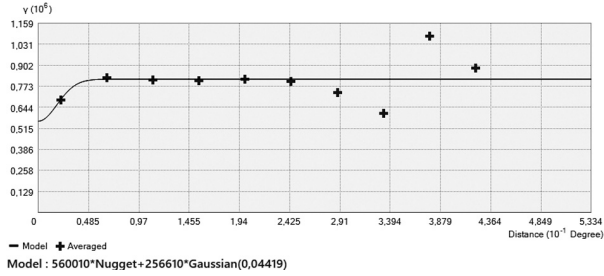
dence to reject the 'complete spatial randomness' hypothesis, which is justified by the figure that the E. coli concentration can be affected by the distance.

Inverse Distance Weighting (IDW)

To fit a model using the predicted and error graphs, and the summary information on prediction errors, as well as by examining pairs of measured and predicted values, we got the semi-variogram in figure 12. With the model (560010*Nugget + 256610*Gaussian (0.04419)), with the respective parameters (Nugget: 560010; Partial Sill: 256610; Major Range: 0.04419°), these parameters characterize the model's function represented by the line in figure 12. The magnitude of the RMSE (Root Mean Square Error) values did not change much, except where the last values (averaged) are concerned, which are presented in a value range of 2.91 to 4.364, indicating that the mean error is not close to zero in all observations.

The IDW utilizes values around the prediction location and can predict values for unsampled locations accordingly, assuming that 'things that are close to one another are more related than things that are farther apart' (El Azhari et al. 2022; Masoudi 2021). 15 points were taken to observe the E. coli concentration in the Tangier Ksar-Sghir Region in 2017 and were used as sample points to interpolate the surrounding E. coli concentration. This is presented in the IDW prediction map framing the northern coast of Morocco (figure 13), which respectively represents the bathing water quality.

The purpose of this study was to present the results of the IDW for the spatial distribution of the E. coli concentration data in the Tangier Ksar-Sghir region. The lower values on the map represent
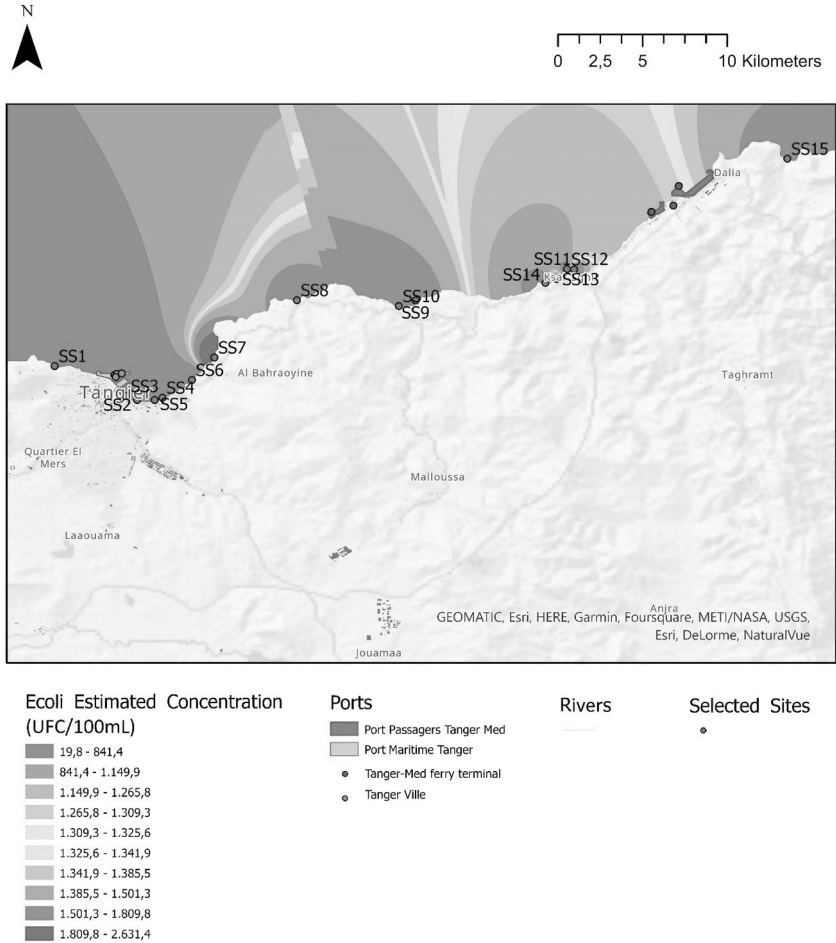
FIGURE 13   Predicted Surface of the Estimated E. Coli Concentrations Using
Inverse Distance Weighting (IDW)

low levels of E. coli concentrations in nine samples, which account
for 60% of the samples, while the higher values represent higher
amounts of pollution detected in the samples (SS7, SS8, SS9, S10,
SS12, and SS15), the maximum being in sample SS7 with an aver-
age (from 1809.8 to 2637.4) of estimated E. coli concentration. From
the results, we can conclude that only values near the shore are valid,
while the values deeper in the Gibraltar Strait were extrapolated due
to the absence of data points in depth (Cherif and Salmoun 2017).

Tangier Med Port was established in 2016 and it has significantly changed the landscape (Jebbad et al. 2022); for instance, in just one year, it relieved one of the most heavily trafficked ports in northern Africa, Maritime Tangier Port, which directly implies the accumulation of pollution from routine ship spills, including garbage and fuel (Er-Raioui et al. 2012). As it is possible to see, around the Tangier-Med port there are much higher values of pollution (Luigia et al. 2020), as well as around the estuaries. This is explained by the presence of runoff from agriculture, industry, and sewage, rich in waste, that settle in the sediments of the shore in these regions, which increases the pollution levels registered there. The city of Tangier has the lowest values in the study region.

Nowadays, remote sensing made it possible to forecast the quality of coastal waters. Through our study, we have demonstrated the potential of Landsat 8, which provides useful information at a high spatial resolution (100 m) for the identification of coastal water pollution.

Furthermore, the strategic methodology applied in this study goes beyond the limits of the current norm, which assesses microbiological quality based solely on viable bacteria enumerated at fixed stations within the bathing zone. By using the methodology (Cherif et al. 2020), the concentration of E. coli could directly be determined from the difference between Sea Surface Temperature (SST) and Air Temperature (AT). This method was applied and tested on the Atlantic coast of Tangier and the western entrance to the Strait of Gibraltar, and could be used in any location which suffers from similar environmental problems.

Generally, to improve the performance of remote sensing, it will be necessary to simulate the dynamics of different physiological states of E. coli populations in response to physico-chemical fluctuations.

CONCLUSION

In the perspective of environmental protection, this study aims to contribute to the establishment ofa coastal monitoring system, the development of new management solutions, and the implementa-

tion of the functionality of Escherichia coli (E. coli), as an indicator in prediction, of the marine pollution phenomena. The development of forecasting systems will allow local authorities to identify specific mitigation measures at the right time, thus reducing the risks to bathers' health coming from fecal bacteria.

The concretization of this project was important to further apply our knowledge of spatial statistics tools and use the spatial aspect of the data that has been hitherto untreated. The application of these tools helped us understand the relationship between the different variables, and the contrasts in the levels of bacterial propagation in the northern shore of Morocco.

The results of the present study showed low E. coli concentrations and SST values in Tangier City (SS1, SS2 and SS3), and Ksar-Sghir (SS14). In addition, the high values of E. coli concentrations and SST values at SS4–SS13 and SS15 can be attributed to discharge from the Souani and Mghogha rivers,and rejections from ships (marine traffic) in Tangier Med Port. Therefore, a significant correlation was found between the remote sensing temperature from Landsat 8 images and different bacteriological parameters. Indeed, the tested equation previously developed for use in the western Atlantic coast of Tangier (Cherif et al. 2020), proved a great result determining the quality of the Mediterranean northern coastal waters of Tangier.

Compared to traditional methods, remote sensing is one of the best tools for providing interesting information to decision makers based on sensed water temperature data. It can provide high temporal and spatial resolution information for the assessment and regular monitoring of this region's marine environment. Therefore, the regression model provides evaluation and detection of potential pollution along the coast, which is represented by an R^2 of 80%. Moreover, the IDW showed that the region of pollution is correlated with the discharge and port zones. Only values near the shore are valid, while the values deeper in the Gibraltar Strait were extrapolated due to the absence of data points at depth.

The present study should be taken as a preliminary result, and these results may be relevant to areas with similar characteristics as Morocco and elsewhere. In perspective, other analyses, such as

heavy metals and other bacteriological analyses, are necessary to develop a control approach to limit the negative impacts of seawater pollution in the context of sustainable development and the preservation of water resources. Overall, the results will support decision makers in establishing adequate policies to prevent environmental hazards and achieve good water quality along the coast of Tangier Ksar-Sghir, Morocco, in the future.

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Résumés

Loyauté et affiliation des élites andalouses envers Mulūk Al-Ṭawā'if au XIe siècle

MESHAL ALENEZI

Au XIe siècle, le pouvoir islamique dans la péninsule ibérique (*al-Andalus*) a connu une désintégration politique et militaire causée par sa division en vingt-deux États arabes et berbères. Cependant, la prospérité culturelle, intellectuelle et scientifique était toujours présente, ce qui a incité les chercheurs et les historiens à examiner la prospérité culturelle des États islamiques d'*al-Andalus*, la domination des chrétiens dans ces États, ainsi que les conflits entre les États islamiques. Cette recherche clarifie la loyauté des élites andalouses envers les souverains musulmans du XIe siècle dans la péninsule ibérique. Elle se penche sur les positions et les ambitions politiques de ces élites, en particulier celles de poètes et de juristes célèbres. En effet, de nombreux chercheurs se concentrent sur l'impact de la faiblesse politique des souverains musulmans ibériques et sur les contributions culturelles des poètes et des juristes, mais ils n'examinent pas l'impact de cette faiblesse sur leurs ambitions politiques et leur loyauté à l'égard de ces souverains au cours de ce siècle. La méthodologie de cette étude est centrée sur l'histoire et l'analyse de plusieurs sources primaires du XIe siècle, fournissant ainsi des arguments pour combler les lacunes de la littérature existante.

Mots clés : juristes, poètes, *al-Andalus,* fidélité, *Mulūk Al-Ṭawā'if*

Exploration de l'efficacité de l'Etat en matière de développement durable : élaboration et utilisation d'un instrument de mesure pour la région de Fès-Meknès

ADJOBA AUDREY PAULE N'ZE ET ABDERRAHMAN TENKOUL

La mise en œuvre du développement durable est devenue un principe directeur essentiel qui s'est intégré à de nombreuses politiques et modèles de gouvernance. Les gouvernements et les administrations ont mis en place des dispositifs de gouvernance pour orienter leurs actions vers la durabilité. Comment évaluer la réussite de cette intégration de la durabilité dans l'activité gouvernementale et administrative ? Cet article

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présente un outil de mesure et de comparaison de la capacité de gouvernance interne axée sur la durabilité et l'opérationnalisation dans le contexte des provinces et préfectures de la région de Fès-Meknès. L'application de l'outil de mesure documente la diversité des dispositifs de gouvernance et leurs différentes capacités. L'application de cet outil révèle non seulement la diversité des arrangements de gouvernance et leurs différentes capacités, mais indique aussi où et comment la gouvernance de la durabilité des gouvernements et des administrations peut être encore améliorée.

Mots clés : collectivité territoriale, gouvernance, durabilité, région Euro-méditerranéenne

Mesurer la transparence de la Banque Centrale d'Egypte comme condition préalable à l'adoption d'une politique de ciblage de l'inflation

HEBATALLA EMAM, NAGWA SAMAK ET ISRAA ABD ELAZIZ

Près de vingt ans se sont écoulés depuis que la Banque Centrale d'Égypte (BCE) a annoncé son intention d'adopter le système de ciblage de l'inflation (CI) une fois que les conditions préalables fondamentales seraient remplies (Banque Centrale d'Égypte 2005). La transition vers la politique de CI s'inscrit dans le cadre de la refonte et de la réforme complètes de la politique monétaire égyptienne à la suite des différents défis auxquels l'économie égyptienne est confrontée depuis la fin des années 1990 (Al-Mashat 2008). Ainsi, la BCE a accordé une attention continue au respect des conditions préalables de la politique de CI (Youssef 2007). Le présent document a pour objet d'évaluer le degré de transparence de la BCE au cours de la période 2005–2021. L'étude s'appuie sur l'indice le plus récent de la Transparence de la Banque Centrale (TBC) mis au point par Al-Mashat et al. (2018) pour quantifier le degré de transparence de la BCE. L'analyse révèle que la TBC en Égypte progresse, mais avec une trajectoire de changement relativement raisonnable. Toutefois, la CBE a un grand vide à combler, surtout en ce qui concerne la transparence liée au Système de prévision et d'analyse des politiques (SPAP) et au processus d'élaboration des politiques.

Mots clés : transparence des banques centrales, ciblage de l'inflation, transparence des banques centrales pour l'indice des banques centrales ciblant l'inflation, Banque centrale d'Égypte

Décisions de carrière dans la région Méditerranéenne : être ou ne pas être un entrepreneur ?

PREDRAG LJUBOTINA ET JAKA VADNJAL

L'importance des caractéristiques individuelles et familiales a été au centre des études récentes sur la succession d'entreprises familiales. Cependant, l'effet régional a souvent été négligé. En utilisant des données au niveau de l'individu mais comparatives car issues de divers pays, cette étude examine les effets des circonstances régionales sur les intentions de choix de carrière des héritiers d'entreprises familiales en ce qui concerne l'emploi, la création de leur propre entreprise ou la succession de l'entreprise familiale. Nous avons utilisé les données de l'enquête GUESSS 2018. En appliquant la régression logistique binominale, nous découvrons que deux groupes de plusieurs nations (pays méditerranéens européens et non européens) présentent nombreuses différences. Nous montrons également que les caractéristiques individuelles de l'entreprise familiale et la période de démarrage sont des facteurs significatifs, même au-delà de conditions telles que l'environnement universitaire, l'entrepreneuriat dans les programmes d'études, les attitudes entrepreneuriales, le locus de contrôle, la distance de pouvoir et les normes subjectives. Les politiques relatives à la succession d'entreprise et à la survie de l'entreprise doivent être particulièrement adaptées en fonction de divers facteurs macroéconomiques et du marché du travail des jeunes afin de réduire les échecs de la succession.

Mots clés : entrepreneuriat, succession d'entreprise, entreprise familiale, intention de choix de carrière, région Méditerranéenne

Evaluation de la qualité des eaux côtières en testant un modèle linéaire à l'aide des données SST de LANDSAT 8 : étude exploratoire

YOUSRA EZZGHARI, EL KHALIL CHERIF, AYMAN BNOUSSAAD, HAMZA EL AZHARI ET HAKIM BOULAASSAL

Le bassin méditerranéen, au large de la côte de Tanger au Maroc, est l'une des mers les plus précieuses en raison de la diversité de son écosystème. Cependant, la pollution est devenue un problème croissant le long de cette côte. Pour cette raison, nous avons testé un modèle linéaire développé pour les eaux côtières occidentales de l'Atlantique de Tanger en uti-

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lisant la température de surface de la mer (TSM) estimée à partir d'images Landsat 8 et la concentration d'Escherichia coli (E. coli) mesurée in situ pour déterminer la qualité des eaux côtières méditerranéennes au nord de Tanger dans 15 sites sélectionnés (SS1 à SS15) le long de la côte de Tanger à Ksar-Sghir. De plus, des statistiques descriptives et des systèmes d'information géographique (SIG) ont été utilisés pour explorer l'association spatiale des données. Les résultats indiquent que les distributions de TSM et d'E. coli ont les valeurs les plus élevées dans les SS4–SS13 et SS15 en raison des rivières Souani, Mghogha et du port de Tanger Med, reflétant une mauvaise qualité et un niveau très élevé de contamination dangereuse dans cette région. Les SS1, SS2, SS3 et SS14 ont montré des niveaux bas de TSM et par conséquent une faible concentration d'E. coli. Ceci signifie que la qualité d'eau est moyenne à bonne, autour des villes de Tanger et Ksar-Sghir. La relation entre la température de l'eau et la concentration d'E. coli a montré un coefficient de corrélation élevé, 80% (RMSE = 0,8), tandis que l'IDW a aidé à délimiter la zone de pollution le long du rivage. Bien que seules les valeurs près du rivage soient valides, les valeurs plus profondes dans le détroit de Gibraltar ont été extrapolées en raison de l'absence de points de données en profondeur. Ces résultats d'IDW ont montré l'impact négatif des rejets des estuaires et du trafic maritime. En conséquence, le modèle testé est utile pour estimer la qualité de l'eau côtière méditerranéenne de Tanger et, à l'avenir, comme moyen pour surveiller potentiellement la pollution dans cette région.

Mots clés : eaux méditerranéennes, Escherichia coli, Landsat 8, TSM, qualité de l'eau, détroit de Gibraltar

Povzetki

Zvestoba in pripadnost andaluzijskih elit Mulūk Al-Ṭawāʾifu v 11. stoletju

MESHAL ALENEZI

V 11. stoletju je bila islamska vladavina na Iberskem polotoku (*al-Andalus*) priča političnemu in vojaškemu razpadu, ki ga je povzročila razdelitev na dvaindvajset arabskih in berberskih držav. Vendar je še vedno obstajal kulturni, intelektualni in znanstveni razcvet, kar je spodbudilo učenjake in zgodovinarje, da preučujejo kulturni razcvet islamskih držav v *al-Andalusu,* prevlado kristjanov v teh državah ter spore med islamskimi državami. Ta raziskava pojasnjuje zvestobo andaluzijskih elit muslimanskim vladarjem 11. stoletja na Iberskem polotoku. Poglobi se v politična stališča in ambicije teh elit, zlasti znanih pesnikov in pravnikov, saj se mnogi raziskovalci osredotočajo na to, kako je politična šibkost iberskih muslimanskih vladarjev vplivala na kulturne prispevke pesnikov in pravnikov, ne preučujejo pa, kako je vplivala na njihove politične ambicije in zvestobo tem vladarjem v omenjenem stoletju. Metodologija te študije je zgodovinsko usmerjena, saj analizira več primarnih virov iz 11. stoletja in tako zagotavlja argumente za zapolnitev vrzeli v obstoječi literaturi.

Raziskovanje učinkovitosti države pri trajnostnem razvoju: razvoj in uporaba merilnega orodja za regijo Fès-Meknès

ADJOBA AUDREY PAULE N'ZE IN ABDERRAHMAN TENKOUL

Izvajanje trajnostnega razvoja je postalo ključno vodilo, ki je bilo vključeno v številne politike in modele upravljanja. Vlade in uprave so vzpostavile mehanizme upravljanja, da bi svoje ukrepe usmerjale k trajnostnemu razvoju. Kako lahko ocenimo uspešnost tega vključevanja trajnosti v vladne in upravne dejavnosti? V tem članku je predstavljeno orodje za merjenje in primerjavo zmogljivosti notranjega upravljanja, usmerjenega v trajnost in operacionalizacijo v okviru provinc in prefektur regije Fès-Meknès. Uporaba merilnega orodja dokumentira raznolikost ureditev upravljanja in njihovih različnih zmogljivosti. Uporaba tega orodja ne

razkriva le raznolikosti ureditev upravljanja in njihovih različnih zmogljivosti, temveč tudi kaže, kje in kako je mogoče upravljanje trajnosti vlad in uprav še izboljšati.

Ključne besede: lokalna uprava, upravljanje, trajnost, evro-sredozemska regija

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Merjenje preglednosti Centralne banke Egipta kot predpogoj za sprejetje politike inflacijskega ciljanja

HEBATALLA EMAM, NAGWA SAMAK IN ISRAA ABD ELAZIZ

Skoraj dvajset let je minilo, odkar je Centralna banka Egipta (CBE) objavila svojo namero, da bo sprejela politiko inflacijskega ciljanja (IC), ko bodo izpolnjeni temeljni predpogoji (CBE 2005). Prehod na politiko IC je del celovite prenove in reforme egiptovske monetarne politike, ki je sledila različnim izzivom, s katerimi se egiptovsko gospodarstvo sooča od konca devetdesetih let (Al-Mashat 2008). Tako je CBE stalno posvečala pozornost izpolnjevanju predpogojev politike IC (Youssef 2007). Namen tega prispevka je oceniti stopnjo transparentnosti CBE v obdobju 2005–2021. V študiji je za kvantifikacijo stopnje preglednosti CBE uporabljen najnovejši indeks preglednosti centralnih bank (PCB), ki so ga razvili Al-Mashat in drugi (2018). Analiza razkriva, da PCB v Egiptu napreduje, vendar z razmeroma razumno trajektorijo sprememb. Vendar pa mora CBE zapolniti še veliko vrzel, zlasti kar zadeva preglednost, povezano s sistemom za napovedovanje in analizo politik (Policy Forecasting and Analysis System – PFAS) in procesom oblikovanja politik.

Ključne besede: preglednost centralne banke, inflacijsko ciljanje, preglednost centralne banke za indeks centralnih bank, ki ciljajo na inflacijo, Centralna banka Egipta

Karierne odlocitve v sredozemskih državah: biti ali ne biti podjetnik?

PREDRAG LJUBOTINA IN JAKA VADNJAL

Pomen individualnih in družinskih posebnosti je bil v središču nedavnih študij o nasledstvu družinskih podjetij. Kljub temu, je bil regionalni vpliv pogosto spregledan. Omenjena študija sloni na podatkih, ki zadevajo posameznike v različnih državah in preučuje učinke regionalnih okoliščin

na namere dedičev družinskih podjetij glede izbire poklicne poti v zvezi z zaposlitvijo, ustanovitvijo lastnega podjetniškega podjema ali nasledstvom družinskega podjetja. Uporabili smo podatke iz raziskave GUESSS 2018. Z uporabo binominalne logistične regresije smo ugotovili, da se dve skupini več narodov (evropske in neevropske sredozemske države) med seboj precej razlikujeta. V študiji je prikazano tudi, da so individualne značilnosti v družinskem podjetju in čas zagona pomembni dejavniki, celo poleg pogojev, kot so univerzitetno okolje, podjetništvo v učnih programih, podjetniški odnos, lokus nadzora, razdalja moči in subjektivne norme. Politike v zvezi z nasledstvom podjetij in s tem povezanim preživetjem podjetij bi morale biti posebej prilagojene na podlagi različnih makroekonomskih dejavnikov in dejavnikov mladinskega trga dela, saj le tako bi zmanjšali število neuspešnih nasledstev.

Ključne besede: podjetništvo, nasledstvo podjetja, družinsko podjetje, namera poklicne izbire, sredozemska regija

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Ocena kakovosti obalne vode s testiranjem linearnega modela z uporabo podatkov Landsat 8 SST: raziskovalna študija

YOUSRA EZZGHARI, EL KHALIL CHERIF, AYMAN BNOUSSAAD, HAMZA EL AZHARI IN HAKIM BOULAASSAL

Sredozemski bazen ob obali mesta Tanger, v Maroku, je zaradi raznolikosti svojega ekosistema eno najdragocenejših morij. Vendar je onesnaževanje ob tej obali vse večji problem. Zato smo preizkusili linearni model, ki smo ga razvili za zahodnoatlantske vode ob obali mesta Tanger, z uporabo temperature morske površine (TMP), ocenjene na podlagi posnetkov Landsat 8, in koncentracije Escherichie coli (E. coli), izmerjene in situ, za določitev kakovosti sredozemskih obalnih voda severno od mesta Tanger na 15 izbranih lokacijah (IL1 do IL15) vzdolž obale od mest Tanger do Ksar-Sghir. Poleg tega smo za raziskovanje prostorske povezanosti podatkov uporabili opisno statistiko in geografske informacijske sisteme (GIS). Rezultati kažejo, da imajo porazdelitve TMP in E. coli najvišje vrednosti na IL4–IL13 in IL15 zaradi rek Souani, Mghogha in pristanišča Tangier Med, kar odraža slabo kakovost in zelo visoko stopnjo nevarnega onesnaženja v tej regiji. IL1, IL2, IL3 in IL14 so pokazale nizke vrednosti TMP in posledično nizke vrednosti E. coli. To pomeni, da je kakovost vode v okolici mest Tanger in Ksar-Sghir povprečna do dobra. Povezava med temperaturo vode in koncentracijo E. coli je pokazala vi-

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sok 80-odstotni korelacijski koeficient (RMSE = 0,8), medtem ko je IDW pomagal razmejiti območje onesnaženja ob obali. Čeprav so bile veljavne le vrednosti ob obali, so bile globlje vrednosti v Gibraltarski ožini zaradi pomanjkanja globokih podatkovnih točk ekstrapolirane. Ti rezultati IDW so pokazali negativen vpliv izpustov iz ustij rek in pomorskega prometa. Zato je preizkušeni model uporaben za ocenjevanje kakovosti sredozemske obalne vode ob mestu Tanger in v prihodnosti kot sredstvo za morebitno spremljanje onesnaženosti v tej regiji.

Ključne besede: sredozemske vode, Escherichia coli, Landsat 8, TMP, kakovost vode, Gibraltarska ožina

ملخصات

الولاء والانتماء للنخب الأندلسية تجاه ملوك الطوائف في القرن الحادي عشر ميلادي / الخامس الهجري

الملخص

في القرن الحادي عشر ميلادي، شهد الحكم الإسلامي في شبه الجزيرة الإيبيرية (الأندلس) تفككًا سياسيًا وعسكريًا بسبب انقسام الاندلس إلى اثنتين وعشرين دولة عربية وأمازيغية. ومع ذلك، كان هناك ازدهار ثقافي وفكري وعلمي، مما دفع الباحثون والمؤرخون إلى دراسة الازدهار الثقافي للدول الإسلامية في الأندلس، وسيطرة المسيحيين على هذه الدول، وكذلك الصراع بين الدول الإسلامية في الاندلس.

يوضح هذا البحث ولاء النخب الأندلسية للحكام المسلمين في الاندلس في القرن الحادي عشر ميلادي. ويتعمق هذا البحث في المواقف والطموحات السياسية لهذه النخب المثقفة، ولا سيما المشاهير من الشعراء والفقهاء، حيث يركز العديد من الباحثين على كيفية تأثير الضعف السياسي للحكام المسلمين الاندلسيين على المساهمات الثقافية لهؤلاء الشعراء والفقهاء دون دراسة كيفية تأثير ذلك على طموحاتهم السياسية وولائهم لحكامهم خلال هذا القرن.

منهجية هذه الدراسة هو المنهج التاريخي الذي يحلل العديد من المصادر التاريخية في القرن الحادي عشر ميلادي لتوفير الحجج لملء الثغرات في الدراسات السابقة.

الكلمات المفتاحية: الفقهاء، الشعراء، الاندلس، الولاء، ملوك الطوائف.

اختبار إجرائية الدولة حول التنمية المستدامة: التنمية واستعمال آليات القياس لجهة فاس- مكناس

الملخص

لقد أصبح الاعتماد على مبدأ التنمية المستدامة نهجا أساسيا في كثير من السياسات العمومية، ونموذجا هاما في مجال الحكامة يستند الى عدة آليات توجه أدائهم نحو التنمية المستدامة.

كيف يمكن تقييم عملية إدماج هذا التوجه في الأنشطة الإدارية وتلك التي تخص التسيير؟ يهدف هذا المقال إلى تقديم أدوات للقياس والمقارنة قصد الجواب عن الإشكالية المطروحة. كما سنسعى من خلاله أيضًا إلى الوقوف عند خصوصية مختلف الأساليب الإدارية الموظفة على صعيد جهة فاس-مكناس، وذلك من أجل اقتراح الحلول الممكنة والارتقاء بها .

الكلمات المفتاحية :الجماعات المحلية، الحكامة، التنمية المستدامة، المنطقة الأور ومتوسطية.

قياس شفافية البنك المركزي المصري كمتطلب لسياسة استهداف التضخم

الملخص

أعلن البنك المركزي المصري في عام 2005 عن نيته في انتهاج نظام متكامل لاستهداف التضخم في حال توافرت كافة الركائز الأساسية لنظام استهداف التضخم (Central Bank of Egypt, 2005). وتجدر الإشارة إلى أن سعي البنك المركزي لانتهاج سياسة استهداف التضخم كان في الأساس جزء من حزمة من الإصلاحات الجذرية المطبقة آنذاك على صعيد السياسة النقدية، نتيجة لتعرض الاقتصاد المصري للعديد من التحديات والصدمات منذ فترة التسعينات. ولهذا، فقد سعى البنك المركزي المصري جاهدا إلى تحقيق كافة المتطلبات الخاصة بنظام استهداف التضخم (Youssef 2007). ولما كانت الشفافية أحد أهم

ملخصات

الركائز لتلك النظام، جاءت هذه الدراسة لتقييم مدى شفافية البنك المركزي المصري خلال الفترة من 2005 حتى 2021. حيث تعتمد الدراسة على أحدث مؤشر لقياس شفافية البنوك المركزية، والمعروف بمؤشر شفافية البنك المركزي للبنوك المركزية المستهدفة للتضخم Al-Mashat et al. (2018a). وقد خلصت الدراسة إلى أن شفافية البنك المركزي المصري في تقدم، ولكن بمقدار تغير محدود نسبيًا. ومع ذلك، لا يزال لدى البنك المركزي المصري العديد من التحديات، لا سيما فيما يتعلق بالشفافية حول نظام التنبؤ وتحليل السياسات، والشفافية حول عملية صنع السياسة النقدية.

الكلمات المفتاحية: شفافية البنك المركزي، استهداف التضخم، شفافية البنك المركزي في استهداف التضخم، مؤشر البنوك المركزية، البنك المركزي المصري

القرارات المهنية في منطقة البحر الأبيض المتوسط: تكون أو لا تكون رائد أعمال؟

الملخص

لقد كانت السمات الفردية والأسرية محور التركيز الرئيسي في الدراسات التي أجريت مؤخرا بشأن وراثة الأعمال التجارية. ومع ذلك، كثيرا ما يتم التغاضي عن التأثيرات الإقليمية. تبحث هذه الدراسة، والتي تستخدم بيانات فردية شاملة لعدة بلدان، آثار الظروف الإقليمية المحيطة على نية اختيار الحياة الوظيفية لورثة الأعمال التجارية الأسرية: وتحديداً، فيما يتعلق ببدء مشاريعهم الخاصة في مجال ريادة الأعمال مقابل خلافة الشركات الأسرية. باستخدام البيانات من دراسة (GUESSS2018) وبتطبيق (binomial logistic regression) نكتشف أن مجموعتين من عدة دول (بلدان البحر الأبيض المتوسط الأوروبية وغير الأوروبية) تختلفان عن بعضهما البعض بعدة فوارق. كما نبين أيضاً أن السمات الفردية في شركة الأسرة، وتوقيت بدء العمل هما عاملان هامان، حتى خارج ظروف معينة مثل البيئة الجامعية، ومناهج ريادة الأعمال في المقررات الدراسية، والمواقف من ريادة الأعمال، ومكان السيطرة، ومسافة السلطة، والمعايير الذاتية. كذلك ينبغي أن تكون السياسات المتعلقة بخلافة الشركات وما يتصل بها من بقاء الشركات، معدة خصيصاً بناءً على مختلف عوامل الاقتصاد وسوق عمل الشباب من أجل الحد من حالات الفشل في خلافة هذه الشركات.

الكلمات المفتاحية: ريادة الأعمال، تنظيم المشاريع، وخلافة الأعمال، والأعمال التجارية الأسرية، والقصد من اختيار الحياة الوظيفية، ومنطقة البحر الأبيض المتوسط

تقييم جودة المياه الساحلية عن طريق اختبار النموذج الخطي باستخدام بيانات لاندسات 8 إس إي تي

الملخص

يعد حوض البحر الأبيض المتوسط، قبالة سواحل طنجة بالمغرب، من أكثر البحار قيمة بسبب تنوع نظامه البيئي. ومع ذلك، أصبح التلوث مشكلة متزايدة على طول هذا الساحل في الآونة الأخيرة. لهذا السبب، قمنا باختبار نموذج خطي تم تطويره للمياه الساحلية لغرب المحيط الأطلسي في طنجة باستخدام درجة حرارة سطح البحر (SST) المقدرة من صور لاندسات 8 (Landsat8) وتركيز بكتيريا إيشيغشيا كولي (E.coli) المقاسة في الموقع لتحديد جودة المياه الساحلية للبحر الأبيض المتوسط.

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ملخصات

شمل طنجة في 15 موقعًا مختارًا (SS1 إلى SS15) على طول الساحل من طنجة إلى القصر الصغير. بالإضافة إلى ذلك، تم استخدام الإحصاء الوصفي ونظم المعلومات الجغرافية (SIG) لاستكشاف الارتباط المكاني للبيانات. تشير النتائج إلى أن توزيعات درجة حرارة سطح البحر وتركيز إيشيغشيا كولي لديها أعلى القيم في SS1, SS3 و SS4 و SS15 بسبب أنهار السواني ومغوغا وميناء طنجة المتوسط، مما يعكس نوعية رديئة ومستوى مرتفع للغاية من التلوث الخطير في هذه المنطقة. أظهرت SS1، SS2، SS3 وSS14 مستويات منخفضة من توزيعات درجة حرارة سطح البحر و تركيز إيشيغشيا كولي ، وبالتالي فإن المياه ذات الجودة المتوسطة والجيدة موجودة حول مدينتي طنجة والقصر الصغير. العلاقة بين درجة حرارة الماء وتركيز إيشيغشيا كولي معامل ارتباط مرتفع، 80% (RMSE0.8=)، بينما ساعد الترجيح المسافة العكسية(IDW) في تحديد منطقة التلوث على طول الخط الساحلي. على الرغم من أن القيم القريبة من الشاطئ فقط هي الصحيحة، فقد تم استقراء القيم الأعمق في مضيق جبل طارق بسبب عدم وجود نقاط بيانات العمق. أظهرت هذه نتائج (IDW) التأثير السلبي للتصريفات من مصبات الأنهار وحركة المرور البحرية. ونتيجة لذلك، فإن النموذج الذي تم اختباره مفيد لتقدير جودة المياه الساحلية على الجانب المتوسطي من طنجة، وفي المستقبل كوسيلة لرصد التلوث المحتمل في هذه المنطقة.

الكلمات المفتاحية: مياه البحر الأبيض المتوسط، الإشريكية القولونية

لاندسات 8 إس إس تي ، المياه ذات الجودة، مضيق جبل طارق

Piran is a charming medieval town with a rich history
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