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The Effect of Toxic Leadership on Counter-Productive Work Behaviors and Intention to Leave: An Empirical Study

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Abstract

The current research determined the effect of toxic leadership on counter-productive work behaviors and the intention to leave work among a randomly selected sample of 357 employees of the Egyptian Pharmaceutical Trading Company using correlation analysis and regression analyses. There was a direct and significant effect of toxic leadership on each of the 5 dimensions of counter-productive work behaviors (abuse, production deviance, sabotage, theft, withdrawal), and the intention to leave work. Based on these results, employers should select leaders based on criteria that incorporate the psychological and humanitarian aspects of dealing with subordinates, furnish leaders with the relevant training and continuously track leaders' behavior to ensure that stay clear of any toxic practices.

Keywords: Toxic leadership, Counter-productive work behaviors**,** abuse, production deviance, sabotage, theft, withdrawal, and intention to leave work

1. Introduction

Leaders are an essential part of an organization's success; therefore, leadership style has attracted the interest of organizational researchers. Leadership styles are derived from the personality of leaders and is reflected in their behavior. Leadership styles ultimately affect employees' behaviors and attitudes at work and subsequently their performance (Hogan & Kaiser, 2005). Hence, a leader who possesses imitable characteristics such as integrity, respect for others, competence and vision can positively impact employees (Kouzes & Posner, 2002). On the other hand, a leader who displays negative characteristics, such as narcissism, self-promotion, and manipulative and controlling behavior negatively impacts employee morale and performance (Schmidt, 2014). Brandle (2006) argues that the combination of a leader's negative characteristics portray him or her as practicing "toxic leadership." Similarly, Xuanfang (2017) defined the term toxic leadership to include behaviors such as wrongly blaming employees, making unrealistic demands on employees, humiliation, and refusing to acknowledge employee accomplishments. Toxic leaders abuse their power; toxic leaders mismanage their subordinates, are rude to them, treat them with disrespect, do not listen to them, and act in a threatening manner towards them.

Toxic leaders negatively impact the workplace. Bhandarker and Rai (2019) reported that toxic leadership in an organization decreases organizational commitment, job satisfaction and results in job burnout. As Xuanfang (2017) pointed out, toxic leadership not only affects individual employees, but also affects the organizational culture leading to a state of prevailing silence among employees for fear of reprimand. Similarly, toxic leadership behaviors lead to employee mistreatment and harm, higher labor turnover, and lower job engagement as argued by Hoffman & Sergio (2020).

In the literature, toxic leadership behaviors result in a work environment dominated by counter-productive behaviors (Indradevi, 2016), emotional exhaustion, and workers' silence (Burke, 2017). Toxic leadership also leads to distrust, fear, increased psychological distress, depression, anxiety, and withdrawal (Webster et al.,2016). Employees' feeling of stress and low productivity (Winn & Dykes, 2019).

Thus it is important to study the consequences of toxic leadership. This study addresses two negative consequences that can result from toxic leadership: employee counter-productive work behaviors in its five dimensions (abuse, production deviance, sabotage, theft, withdrawal), and the intention to leave work from the point of view of employees of the Egyptian Pharmaceutical Trading Company.

This paper is structured as follows: The first section presents a literature review on theoretical and conceptual frameworks for toxic leadership, counterproductive work behaviors and intention to leave. The next section illustrates hypothesis development followed by the methodology used. Subsequent sections present the results, interpretation and recommendations.

2. Literature Review and Hypothesis Development

In this section, the researcher defines basic concepts addressed in this study and presents literature relevant to the study variables.

Customarily, research in the field of leadership is assessed from a positive perspective. However, the recent abuse of power in several business organizations has redirected researchers' attention to the dark side of leadership. Scientific studies have used a variety of terms to describe these destructive forms of leadership such as: Abusive (Tepper, 2000) Abusive, Tyrannical, Bad or Unethical (Kellerman, 2004), Incivility (Johnson and Indvik, 2001), The dark side of leadership (Mathieu et al., 2014), and Toxic (Pelletier, 2009).

Toxic leadership, also called destructive leadership, is a leadership style in which a leader expresses the inappropriate and aggressive behavior towards his or her subordinates. Employees in a toxic work environment suffer frequent reprimands and emotional abuse. (Xuanfang ,2017).

Dobbs and Do (2019) argue that the different terms used by different researchers often describe the same phenomenon: personal influences and unwarranted hostility by those in positions of power to their subordinates that negatively affect subordinates and harm the general good of the organization. However, other researchers (Dogan & Baloglu, 2019; MacLennan, 2017; Singh et al., 2017) perceive the term "toxic leadership " as more comprehensive in terms of the type of behaviors and their destructive effects unlike other terms for destructive and dysfunctional leadership.

2.1 Definition of Toxic Leadership

Padilla et al (2007) stated that leaders' behaviors arise from the combination of three factors: leaders, subordinates, and the organizational culture, also called the ~~"~~toxic triangle," which in combination negatively affect leadership behaviors. Toxic-destructive leaders have an immense need for Power, or more precisely, authoritarianism, narcissism, adverse life history, and hate mentality. Subordinates, are categorized as either Conformers or Colluders. Conformers allow toxic leaders to exercise excessive force in a manner that obscures conformers' eyes from seeing that their disadvantaged or negatively affected. Colluders on the other hand support the ideology and values of toxic leaders. The third factor, organizational culture or environmental factors, represents the absence of checks and balances or specific procedures to deal with toxic leadership behaviors, and the presence cultural values that promote toxicity.

Dogan & Baloglu (2019) described toxic leadership as a multidimensional concept that includes bad supervisory behaviors such as narcissism, authoritarianism, ostentation, arrogance, and instability. Toxic leaders possess personal characteristics that have detrimental effects on subordinates; their conduct and actions demean and discourage employees and hurt employees' feelings (Hoffman & Sergio, 2020). Toxic leadership behaviors can appear from the highest leadership position (such as a manager) to the lowest levels of leadership such as that of a supervisor (Bhandarker and Rai, 2019).

2.2 Toxic Leadership and Counterproductive Work Behaviors

Toxic leadership is often seen as aspects of destructive leadership or what is called dark leadership. In trying to define toxic leadership, most of the focus has been on its negative effects on subordinates. Toxic leadership increases subordinates stress levels by reducing their motivation and performance. In addition, toxic leaders may be insensitive and indifferent to others' feelings which hurts subordinates in the long run (Kurtulmus, 2020). These leaders also engage in practices characterized by terrorism and torture and will choose dishonest and immoral paths at any time want (Webster et al., 2016).

Toxic leadership behaviors may also lead to deviations in the organization's environment, retaliatory activity from subordinates, alienation of subordinates, reduced work achievement, and physical and psychological stress. Furthermore, toxic leaders do not have any degree of confidence in their subordinates; On their part, they are exposed to outright contempt, which leads to an increase in negativity among the subordinates, which increases pressure between them and eventually leads to revenge in the form of counter-productive work behaviors (Kayani & Alasan, 2021).

MacLennan (2017) noted that any form of bad behavior from leaders, including toxic behaviors, can lead to counter-productive behaviors. Therefore, in stressful situations or in the absence of resources, employees can

retaliate against their leaders by displaying counter-productive behaviors. Kayani & Alasan (2021) concluded that toxic leadership has a significant positive effect on counter-productive work behaviors from a study conducted on 355 nurses in public sector hospitals in Pakistan. A research study by Justin (2016) conducted on a sample of 197 medical, nursing and laboratory employees in Nigerian public hospitals concluded that there is a positive significant correlation between toxic leadership and counter-productive behaviors.

Aydinay et al (2021) used regression analysis found that when the level of employees' perception of destructive leadership increased by one unit, counter-productive work behaviors increased by 0.382 units. They also illustrated that destructive leadership accounts for 14% of the change in counter-productive work behaviors from a study was conducted on a sample of 486 employees working in the service sector in the fields of (education, health, hotels, retail trade, and information) in Mersin, Turkey.

Based on the previous literature review, the researcher developed the first hypothesis as shown below:

H1: Toxic leadership has a positive and significant effect on the counter-productive behaviors in its five dimensions (abuse, production deviance, sabotage, theft, withdrawal) from the point of view of employees in the Egyptian Pharmaceutical Trading Company.

The first hypothesis was divided into five sub-hypotheses as follows:

H1/a: Toxic leadership has a positive and significant effect on abuse dimension from the point of view of employees in the Egyptian Pharmaceutical Trading Company.

H1/b: Toxic leadership has a positive and significant effect on production deviance dimension from the point of view of employees in the Egyptian Pharmaceutical Trading Company.

H1/c: Toxic leadership has a positive and significant effect on sabotage dimension from the point of view of employees in the Egyptian Pharmaceutical Trading Company.

H1/d: Toxic leadership has a positive and significant effect on theft dimension from the point of view of employees in the Egyptian Pharmaceutical Trading Company.

H1/e: Toxic leadership has a positive and significant effect on withdrawal dimension from the point of view of employees in the Egyptian Pharmaceutical Trading Company.

2.3 Toxic Leadership and the Intention to Leave Work

The decision to leave work goes through several stages that end with the actual process of leaving work. The intention to leave work can be defined as ~~"a~~ conscious and deliberate will to leave the organization" (Bester, 2012, Cited in: Naeem & Khurram, 2020). Organizations bear diverse and immense costs when employees leave the organization including the costs of work disruption, recruitment, and training. Therefore, an intention to leave work is undesirable in any organization; thus, it is necessary to identify the factors that can increase the employee's intention to leave work (Naeem & Khurram, 2020).

Leadership styles can influence an employee's intentions to leave work (Basak et al., 2013). For instance, ethical leadership reduces the intent to leave work (Elçi et al., 2012; Tajneen, 2022), whereas abusive leadership has a negative impact on organizational commitment, job satisfaction, and organizational justice, which ultimately increase employees' intention to leave work (Weberg & Fuller, 2019).

According to the Embeddedness model (Mitchell et al., 2001), employees tend to stay in employment as long as they feel connected to and included in the organization and that they are an important part of their organization. But toxic leaders can make their employees feel less integrated within their organizations by negatively affecting their commitment. Likewise, according to the social exchange theory, toxic leaders violate the theory's fundamental principle of mutual benefit between individuals through their self-centered, self-interested, and controlling behavior that can eventually prompt employees to leave work (Cook et al., 2013, Cited in: Fizza & Khurram, 2020). Moreover, Zeffane & Melhem (2017) argue that employees tend to leave their workplaces when the employees are unsatisfied and stressed like when a toxic supervisor makes subordinates unhappy and their lives difficult.

Leaders with toxic behaviors can harm the well-being of employees and increase their dissatisfaction, and thus increasing employee intentions to leave (Bas¸kan 2020). Some previous studies have shown that bad and abusive supervision increases intentions to leave (Ahmad and Begum, 2020; Pradhan et al., 2019; Richard et al., 2020). Conversely, some positive leadership styles tend to reduce possibility of employee departure (Amunkete and Rothmann, 2015; Sun and Wang, 2017).

The study conducted by Reyhanoglu & Akin (2022) on 680 of different employees (permanent and temporary) in

a number of Turkish hospitals concluded that toxic leadership has a positive and significant effect on employees' tendency to leave work. Similarly, Hitchcock (2015) evaluated 471 individuals working in a number of non-profit public institutions in San Diego, America and concluded that toxic leadership has a positive and significant effect on employees' tendency to leave work.

It has been proven that there is a positive significant correlation between toxic leadership and employees' intention to leave work in the study by Amutenya (2019) conducted on a sample of 66 employees in the local administration of Windhoek, Namibia. Lucia & Priscilav (2022) concluded from a study conducted on a sample of 172 employees in a number of public and private companies in Brazil that there is a significant positive impact of toxic leadership on the intention of employees to leave work.

As regards the indirect effect of toxic leadership on the intention to leave work, the study by Naeem & Khurram (2020) which was conducted on a sample of 393 employees in the banking sector in Pakistan using the structural equation modeling method concluded that psychological well-being and employee engagement partly mediate the relationship between toxic leadership and intent to leave work. On the other hand, to assess factors influencing employee retention, Tanuwijaya & Jakaria (2022) conducted a study on a sample of 155 faculty members and their assistants at the Faculty of Economics and Business Administration, University of Trisakti, Indonesia and concluded that transformational leadership affects more than toxic leadership on retention employees through the mediating role of job satisfaction.

Based on the previous literature review, the researcher developed the second hypothesis shown below:

H2: Toxic leadership has a positive and significant effect on the intention to leave the work from the point of view of employees in the Egyptian Pharmaceutical Trading Company.

3. Research Methodology

3.1 Population and Sampling

The research population was all the 4, 976 employees of the Egyptian Pharmaceutical Trading Company.. Statistical tables were used to arrive at a sample size of 357 based on a margin of error of 5% (Bazara'a, 1989).

Since the objective of the study was to estimate of a certain phenomenon in the study population from the reality of the sample data, we relied on a randomly drawn probability sample (Bazraa, 1989). The questionnaire was distributed to the sample population with a response rate of 79% (282 completed questionnaires).

3.2 Measurement and Instrumentation

This research study had one independent variable (toxic leadership), and two dependent variables (Counter-productive work behaviors and intention to leave work). The scale of toxic leadership adapted from the work of Schmidt (2014) had fifteen items. The scale for the counterproductive behavior was adapted from the work of (Chand and Chand, 2014) and had five dimensions namely – abuse, production deviance, sabotage, theft and withdrawal. The scale of intention to leave work was measured through (Bothma and Roodt, 2013) and consisted of six items. All variables were measured using interval scales as well as using a 5-point Likert scale with a description of (1) strongly disagree (2) disagree (3) undecided (4) agree (5) strongly agree.

3.3 Reliability

The Cronbach alpha reliability was used to estimate the internal reliability of the scales. The results of the Cronbach alpha are presented in table 1.

Table 1. Cronbach reliability coefficients

scales	No. of items	Alpha coefficients
Toxic leadership	15	.832
Abuse	5	.810
Production deviance	5	.798
Sabotage	5	.730
Theft	5	.846
Withdrawal	5	.843
Intention to leave	6	.761

3.4 Analysis Technique

The researcher used the statistical methods in analyzing the data using the computer through the Statistical package for Social Sciences (SPSS):

- Descriptive statistics represented by the arithmetic mean and standard deviation to describe the study variables

- Pearson's correlation coefficient to determine the magnitude and direction of the relationship between the dependent variables and the independent variable used in this research.
- Regression analysis to determine the relationship between the independent variable on the dependent variables.

4. Results

4.1 Demographic

The majority of the respondents were males (71%), had a bachelor's degree (82%) while others had attained high school education (13%) or post graduate education (5%). As regards work experience and tenure, the majority had worked for 5-<10 years (65%), followed by 15-<20 years (25%), 15+ years (7%) and < 5 years (3%)

Table 2. Descriptive statistics for study variables

Variable	Mean	Standard Deviation
Toxic leadership	3.95	.657
Counter-productive work behaviors	3.83	.749
intention to leave work	3.88	.773

Table 2 shows employees' perceptions towards toxic leadership styles portrayed by their supervisors which the employees considered to be very high. as evidenced by a mean value of 3.95; a result that implies the respondents felt that their leaders often applied this leadership style. There was also a high level of counter-productive work behaviors and intention to leave work among the employees of the company under study; mean value of 3.83 and 3.88, respectively.

4.2 The Correlation between the Research Variables

Table 3 shows the correlation between toxic leadership as an independent variable and dimensions of counter-productive work behaviors (Abuse, Production deviance, Sabotage, Theft, and Withdrawal) and intention to leave as the dependent variables.

Table 3. The results of correlation analysis between the research variables

Variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Toxic leadership							
Abuse	.645**						
Production deviance	.721**	.598**					
Sabotage	.597**	.637*	.752**				
Theft	.620**	.712**	.604**	.655**			
Withdrawal	.710**	.689*	.707**	.720**	.586*		
Intention to leave	.739**	.538**	.604**	.729**	.679**	.772**	

Note. *ρ< 0.05; **ρ< 0.01.

Table 3 illustrates positive and significant relationships between Toxic leadership and all dimensions of counter-productive work behaviors: Abuse, Production deviance, Sabotage, Theft, and Withdrawal with (R) values equal: .625, .721, .597, .620, .710, respectively a statistical significance of <0.01 level for all the 5 relationships. The findings also revealed a positive and significant relationship between Toxic leadership and Intention to leave work with an r = .739 and a statistical significance at a <0.01 level.

Hence, the aforementioned results concur with the predictions of the research hypotheses.

4.3 Regression Analysis

Finally, regression analysis was used to determine the effect of toxic leadership on both counter-productive work behaviors, and intention to leave work to test the first hypothesis, which states:

H1: Toxic leadership has a positive and significant effect on the counter-productive behaviors in its five dimensions (abuse, production deviance, sabotage, theft, withdrawal) from the point of view of employees in the Egyptian Pharmaceutical Trading Company.

Table 4. The results of regression analysis of the effect of toxic leadership on the dimensions of counter-productive work behaviors

Variables	abuse		production deviance		sabotage		theft		withdrawal	
	β	(T) test	β	(T) test	β	(T) test	β	(T) test	β	(T) test
Toxic leadership	.432	3.421*	.346	2.247**	.335	2.682**	.272	3.119*	.310	2.693*
Adjusted R^2	.246		.214		.287		.226		.203	
(F) Test	19.324		21.329		24.401		18.394		20.392	
Sig.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

*$p < .05$; **$p < .01$

According to the results shown in Table 4, toxic leadership has a positive and significant effect on the abuse dimension (standard regression coefficient of 0.432)at a level of significance less than 0.05), and toxic leadership accounts for about 25% of the change in the abuse dimension in support of the first sub-hypothesis (H1/a).

Additionally, toxic leadership has a positive and significant effect on the production deviance dimension (standard regression coefficient of 0.346 at a level of significance less than 0.05), and explains about 21% of the change in the production deviance dimension in support of the second sub-hypothesis (H1/b).

Similarly, toxic leadership has a positive and significant effect on the theft dimension (standard regression coefficient of 0.335 at a level of significance less than 0.05), and explains about 28% of the change in the theft dimension in support of the third sub-hypothesis (H1/c).

Likewise, toxic leadership has a positive and significant effect on the sabotage dimension (standard regression coefficient of 0.272 at a level of significance less than 0.05), and explains about 23% of the change in the sabotage dimension in support of the fourth-hypothesis (H1/d).

Finally, toxic leadership has a positive and significant effect on the withdrawal dimension (standard regression coefficient of 0.310 at a level of significance less than 0.05), and explains about 20% of the change in the withdrawal dimension, in support of the fifth sub-hypothesis (H1/e).

The second hypothesis states:

H2: Toxic leadership has a positive and significant effect on the intent to leave the work from the point of view of employees in the Egyptian Pharmaceutical Trading Company.

Table 5. The results of regression analysis of the effect of toxic leadership on the intent to leave the work

Variables	intent to leave the work	
	β	(T) test
Toxic leadership	.407	3.421*
Adjusted R^2	.268	
(F) Test	19.324	
Sig.	.000	.000

*$p < .05$; **$p < .01$

According to the results shown in Table 5, toxic leadership has a positive and significant effect on intent to leave the work (standard regression coefficient (β) of 0.407 at a level of significance less than 0.05), and explains about 27% of the change in the dependent variable intent to leave the work in support of the second hypothesis (H2).

5. Discussion and Conclusions

The purpose of this study was to examine the impact of toxic leadership on counter-productive work behaviors in its five dimensions (abuse, production deviance, sabotage, theft, withdrawal) and intention to leave the workplace from the employees' point of view at the Egyptian Pharmaceutical Trading Company.

The study noted that subordinates highly perceived their supervisors as toxic leaders. This result is consistent with Jaja's (2015) who argued that subordinates need comfort, stability, and solutions from their managers. But these expectations appear as an optical illusion among African and Arab employees whose managers prefer instead to push subordinates out of their comfort zone through toxic tendencies. Consequently, prevalent toxic leadership behaviors among supervisors have a direct and significant effect on all five measures of counterproductive work behavior namely— abuse, production deviance, sabotage, theft and withdrawal. These results are consistent with that in the literature. For instance, Aydinay et al. (2021) prove that destructive leadership has a positive and significant effect on counter-productive work behaviors among employees in the service sector in Turkey. Likewise (Justin, 2016), a different study concluded that there is a positive significant correlation between toxic leadership and counter-productive behaviors among employees in Nigerian public

hospitals. Moreover, other researchers (Kayani & Alasan, 2021) concluded that toxic leadership has a significant and positive effect on counter-productive work behaviors among nurses in public sector hospitals in Pakistan. Often toxic leadership behaviors are reciprocated by counterproductive behaviors in response to treatments that are considered abusive, humiliating, or degrading. Subordinates are prone to transmit aggression to peers or properties and assets accompanied by actions ranging from sabotage to destroying of company property, theft, withdrawal. On the contrary, humane treatment of employees would encourage them to demonstrate positive behaviors at work because they feel valued, trusted, and important to the organization.

The results of the current study also showed that toxic leadership has a significant impact on employee intention to leave work. This finding suggests that leaders' toxic practices make it difficult for employees to stay, thus increasing their intent to leave the company.

The results of the current study are consistent with previous literature that directly or indirectly examined the influence of toxic leaders on employees' intention to leave. According to (Labrague et al., 2020), compared to employees working under transformational leadership, employees working under toxic leadership have a higher their sense of work stress and higher turnover intentions. Similarly, Lucia & Priscila (2022) concluded that there is a significant and positive impact of toxic leadership on the intention of employees to leave work in several public and private companies in Brazil. However, the results of the current study partially agree with the findings ofNaeem & Khurram (2020) that illustrated an indirect effect of toxic leadership on the intention to leave work through a mediation effect on psychological well-being and employee engagement.

6. Limitations

The research was confined to three variables: toxic leadership as an independent variable, and two consequences of toxic leadership practices as dependent variables: counter-productive work behaviors and intention to leave work.

The current study, a cross-sectional study, simultaneously collected data for both dependent and independent variables making it impossible to identify cause-and-effect relationships between the variables which is only possible in longitudinal study designs.

The research was limited to the Egyptian Pharmaceutical Trading Company in the Greater Cairo Region due to cost and time constraints.

7. Recommendations

Based on the results of the field study, the authors wish to make practical recommendations for officials at the Egyptian Pharmaceutical Trading Company and for future research.

7.1 Practical Recommendations

The leaders of the Egyptian Pharmaceutical Trading Company should:

- Develop foundations and criteria for selecting leaders that focuses on positive leadership patterns that strike a balance between work requirements and humanitarian and ethical aspects such as transformational leadership and authentic leadership which contributes to achieving the desired results at all hierarchical levels.
- Work to raise the level of effective leadership among the leaders through the design and implementation of training programs to provide these managers with skills and positive attitudes that help them in dealing with subordinates.
- Conducting periodic psychological tests for leaders at all hierarchical levels to ensure the leaders' personal traits qualify them to continue to perform their duties.
- Continuously review of the behavior of their leaders with their subordinates to ensure that their leaders are free from toxic practices.

7.2 Recommendations for Future Research

- Future research should test the same variables in this study in other sectors, for instance service organizations such as hotels or hospitals, and industrial organizations to enhance generalizability.
- The effect of toxic leadership should be assessed on other variables other than those addressed in the present study, such as: employee creativity, organizational citizenship behaviors.
- Furthermore, other researchers could also conduct a study that includes both the antecedents and the consequences of toxic leadership to generate sufficient knowledge of this subject.

8. Conclusion

The researcher conducted this research to determine the effect of toxic leadership on both counter-productive work behaviors and intention to leave work in the Egyptian Pharmaceutical Trading Company using regression analysis of data collected from 357 employees. Toxic leadership is predictive of employees' counter-productive behaviors and intention to leave work. Suitably selected leaders ought to be trained on both psychological and technical aspects of leadership and be tracked to ensure that they are free from toxic behaviors.

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The Capital Structure through the Modigliani and Miller Model

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Abstract

The Modigliani-Miller theorem is not only his most important contribution to the theory of finance, but it is one of the most important results in the last half century of evolution of the financial economy, which among other things has certainly not been poor in contributions. important.

The Modigliani-Miller theorem concerns the financing choices of firms, and in particular the choice between debt and shares. It identifies the conditions under which the choice of issuing debt or shares to finance a given level of investments does not affect the value of companies, and therefore in which there is no optimal level of debt compared to the companies' own means. Therefore, it belongs to a class of surprising theorems of "neutrality" or "indifference" that exist in economics: these are theorems that show the irrelevance of a choice that at first sight would seem very important, such as that on the degree of debt of firms. Other theorems were developed after this: Trade-off, Pricing order and Market Timing.

Keywords: capital structure, M&M model

1. Introduction

By capital structure we mean the combination of the company's debt and equity (Brigham and Ehrhardt, 2008). To do this, companies can both collect external sources and recover profits by not distributing them to shareholders.

Through research, the optimal capital structure has been classified as a union between capital, debt and equity. This occurs either when the company maximizes its value or when it raises enough capital to not alter the structure itself (Brigham and Ehrhardt 2008). Myers (1984), states that the different theories on the structure of capital would not explain the financing behavior and, therefore, advises firms against the optimal capital structure when it is notpossible to explain such behaviors.

Rajan and Zingales (1995) argue that profitability negatively affects financial leverage and this causes an increase in the size of the firm when this negative influence becomes stronger and stronger.

De Wet (2006), on the other hand, argues that the company with a lower WACC maximizes value as a whole.

M&M model of 1958 is the main focus of further studies on the structure of capital culminating in the work entitled "The Irrilevance Theorem" (Modigliani and Miller, 1958).

What do we really know about the choice of the corporate capital structure sixty-four years later? As Rajan and Zingales(1995, p. 1421) state: "The theory has clearly made progress on the subject. We now understand the most important deviations from the Modigliani and Miller assumptions that make the capital structure relevant to the value of a firm. However, very little is known about the empirical relevance of the different theories".

For this reason, there are several theories on the subject.

The work is structured as follows: first of all, the M&M model is analyzed, after which, after analyzing some of the limitsof this model, alternative theories to this model are described; in the final part, the conclusions are presented.

2. The Model of Modigliani and Miller

The M&M model is the best known model among the recipients of the Nobel Prize in economics. It is based on two propositions.

The first proposition states that the value of the indebted company is equal to the value of the non-indebted company, in the presence of a market with certain characteristics, such as: no taxes; absence of information

asymmetry or a condition in which information is fully shared between all individuals taking part in the economic process; individuals and businesses borrow at the same interest rate; absence of transaction costs or all those costs related to the organization of an activity and market in the form of strong efficiency.

Modigliani and Miller (1958) expressed this fact in a mathematical way:

$$V_j = (S_j + D_j) = \bar{X}_j / \rho_k \quad \text{or} \quad \frac{\bar{X}_j}{(S_j + D_j)} = \frac{\bar{X}_j}{V_j} = \rho_k \tag{1}$$

for each j-firm of class k where:

V_j market value of a company (market value of all stocks),
S_j market value of equity (issued stocks),
D_j market value of debt (issued bonds),
$\bar{X}_j$ expected earning of assets (expected earning before interest),
ρ_k market realization rate of expected earning made by the company in its class.

Modigliani-Miller Proposition II states that debt increases the return required by shareholders on equity investment; therefore, the following are related: the cost of capital of an indebted company; the cost of capital in a company financed only with equity (equity); the cost of debt and the ratio of debt to equity, i.e. financial leverage.

(Miller and Modigliani, 1958). The mathematical expression is:

$$i_j = \rho_k + (\rho_k - \tau) D_j / S_j \tag{2}$$

where:

i_j expected rate on return of a common stock of j- company in k- class,
ρ_k market realization rate of expected return made by the companies of the given class,
τ interest rate of the debt,
S_j market value of equity (issued stocks),
D_j market value of debt (issued bonds).

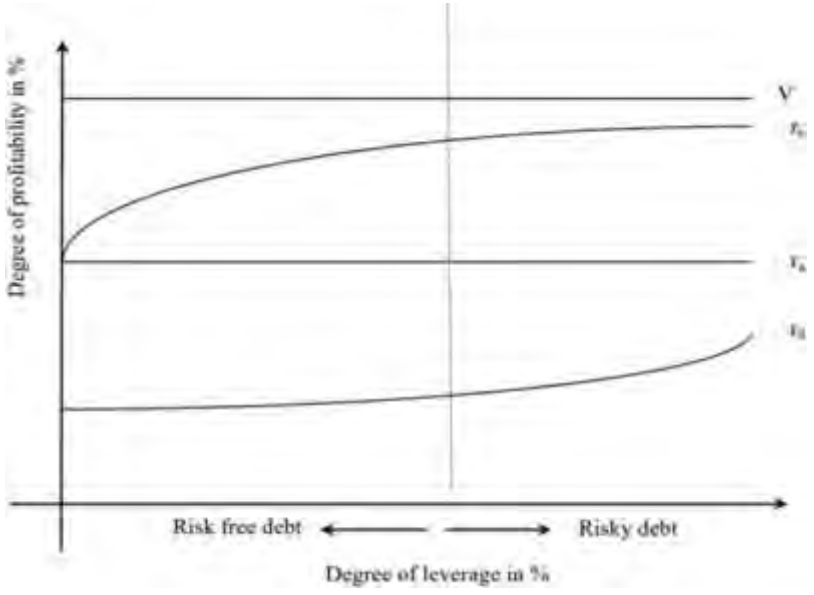

Figure 1. M&M model

Source: Own-processing

Instead, based on these equations, Modigliani and Miller concluded that shareholders' requirements for a greater returnon their capital do not appear up to a certain degree of debt, but grow steadily.

The M&M model is represented in figure 1.

where:

V	company market value in monetary units,
r_s	costs of equity (profit of shareholders in %),
r_d	costs of debt (profit of creditors in %),
r_a	total costs on capital (profit of total capital in %),
$\frac{D}{E}$	ratio of debt to equity (degree of leverage in monetary units).

Bonds are proof of risk. The debt-to-equity ratio is not affected by the expected return on debt. At a time when there is a greater demand for loans, credit institutions raise interest rates. This occurs when the expected return on capital grows in proportion to the ratio of debt to equity. In the risk zone, capital increases slower than the debt-to-equity ratio because it is less sensitive to the further increase in debt.

Therefore:

$$r_s = r_a + \frac{C_d}{C_s} \cdot (r_a - r_d) \tag{3}$$

where:

C_d	debt in monetary units,
C_e	equity in monetary units,
r_d	costs of debt in %,
r_e	costs of equity in %,
r_a	total costs of capital in monetary units (costs of company capital funded only by equity).

This relationship is interpreted as follows: the expected rate of return on equity increases directly with respect to the debt/equity ratio (Bartosova, 2005). The theory of Modigliani and Miller is based on conditions that do not respect reality. Therefore the authors also considered income taxation.

This result is mathematically expressed in the following equation:

$$X^{\tau} = (1-\tau)(X-R) + R = (1-\tau)X + \tau R = (1-\tau)\bar{X}Z + \tau R \tag{4}$$

where:

X^{τ}	earning after taxation in monetary units,
τ	margin tax rate of the company in % multiplied by 1/100,
X	earning before interest and taxes, can be expressed also by $\bar{X}Z$ (multiplication of expected earning and random factor) in monetary units,
R	interest rate of debt in % multiplied by 1/100.

The authors then considered the personal income tax, the increase in creditors' requirements and other costs associated with the operation of the company. The purpose of the tax shield is to increase the company's market value by using external sources. Therefore:

$$PV\,TS = \frac{C_d \cdot R \cdot T}{i} = C_d \cdot T \tag{5}$$

where:

PV TS	present value of the interest tax shield in monetary units,
C_d	debt capital in monetary units,
R	interest rate of debt in % multiplied by 1/100,
T	income tax rate in % multiplied by 1/100.

The market value of the company with debt is mathematically expressed:

$$V_d = V_a + PV\,TS \tag{6}$$

where:

V_d value of the company with debt in monetary units,

V_e value of the company funded only by equity in monetary units.

This theory is best because maximize the value of the company.

Taking income tax into consideration, the equation is therefore:

$$r_e = r_e + \frac{C_e}{C_d} \cdot (r_e - r_d) \cdot (1 - T) \quad (7)$$

According to financial practice, the M&M model did not consider the costs of financial difficulties. After the introduction of personal taxes, the main goal of the company is to minimize the present value of all taxes that are paid by the company. Therefore, one should choose a capital structure that maximizes profit after taxation. This is represented by the relative tax advantage of debt over equity:

Relative fiscal advantage of the debt

$$= \frac{(1 - T_r)}{(1 - T_{pa})(1 - T_c)} \quad (8)$$

where:

T_r rate of personal tax of interest in %,

T_{pa} effective rate of personal tax of stocks profit in %,

T_c corporate tax rate in %.

3. The Limits of the M&M Model and the Different Theories

The contribution of Modigliani and Miller was fundamental for the financial economy. Many researchers, including Stern and Chew (2003), agree that M&M propositions are the most famous and, at the same time, have had a strong impact onthe development of economic-financial theory (Stern & Chew, 2003, p . 590).

Despite this, Breuer and Gürtler (2008) theorize the insignificance of the failure of the hypotheses. As such, they reportedthe following: taxes are neutral, there is no additional cost in the capital market, furthermore, investors and businesses are identical and have equal access to credit markets and, finally, financial information of the company reveal no fundamentalinformation (Breuer & Gürtler, 2008, pp. 5-6).

The limitations of the M&M model are as follows:

- The risk classes are crucial and depend on them,
- It implies an objective allocation of the perspective on possible outcomes, rather than subjective e
- The hypotheses are based on the analysis of the partial equilibrium, rather than on the general one (Stiglitz, 1969, p.784).

For this reason, several theories have been developed including: Trade-off theory, Pecking order theoryand Market Timing Theory of Capital Structure.

3.1 The Trade-Off Theory

The trade-off theory is one of the theories that best represent the structure of capital and has been seriously considered after the debate on the M&M theorem.

In this theory, there is a decision maker who manages the company and evaluates the risks and advantages of different financial plans.

The basic assumption of this theory is as follows: when the corporate income tax is added, a benefit is created for the debt and this contributes to the protection of earnings from taxes. Since the function of the firm is linear and there is no debt compensation cost, there is 100% debt financing. This definition of Myers has maintained several aspects of the discussion: first, the goal is not directly observable. It can only be imputed by evidence but this depends on the addition of a structure; secondly, the tax code is much more complex than that of the theory: Graham (2003), in fact, provides a useful review of the literature on tax effects; furthermore, thirdly, bankruptcy costs must be inertial: the latterare also important and Haugen and Senbet (1978) provide a useful discussion of

them and finally, fourthly, transaction costs must take a specific form : the marginal cost of the adjustment must increase when this is greater. Leary and Roberts (2005) describe the implications of alternative assumptions on compliance costs.

There are two other trade-off theories: the static theory and the dynamic one. The static theory argues that companies have an optimal capital structure, determined through the exchange of benefits with the use of debt. Such an exchange has advantages and disadvantages: the advantage is that there is a debt tax shield while the disadvantage is the presence of potential financial difficulties. Agency costs are considered another risk factor (Jensen and Meckling, 1976). By including these costs in the theory, the company creates its own optimal structure by exchanging the tax advantage of the debt with both the costs of financial distress and agency costs. An important prediction of this theory is that firms target their own capital structures, i.e. if the effective leverage ratio deviates from the optimal one, the firm will adapt its funding behavior in such a way as to bring back the ratio of leverage at the optimum level.

In dynamic theory, on the other hand, an important role is played by the funding margin. For this reason, there will be some companies that will want to disburse funds in the following period while others will ask to raise liquidity. When the choice falls on raising funds, liquidity can take the form of debt or equity. This theory was supported by Stiglitz (1973). Dynamic trade-off models are used to consider embedded option values in deferring leverage decisions

to the next period. Goldstein et al. (2001) observe that a firm with low leverage today has the next option to increase leverage. This serves to decrease the level of leverage. Another author who analyzed this theory was Strebulaev (2007): he examined a model similar to that used by Fischer (1989); this theory foresees the detachment of leverage ratios from the optimal situation when companies will periodically finance due to transaction costs.

3.2 The Pecking Order Theory

The other theory, not used in practice, is that of the hierarchical order. He argues that companies prefer to finance with retained earnings. They do not resort to external sources but to internal ones because they have less financial risk. The latter are chosen only when there is a reduction in the cost of capital. This theory was supported by Myers and Mailuf (1984), who argued that managers will look for internal sources first and then external ones.

3.3 The theory of Market Timing

The last theory is that of Market Timing. This theory states that the company issues shares when it perceives that its shares are overvalued and repurchases them when it discovers that they are undervalued. It has two versions. According to the first version, agents must be rational; for this reason, the shares can be issued directly to the investor (Baker and Wurgler, 2002). According to the second version, however, it is claimed that the information is incorrect. Agents think they have complete information on time to market. According to Graham and Harvey, transfer time is a key point in timing it.

4. Conclusions

The capital structure defines how an enterprise finances its investments through some combination of debt, venture capital, or mixed financial securities. The capital structure is therefore the composition or, precisely, "structure" of the financial capital of the balance sheet of a company.

The study of the structure of capital begins with the work of Modigliani and Miller of 1958, which reaches a conclusion that the structure of capital is irrelevant, under ideal assumptions about the absence of friction in the financial markets. Other theories besides this one were examined including the theory of trade-off, pecking order and timing market.

The theories of the trade-off of the capital structure start from the hypothesis that, in the presence of a friction of some form in the financial markets, debt presents benefits and costs for a firm. The trade-off between costs and benefits determines an optimal capital structure, corresponding to the level of debt that equates the marginal benefits to the marginal costs of debt.

The theories of the pecking order start from the removal of the hypothesis of Modigliani and Miller of perfect information. Specifically, they hypothesize that firms 'management has more precise information about some aspect of firms' investment prospects. The conclusion that unifies the different theories of the pecking order is that companies will prefer to resort to the form of financing whose value is less sensitive than the particular information object of the information asymmetry.

Market timing theories have a more recent development, and start from positions at least partly distant from those of themore orthodox theories of trade-off and pecking order. In particular, the idea of market timing is based on the hypothesis, borrowed from the behavioral finance literature, that the market may give an inefficient valuation of a company's sharesor its debt.

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Political Orientations of Governments and Renewable Energy

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Abstract

This article empirically examines the relationship between the orientation of political powers and renewable energy in 21 developed countries from the period 1960–2018 using the panel ARDL approach. The political tendencies of the governments in developed countries are tested through three models that are created for this study. According to the first result obtained from the empirical study, a positive and statistically significant long- and short-term cointegration relationship is observed between left-leaning governments and renewable energy. It appears that it is essential to have strong environmental movements in the period of left-oriented governments in achieving this result. Second, a long- and short-term cointegration relationship is found between central governments and renewable energy. Finally, there is no statistically significant relationship between right-oriented governments and renewable energy in the short and long term.

Keywords: energy politics, renewable energy, the political orientation of governments, GDP, environmental pollution

1. Introduction

Recently, there has been a discussion on economic growth in peace with nature in the economics literature. Taking innovative measures related to the environment to ensure sustainable development encourages technological progress (Ulucak, 2020: 6). Developments in technological progress increase the use of renewable energy while reducing the use of non-renewable energy. The increase in the use of renewable energy reduces the emission of harmful gases such as CO_2 and GHG to the environment (Tawiah, Zakari, & Adedoyin, 2021). Renewable energy supports green growth and provides an important step in the realization of sustainable development.

The main factor that necessitates traditional energy sources cannot sustain economic growth additional energy sources. A necessary but not sufficient prerequisite for economic development is sustainable economic growth. Therefore, the ability to replenish energy resources emerges as an essential element for sustainable economic growth. The development of renewable energy sources is significant for sustainable economic growth and the environment. Achieving the balance between carbon emissions and economic development is one of the ways to achieve sustainable development goals (Saidi & Omri, 2020). The development of renewable energy sources plays an important role in ensuring this balance. The demand for energy resources is increasing rapidly due to the increasing population rate in the world, industrialization, and urbanization (Mohsin, Kamran, Nawaz, Hussain, & Dahri, 2020). The increasing energy demand is met from fossil energy sources since the technological infrastructure required for renewable energy sources has not yet been adequately provided in all countries. However, the high rate of toxic gas emitted by fossil energy sources creates difficulties in achieving sustainable development goals. Therefore, policies to increase the use of renewable energy to reach a cleaner environment have come to cover all countries around the world. For this reason, determining factors affecting the advancement of renewable energy sources gain importance.

There are many economic and non-economic factors affecting the development of renewable energy sources. As Geels (2002) and Geels et al. (2016) point out, renewable energy systems are socio-technical systems that change with the political framework. Biresselioglu and Karaibrahimoglu (2012) state that governments' political orientation directly impacts the use and promotion of renewable energy. Such understanding of the development of renewable energy sources, as stated by Gullberg (2011), increased environmental awareness of the media and the public, prompting political parties to include alternative energy sources such as renewable energy, without

environmental side effects in their programs. In summary, the ideological orientation of the political parties holding power emerges as an essential factor affecting the development of renewable energy resources. Therefore, this study aims to evaluate the perspectives of various political orientations on renewable energy.

In this study, the effects of the orientation of political powers, which is one of the non-economic factors, on renewable energy resources will be tested with the panel ARDL approach. Although in the literature on this subject, there are few studies such as Abban & Hasan (2021); Ahmadov & Van Der Borg (2019); Cousse (2021); Yadav, Ravindra Tripathi, & Tripathi (2022); Jahn (2021); Q.J.Wang, Feng, H.J.Wang, & Chang (2022); Chang, Wen, Zheng, Dong, & Hao (2018), one of the points that make this study unique is the application of an estimation method that takes into account cross-section dependence and second-generation unit root tests. In the first part of the study, the theoretical and empirical literature between the ideological orientations of the ruling political parties and the development of renewable energy sources is reviewed. In the second part, an empirical study that tested this relationship between the years 1960-2016 using the data of 21 developed countries is included. In the last section, the results obtained are evaluated.

2. Literature Review

Recently, when the theoretical relations between different political formations in power and the development of sustainable energy resources were reviewed in the theoretical literature, the existence of various approaches came to the fore.

Although there are many factors such as economic (Gray, Ljungwaldh, Watson, & Kok , 2018; Rentschler, 2013), environmental (Stoutenborough, Shi, & Vedlitz, 2015), and energy security (Manley, Hines, Jordan, & Stoltz, 2013; Knox-Hayes, Brown, Sovacool, & Wang, 2013; Hess & Renner, 2019) for the promotion and development of renewable energy resources, such development varies between countries. Among the reasons for this is the importance attributed to renewable energy by those in power and their political orientation. Thonig et al. (2020) talk about three ideologically based approaches to energy politics: “the government-centered, the market-centered, and the grassroots-centered.” In market-oriented logic, the role of the government in renewable energy policies is limited to setting general objectives and defining the "rules of the game." According to Thonig et al. (2020), the central government controls and manages the transition to renewable energy within a specific master plan in the state-centered approach. The failures of market-based policies give governments a leading role in the use and promotion of low-carbon energy sources (Lederer, Wallbott, & Bauer, 2018; Altenburg & Pegels, 2012; Lütkenhorst, Altenburg, Pegels, & Vidican, 2014; Neumayer; 2003). On the other hand, a transition to renewable energy sources in the grassroots-centered approach is carried out by local governments. Finally, Thonig et al. (2020) argue that the transition to renewable energy sources in the grassroots-centered method will be carried out by local governments within the framework of their available resources.

In general, it can be said that right-leaning governments adopt a market-based approach, while left-wing governments adopt a state-based approach (Schaffer & Bernauer, 2014; Biresselioglu & Karaibrahimoglu, 2012; Potrafke, 2010; Thonig et al., 2020). Within the framework of this distinction that affects the renewable energy policies of the ruling governments, it is thought that the theoretical foundations of the right and left governments for the development of renewable energy sources should be laid down.

It is argued that left-oriented governments encourage the development and consumption of renewable energy resources (Benton, 1997; Neumayer, 2003; Nicolini & Tavoni, 2017). The primary basis for this argument is that left-oriented governments are more receptive to environmental demands from consumers and environmental activists (Jahn, 1998; King & Borchardt, 1994; Benton, 1997). In that sense, as stated by Hirschl (2009); Panwar, Kaushik and Kothari (2011); Verbruggen et al. (2010), renewable energy is seen as an energy source that can cause fewer environmental problems. Besides, the interventionist nature of left-oriented governments emerges as an essential element in promoting renewable energy (Biresselioglu & Karaibrahimoglu, 2012). Fankhauser, Gennaioli and Collins (2015) claim that left-leaning governments with an interventionist nature can see low-carbon energy investments as a fiscal incentive.

Right-oriented political governments do not fully oppose the development of renewable energy sources. However, they seem to focus on energy policies that do not reduce dependence on fossil fuels by highlighting employment and security concerns, but rather support the transition to cleaner fossil fuels (Hess & Renner, 2019). This perspective may be because people do not want to pay more for renewable energy. According to Fobissie (2019), the fact that people do not want to pay extra for renewable energy stems from a political perspective rather than socio-economic conditions.

The transition to low-carbon energy and climate change has come to the fore among policymakers in the national and international arena, especially after the Paris Climate Agreement was signed in 2015 (Ćetković & Hagemann,

2020). Due to the increase in the world population and therefore energy is a resource that can be used in every field, the continuous increase in energy demand has further increased the importance of renewable energy sources. At the same time, continuous fluctuations in oil prices, the environmental damage caused by fossil energy sources, climate change caused by global warming and environmental degradation have also led to an increase in the demand for renewable energy (Yildiz, Arslan, & Sağlam Çeliköz, 2022). To create a sustainable environment, policy recommendations to limit and phase out polluting fossil fuel-based industries have become more important, as well as reliable and sustainable decarbonization efforts, and policy measures to support the developing low-carbon sectors and technologies (Ćetković & Hagemann, 2020). The transition from fossil fuels to renewable energy has been among the most important issues of all countries, from the UN Environment Conference in Stockholm in 1972 to the Paris Climate Agreement signed in 2015, to achieve a sustainable environment in the national and international arena.

The green party, which started to prevail in the EU parliament in the 1960s, aimed to create a productive activity structure as a legislative/parliamentary activity targeting environmental regulatory policies (Mourao, 2019). For this purpose, they have made a significant contribution to increasing the activities aimed at reducing environmental polluting gases. At the same time, as a result of increasing political polarization and the increasing importance of populist radical right parties in the European parliament, negative views on the transition to low-carbon energy and climate change emerge (Huber, Maltby, Szulecki, & Cetkovic, 2021). It can be thought that the fact that populist views do not show a homogeneous feature in EU policy prevents the efforts to increase the use of renewable energy from progressing sufficiently. This may cause insufficient results from energy and climate policies to create a sustainable environment. While right-wing parties generally focus on reducing budget deficits, inflation, and economic growth in the parliaments of the world countries, including EU countries; Left-wing parties mostly focus on unemployment rates and income inequality (Anzia & Moe, 2016). The advantages of renewable energy sources over fossil energy sources are too great to be ignored, as they have a low environmental impact, create new employment areas and thus stimulate economic growth. However, despite the increase in the share of renewable energy sources in the world, the weight of the use of fossil energy sources continues. The reason for this is that the technological structure required for the use of renewable energy sources is costly. For this reason, there are different views on the development of renewable energy, both among countries and among political groups in these countries.

Populist polarization in Europe spans from the far left to the far right. Right-wing parties (conservative) in Europe are against the new environmental regulations because they pose a threat to the free market economy, weaken democracy because the public's opinion is not taken into account, and weaken the interest groups of the country (Şahin, 2020). Left-wing populist parties are in favor of international climate agreements and support policies to increase the use of renewable energy (Huber et al., 2021). Especially in recent years, environmental destruction, toxic gases emitted from fossil energy sources, destabilization of the ecosystem due to climate change as a result of damage to the ozone layer, and the decrease in biodiversity and economic, social, and environmental damage to community life, renewable energy sources have become more popular in the left-wing political circle. brought about. Right-wing populist parties, on the other hand, mainly support low-carbon energy production as a way to increase economic growth and energy security, while opposing it because they see coercive measures such as environmental taxes as an unnecessary burden on the economy and people (Lockwood, 2018). The views of right-wing populist parties, mostly towards economic growth, may be effective in the lack of support for the studies on renewable energy production. In addition, these attitudes of right-wing populist parties do not show a positive view in the formation of a policy in line with international studies and agreements signed to create a sustainable environment that affects all countries of the world. Although there are different opinions among political groups on the development of renewable energy resources, an incentive policy that can be implemented as a result of the full combination of policies can contribute to the development of renewable energy resources (Bayülgen & Ladewig, 2017). In the development of renewable energy sources; In addition to factors such as the geographical structure of the country, climate, and political environment, the political structure of the country is also effective. Although opinions on the use of renewable energy differ between political views, an increasing number of incentive policies are implemented in EU countries for the development of these energy sources.

Empirical studies confirm the relationship between less pollution and the power of traditional left parties (Neumayer, 2003). King and Borchardt (1994) found a relationship between left-oriented governments and less pollution in seventeen OECD countries. In the study conducted by Scruggs (1999) for OECD countries, a statistically significant and positive relationship was found between good environmental performance and left governments. Historically, we can witness the efforts of the left governments to reduce environmental pollution.

For example, as Gallagher (2013) points out, at the end of the 1990s, the Social Democrat (SPD) and Green Party coalition in Germany implemented various policies to reduce carbon emissions and increase renewable energy sources. Jacobsson and Lauber (2006) obtained results that empirically confirm the efforts of the Green Party and Social Democrats to support renewable energy in Germany. Biresselioğlu and Karaibrahimoğlu (2012) provided important evidence in their study that left-wing forces support renewable energy. The study concluded that while left-oriented and central-oriented governments in Europe support the development and consumption of renewable energy resources instead of fossil fuels, right-oriented governments have a negative impact.

Abban and Hasan (2021) examined the 2007 and 2017 periods of 60 developed and developing countries. According to the GMM analysis, left and center-oriented ruling parties support renewable energy investments. These results are valid for both developed and developing countries. Therefore, while the left-wing or center-oriented parties of the government support the use of renewable energy, right-wing parties do not support the use of renewable energy. According to the results of the OLS regression analysis for EU countries covering the 1997-2015 period in the study of Ahmadov & Van Der Borg (2019), it is concluded that left and center-oriented parties do not support renewable energy production. According to the results of the multiple regression analysis based on the 2019 period by Cousse (2021), political orientations, mostly right-wingers, hurt the development of renewable energy technologies in Switzerland. The Average Treatment Effects (ATE) model was used in the study of Czyzewski, Polcyn, & Brellik (2022) for Poland. According to the findings obtained as a result of the analysis, according to Yadav et al. (2022), the right-wing party representing liberals and conservatives appears to have a positive effect on environmental quality. According to Mourao (2019), in the study of 36 countries using the GMM analysis and the period 1980-2014, it is revealed that the Green Party is effective in reducing environmental polluting gases such as carbon dioxide emissions and greenhouse gases. Therefore, it can be said that the green party supports the use of renewable energy in the 36 countries discussed. According to the results of the regression analysis conducted by Jahn (2021) for 28 EU countries covering the period, 1990-2018, right-wing and left-wing populist parties have different effects in various parts of Europe. While right-wing populist parties have an increasing effect on greenhouse gas emissions in North West and Eastern Europe, left-wing populist parties have a decreasing effect on greenhouse gas emissions in Southern Europe. Right-wing and centrist populist parties support the use of fossil fuels. Wang et al. (2022), carried out the GMM analysis by considering the 1990-2016 period of 98 countries. According to the study, it is revealed that CO_2 emissions are reduced in countries where the left view is dominant in power, and greenhouse gas emissions increase more in countries where the right view is dominant in power. As a result, it can be said that left-wing parties support the development of renewable energy sources and right-wing parties support the use of energy sources that increase greenhouse gas emissions. According to the group-mean dynamic common correlated estimator (DCCE) study conducted by Chang et al. (2018) using the period 1990-2014 in 31 OECD countries, left-wing parties reduce their energy intensity. Reducing energy intensity reduces the effects of climate change. Therefore, the polluting effect of toxic gases such as carbon dioxide emissions and greenhouse gases also decreases. In the study of Dalton (2015), OLS regression analysis was performed by taking the data of eight industrialized countries from 1993 to 2010. According to the results of the analysis, while the role of right-wing parties in environmental regulatory activities decreased in this period, those of left-wing parties increased. Left-wing parties support environmental regulation and activities to reduce fossil energy use. Nicolli and Vona (2019) support the policies (such as incentive tariffs, tax measures, and investment incentives) implemented by the green party for the development of renewable energy, according to the results of the regression analysis made using the data of 28 OECD countries for the period 1979-2007. In this way, they make a positive contribution to increasing the use of renewable energy.

When the theoretical and empirical literature is evaluated in general, it is possible to summarize the main elements that come to the fore. One of the reasons why different political parties in power have different approaches to renewable energy policies is the attitude of their voters to renewable energy. According to Karlstrøm and Ryghaug (2014), it can be said that while right-oriented governments try to win their voters through economic growth, development, etc., they do not prioritize the environmental issue. However, it can be argued that right-oriented governments do not entirely disregard renewable energy for sustainable growth and their development goals that do not destroy nature and resources.

On the other hand, it is seen that left-oriented governments are more receptive to the demands of both voters and environmental movements than other political orientations. This distinction in attitude leads left-leaning governments to encourage the use and development of renewable energy more often than their right-leaning counterparts.

3. Methodology and Data

In this study, which examines the relationship between various political orientations and renewable energy, the existence of a cointegration relationship in the short and long term was tested using the pooled-mean group (PMG) and mean group (MG) estimators developed by Pesaran & Smith (1995) and Pesaran, Shin, & Smith, (1999). The MG estimator derives its long-term parameters from the average of individual parameters. However, this estimator does not consider that certain parameters may be the same across groups. The PMG estimator allows the constant error variances and short-term parameters to change while restricting the long-term parameters to remain the same across groups (Pesaran et al., 1999). Therefore, which of the two estimators gave effective results was determined by the Hausman test.

3.1 Description of Data Sets

In this study, 21 countries were included in the analysis based on data availability for the years 1960-2018.The data showing the political orientation (government composition) of governments in power and reel GDP are taken from the comparative political data set. This dataset includes data from OECD and European Union countries. This data is based on calculations of Schmidt & Bayer (1992) until 1991. whereas, renewable energy data is taken from OECD. Left party data is used to represent social democrats and political parties to the left of social democratic parties. The concept of a right-wing party has been used to express liberals and conservatives. Finally, center parties are used to describe the Christian democratic or Catholic parties. Renewable energy data is taken as the share of renewable energy in the primary energy supply.

Table 1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
energy	1,228	14.73307	17.26265	0	89.75
gov_right	1,233	41.04794	38.85865	0	100
gov_cent	1,233	25.44775	30.71808	0	100
gov_left	1,233	31.40299	36.1361	0	100
realgdpgr	1,218	2.991364	2.820945	-9.13249	25.12017

3.2 Cross-Sectional Dependency

Before looking at the relationship between the political orientation of governments and renewable energy, it is necessary to determine the degree of integration by performing unit root tests of the variables. First-generation unit root tests do not consider cross-sectional dependency (Im, Pesaran, & Shin, 2003; Maddala & Wu, 1999; Hadri, 2000; Levin, Lin, & Chu, 2002).

In the words of Pesaran (2007), they are tests that assume that individual time series in the panel are distributed independently in cross-sectional terms. Therefore, second-generation unit root tests that take into account the cross-sectional dependency should be applied.

The cross-sectional dependency test is first based on the Breusch and Pagan (1980) LM test. Breusch and Pagan's (1980) LM test is a test that can be used when the cross-section units (N) are large and the period (T) is small. LM statistics used in determining cross-section dependency are as follows.

$$LM = T\sum_{i=j}^{N-1}\sum_{j=i+1}^{N}\hat{\rho}_{ij}^{2} \sim X_{N(N-1)/2}^{2} \quad (1)$$

In equation (1), ρ_{ij} shows the correlation coefficients obtained from the error terms of the model. The asymptotic distribution of x^2 is obtained from N for all (i, j) while $T_{(i,j)} \to \infty$.

Pesaran (2004) developed the Breusch and Pagan test and suggested the CDLM test, which can be applied in cases where both the cross-section (N) and the analysis period (T) are prominent.

$$CD_{LM} = \sqrt{\frac{1}{N(N-1)}}\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}(T\hat{\rho}_{ij}^{2} - 1) \quad (2)$$

In the CDLM test developed by Pesaran (2004), distortions occur when the cross-section (N) is larger than the period (T) (Pesaran, 2021). For this reason, Peseran (2004) claims that a new cross-section dependency test is needed when N is significant and T is small, showing small sample properties. Peseran (2004) tests cross-sectional dependency as follows.

$$CD = \sqrt{\frac{2T}{N(N-1)}}\left\{\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}\rho_{ij}\right\} \quad (3)$$

CD statistics, unlike LM statistics, for various panel data models (heterogeneous, homogeneous, non-stationary), N and T values are zero. Pesaran and Yamagata (2008) developed the LMadj (Bias-Adjusted Cross-Sectional Dependency Lagrange Multiplier) test based on the Breusch and Pegan (1980) LM test.

$$LM_{adj} = \sqrt{\frac{2}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} (T\hat{\rho}_{ij}^2 \frac{(T-k)\hat{\rho}_{ij}^2 - \mu_{Tij}}{\vartheta_{Tij}} \quad (4)$$

While k shows the regressor's number, μ_{Tij} shows the average, and ϑ_{Tij} represents the variance. When the probability value obtained as a result of the test is less than 0.05, the presence of cross-section dependence is accepted.

3.3 Homogeneity Test

The homogeneity tests of the slope coefficients were tested using the delta test developed by Pesaran and Yamagata (2008). Pesaran and Yamagata's (2008) test is an improved form of Swamy's (1970) homogeneity test. Pesaran and Yamagata's (2008) homogeneity test is formulated as follows.

$$\widetilde{N} = \sqrt{N}(\frac{N^{-1}\tilde{S} - k}{\sqrt{2k}}) \quad (5)$$

$$\widetilde{N}_{adj} = \sqrt{N}\left(\frac{N^{-1}\tilde{S} - E(\tilde{Z}_{iT})}{\sqrt{Var}(\tilde{Z}_{iT})}\right) \quad (6)$$

The cross-section dependency results obtained for the variables and the three models are presented in Table 2. Table 2 also includes the delta and adjusted delta, showing the slope homogeneity test results.

Table 2. Cross-Sectional Dependency Test

Variables and Models	Breusch& Pagan (1980) LM Test	Pesaran (2004) CDLM Test	Pesaran et al. (2008) LMadj	Result Cross-Sectional Dependency
rnenergy	30000	172.7	1214	accepted
	(0.001)	(0.001)	(0.001)	
reelgdpgr	3528	14.84	73.07	accepted
	(0.001)	(0.001)	(0.001)	
gov_right1	5546	50.23	159.8	accepted
	(0.001)	(0.001)	(0.001)	
gov_cent1	8142	76.82	271.3	accepted
	(0.001)	(0.001)	(0.001)	
gov_left1	4615	43.53	119.8	accepted
	(0.001)	(0.001)	(0.001)	
Model 1	23000	148.8	816.8	accepted
	(0.001)	(0.001)	(0.001)	
Model 2	23000	149.1	816.1	accepted
	(0.001)	(0.001)	(0.001)	
Model 3	21000	142.1	-751.2	accepted
	(0.001)	(0.001)	(0.001)	
	Model 1	**Model 2**	**Model 3**	
$\widetilde{N}$	3.015	3.696	2.0150	
	(0.001)	(0.001)	(0.048)	
$\widetilde{N}_{adj}$	4.099	3.995	2.022	
	(0.001)	(0.001)	(0.043)	

The values in parentheses show the probability value (*p-value*).

Cross-section dependency results are presented in Table 2. As a result of the tests, cross-section dependency was determined in variables and models. For this reason, the second generation unit root test, which takes into account the cross-sectional dependence, was used.

3.4 Panel Unit Root Test

As mentioned before, cross-section dependency in variables and predicted models necessitates the application of second-generation unit root tests. One of the second-generation unit root tests is the Cross-sectional augmented Dickey-Fuller (CADF) test developed by Pesaran (2007). Pesaran's (2007) CADF test is a test that can be applied when the time dimension (T) is larger or smaller than the cross-section dimension (N). Pesaran's (2007) CADF test used in the study is as follows.

$$\Delta y_{it} = a_i + b_i y_{i,t-1} + c_i \bar{y}_{t-1} + d_i \Delta \bar{y}_t + e_{it} \quad (7)$$

CADF test statistics are calculated as follows.

$$t_i(N,T) = \frac{\Delta Y_i' \bar{M}_W Y_{i,-1}}{\hat{\sigma}_i (Y_{i,-1}' \bar{M}_W Y_{i,-1})^{\frac{1}{2}}} \quad (8)$$

On the other hand, it is calculated by taking the average of t statistics values for the cross-section; the panel CIPS test statistic equation is given below.

$$CIPS(N,T) = N^{-1}\sum_{i=1}^{N} t_i(N,T) \quad (9)$$

A stability test was performed by comparing the CIPS statistics calculated for 21 developed countries in the study with Pesaran's (2007) critical table values. The results obtained are presented in Table 3.

Table 3. CADF Panel Unit Root Test Results

Variables	**CIPS STATISTICS**		
	Test Statistics	***P*-value**	**Result**
rnenergy	-1.780	0.501	I(1)
d.rnenergy	-4.380***	0.001	I(0)
gov_right1	-2.445***	0.001	I(0)
gov_cent1	-2.982***	0.001	I(0)
gov_left1	-2,907***	0.001	I(0)
reelgdpgr	-3.052***	0.001	I(0)

*** indicate significance at the 1% level

The CIPS statistics obtained from the CADF unit root test is a statistic calculated for the entire panel. Pesaran's (2007) CADF unit root test results show that all variables except renewable energy (rnenergy) are stationary at a level. When the difference in the renewable energy (rnenergy) variable is taken, it becomes stationary.

3.5 MG and PMG Estimations

The relationship between government policy orientations and renewable energy has been tested using PMG (pooled-mean group) and MG (mean group) estimators. MG and PMG are non-stationary dynamic panel estimators where intergroup parameters are heterogeneous. In this framework, three models created to investigate the long-term relationship are as follows.

$$\text{Model I}: \quad rnenergy_{it} = \alpha_0 + \alpha_{1i} gov\_right_{it} + \alpha_{2i} reelgdp_{it} + \epsilon_{it} \quad (10)$$

$$\text{Model II}: \quad rnenergy_{it} = \alpha_0 + \alpha_{1i} \text{gov\_cent}_{it} + \alpha_{2i} reelgdp_{it} + \epsilon_{it} \quad (11)$$

$$\text{Model III}: \quad rnenergy_{it} = \alpha_0 + \alpha_{1i} \text{gov\_left}_{it} + \alpha_{2i} reelgdp_{it} + \epsilon_{it} \quad (12)$$

Among the variables included in the models, gov_right indicates right-handed governments, gov_center central governments, realgdp equals real GDP and ϵ_{it} denotes the error term. In the first model, the cointegration relationship between right-oriented governments and renewable energy is examined. This model includes renewable energy (rnenergy), right-oriented governments (gov_right), and real GDP (realgdp) variables. In the second model, the cointegration relationship between central governments and renewable energy is investigated. The variable gov_cent in this model represents central governments. In the last model, the relationship between left-oriented governments and renewable energy is tested. The gov_left variable in the model represents left-oriented governments. For each model, PMG and mg were estimated, and the effective predictor was determined by the Hausman test. The long and short-term coefficients obtained from the estimation of the models are presented in table 4.

As seen in Table 4, according to Hausman test results, MG in the first model, PMG in the second model, and MG in the final model give effective results. Within the framework of the Hausman test, it was determined that the MG estimator gave more effective results for the first model. The Hausman *p*-value obtained in the first model is lower than 0.05, indicating that the MG estimator gives more effective results. In the results obtained from the first model in which the cointegration relationship between right-oriented governments and renewable energy was tested, a positive but not statistically significant coefficient was found in the long run. In other words, it can be said that there is no long-term cointegration relationship between right-oriented governments and renewable energy. On the other hand, the error correction term estimated for the first model is negative and statistically significant, which means that the error correction mechanism is working. Besides, when a deviation from the long-term balance occurs, it will come to balance again.

When the findings obtained from the estimation of the second model are evaluated, it is determined that there is a long-term and statistically significant relationship between central governments and renewable energy. The probability value of the Hausman test is more important than 0.05, indicating that the PMG estimator is effective. According to PMG estimation results, there is a long and short-term cointegration relationship between renewable energy and central governments. The long and short-term coefficients obtained in the model are

-0.2454312 and -0.1659659, respectively.

In the last model in which the relationship between left-oriented governments and renewable energy is tested, there is a cointegration relationship in the long and short term.
Hausman's test shows that the MG estimator is valid. It is seen in the model that the long-term cointegration coefficient is 0.1478609, and it is statistically significant at a one percent significance level. In addition, the short-term coefficient is also positive and statistically significant.

The results show that political orientations in EU countries have a direct effect on the use of renewable energy. In EU countries, central governments' investments in renewable energy are low and these governments are more supportive of fossil energy resource use. Left-oriented governments in EU countries consider natural resource use and social welfare more than central governments' right-oriented governments (Biresselioglu & Karaibrahim, 2012). The fact that people live in a cleaner environment has an impact on their social and cultural lifestyle. For this reason, regulations made to prevent environmental pollution have a positive effect on social welfare. Accordingly, left-oriented support supports the use of renewable energy, which is both a natural resource and less harmful to the environment.

Table 4. MG and PMG Estimations Results

Dependent Variable:	**MODEL I**		**MODEL II**		**MODEL III**	
Renewable energy	**MG**	PMG	MG	**PMG**	**MG**	PMG
Long-run coefficients						
ReelGDP	0.437	-0.802	0.351	-0.593	0.818	-0.377046
	(0.590)	(0.355)	(0.604)	(0.331)	(0.516)	(0.3109586)
Gov_right	0.002	-0.013				
	(0.227)	(0.208)				
Gov_centre			-0.221	-0.245		
			(0.027)***	(0.251)***		
Gov_left					0.147	0.2158078
					(0.024)***	(0.0185453)***
Short-run coefficients						
ReelGDP	0.460	1.149	0.655	1.056	0.406	1.025539
	(0.460)	(0.246)***	(0.381)	(0.253)***	(0.381)	(0.2515729)***
Gov_right	-0.020	-0.013				
	(0.141)	(0.007)				
Gov_centre			0.173	-0.165		
			(0.014)***	(0.008)***		
Gov_left					0.078	0.1022176
					(0.015)***	(0.100543)***
Statistics						
Hausman test (p-value)	8.34		5.27		19.87	
	(0.015)		(0.071)		(0.0001)	
Number of observations	1128		1128		1128	

The values in parentheses show the probability value (*p-value*). *** indicate significance at the 1% level

4. Results

The use of renewable energy is an important factor in realizing sustainable development by reducing the spread of toxic gases that occur in nature to the environment. For this reason, the development of renewable energy sources is an important element for sustainable growth and the environment, which has been one of the important agenda topics for the continuation of social life in recent years.

The increase in energy demand due to the continuous increase in the world population and urbanization rate, the fluctuations in oil prices, and the negative effects of climate change and environmental pollution due to the toxic gases emitted by fossil energy sources to the environment, the importance of renewable energy sources gradually increases. In this context, the transition plan from fossil fuels to renewable energy has become the common goal of all countries from the 1972 UN Environment Conference to the 2015 Paris Climate Agreement and has become one of the most important agenda items among policymakers. However, there are different opinions in the political environment regarding the decisions taken and the policies implemented to increase the use of renewable energy resources. In the political environment, right-wing governments generally support the use of cleaner fossil energy that does not reduce dependence on fossil fuels, taking into account more macroeconomic factors such as budget deficits, inflation, and economic growth. Although these attitudes of right-wing political

parties do not completely oppose the transition to renewable energy, they may cause insufficient results from energy and climate policies to create a sustainable environment. Left-wing governments, on the other hand, have a more positive view of the transition to renewable energy, as they are more sensitive to environmental demands from consumers and environmental activists and that renewable energy causes less environmental damage. Therefore, transition policies to renewable energy can create differences in the political environment according to the government's perspectives on economic and social life.

In the econometric analysis part of the study, Panel ARDL analysis was used to examine the cointegration relationship between political orientations and renewable energy. The first of the findings is that there is no cointegration relationship between right-oriented governments and renewable energy in the short and long term. There may be two reasons for these results. First of all, it may arise from the fact that the business world, which is the financier of right-oriented political powers, sees renewable energy as a factor that increases costs. Renewable energy is a sector that requires long-term investments. In addition, while profit maximization is the main goal for corporations, the goal of governments is to increase social welfare. This can lead to a conflict between corporations' goals and government policies. For this reason, right-oriented governments may take a hesitant stance in implementing long-term renewable energy policies that prioritize social welfare.

The second finding shows the long and short-term cointegration relationship between centrist governments and renewable energy. However, the long-term and short-term cointegration coefficient is negative. The term error correction is negative and statistically significant.

The main finding obtained from the last model is that there is a positive and statistically significant cointegration relationship between left-oriented governments and renewable energy in the long and short run. This result is parallel with empirical studies that apply different statistical methods (Biresselioglu & Karaibrahimoglu, 2012; Neumayer, 2003). This study is unique because it considers the cross-sectional dependency, and the second-generation unit root tests are applied. One reason for the long- and short-term relationship between left-oriented governments and renewable energy is thought to be the strengthening of environmental movements under left-oriented governments. Second, left-leaning governments are open to demands from the electoral base for economic growth and development that are environmentally friendly.

In summary, although there are many factors affecting the consumption and development of renewable energy, the political orientations in power have different perspectives on the subject for various reasons, which is an element that affects renewable energy.

Russia's intervention in Ukraine due to the current Russia-Ukraine war has caused an energy crisis in Europe. Here, we can say that renewable energy investments will reduce Europe's energy dependency. Therefore, it is extremely important for Europe's energy security that all political orientations focus on policies that support renewable energy. Ensuring energy security in Europe can take an important toward achieving sustainable and environmentally friendly development.

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The Determinants of the Efficiency of Ivorian Commercial Banks: A Study Using the Non-Parametric Approach

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Abstract

The objective of this study is to analyze the determinants of banking efficiency in Côte d'Ivoire. To achieve this objective, we used annual data covering the period from 2004 to 2017, for fifteen Ivorian banks. Methodologically, we first used the non-parametric data envelopment analysis (DEA) method to determine the efficiency scores. The results show that Ivorian banks are technically inefficient. Second, we used a Tobit model to identify the determinants of bank efficiency. The Tobit regression identifies return on equity, regulatory capital, size, and credit as the main determinants of the technical efficiency of Ivorian banks. In addition, bank liquidity and ownership, GDP growth rate, and inflation are sources of inefficiency in Ivorian banks. The study recommends that banks manage their resources rationally to finance the economy efficiently. At the level of the monetary authorities, they should ensure that banks apply regulatory standards.

Keywords: technical efficiency, DEA method, Tobit model, bank

1. Introduction

The underdevelopment of domestic capital markets in developing countries is due, according to McKinnon (1973) and Shaw (1973), to nominal interest rate ceilings and state control over the financial system. The results of these policies led to low or even negative real interest rates. This practice, described by these authors as financial repression, was the main cause of the poor performance of the banking sector and ultimately of economic growth rates in developing countries. Under the aegis of the major international institutions, the majority of sub-Saharan economies have undertaken financial liberalization programs since the mid-1980s. In addition to interest rate liberalization, many other measures were implemented in Africa as part of financial reforms (bank restructuring, abolition of direct monetary control, strengthening of supervision). However, neo-liberal policies inspired by monetarism have not provided a miracle solution to economic development. Reinhart and Tokatlidis (2003), referring to sub-Saharan Africa, argue that financial reforms have had very little effect on economies. According to the IMF report (2013), the Ivorian banking sector remains underdeveloped. Bank credit to the economy related to GDP went from 14.20 in 1990 to 11.0 in 2000. In 2013, the ratio of credit to the private sector to GDP was around 18 percent, and access to financial services was limited (11 percent of the population, including microfinance) (IMF, 2013). In 2016, the credit to the economy ratio related to GDP settled at 27.60. Bank credit remains a secondary source of financing for small and medium-sized enterprises, with self-financing being the preferred method. Financial liberalization is necessary because of the mismatch between the volume of savings and the investment needs of developing countries. Moreover, McKinnon is part of a liberal approach, since the price determined the market because the increase in interest rates was to create a savings market. Implicitly, this meant that financial liberalization policies led to banking competition. The increase in interest rates (in the competitive market) is supposed to encourage savings, which will be used to increase bank credit and investment, and ultimately growth. The resulting competitive pressure should, in principle, increase the efficiency of the functioning of financial intermediation by reducing interest rate spreads. Prao and Kamalan (2019) show through a study of the effect of banking structure on interest rate margins of banks in WAEMU countries from 2005 to 2014 that in the short run, the share of the four largest banks positively influences bank interest rate margins. These results support the findings of Sharpe (1990) who highlighted an

informational monopoly power that banks hold over their customers, in particular, the old ones, known in the literature as the "hold-up problem".

In the current financial globalization, the constraints of progressive opening to the international market and the financing needs of national economies impose on financial institutions more sustained efforts in terms of governance and competitiveness. Indeed, subject to the requirements of globalization processes and operating in an uncertain environment, banks are required to improve their efficiency and increase their performance in order to preserve their sustainability. Consequently, Ivorian banks are now obliged to improve their productivity and efficiency by adopting several strategies, in particular by focusing on improving their productive efficiency, in order to face increasingly fierce competition both at the national and international levels. Given that Ivorian banks currently operate in a highly competitive environment, the long-term viability of this sector depends on its degree of efficiency. Furthermore, in African countries such as Côte d'Ivoire, where banks are the main sources of financing for the economy given the embryonic nature of the financial markets, the search for banking efficiency remains a necessity. To adequately finance the economy, banks must be efficient. Moreover, since the objective of any company is to maximize its profit, it is only natural that it should ask itself about the return on these factors (inputs). With a given quantity of available inputs, the firm must produce the maximum number of goods or achieve the highest level of profit per unit of goods produced, in the application of the strategies of economic calculation. If it is in this situation, it is said to be technically efficient.

According to Weil (2006), technical efficiency refers to the production frontier, in other words, a firm is technically efficient if its activities place it exactly on the frontier. This efficiency is "the ability to avoid losses by producing as much output as the use of inputs allows or by using as little input as the production of output allows" (Harold, Lovell, and Schmidt, 1993). Similarly, a firm can minimize its factor costs to maintain or obtain a given level of output. In this configuration, the firm operates at allocative efficiency. As for scale efficiency, it refers to the fact that the firm must ensure a perfect match between its marginal cost and the selling price of its product on the market, in a situation of pure and perfect competition.

With these different definitions, it appears that the search for efficiency is important for a bank. Indeed, according to Allen et al. (2007), an efficient bank contributes to the reliability and soundness of the financial system. An operationally efficient bank contributes to increased shareholder wealth by offering market shares to its investors. Banks have the onerous task of providing the capital necessary to finance the most profitable and safest investment projects. According to the authors, without an efficient allocation of capital, profitable projects cannot be undertaken, thereby reducing economic growth. Efficiency also helps to anticipate banking crises (De Lima, 2012). On the other hand, an inefficient bank can have several consequences for the bank and for the economy. For Sufian and Kamarudin (2013), one of the main reasons for bank failure is the decline in efficiency. In addition to making the bank unstable, inefficiency also limits their productive capacities (Gentier, 2003). In the economic literature, work has highlighted the factors that can influence bank efficiency. For some, bank efficiency could be determined by internal bank factors such as profitability, size, liquidity, and bank ownership (Berger et al., 1993; Gunes and Yilmaz, 2016). For others, on the other hand, external factors may influence bank efficiency through variables such as inflation and gross domestic product growth rate (Demirguç-Kunt and Detragiache, 1998).

Recent research suggests that both internal and external factors can explain banking efficiency (Pasiouras, 2008; Femise, 2011). Taktak (2010) conducted a study on the particularities of bank governance and the effect of internal governance mechanisms of Tunisian listed banks on their efficiency during the period 2002-2006. This study reveals that Tunisian listed banks, whether small, medium, or large, have an average efficiency level of 79.30% during the study period. Similarly, the analysis also shows that the deterioration of the efficiency level of Tunisian banks is mainly due to the failure of large public banks.

In Côte d'Ivoire, in 2004, bank deposits as a percentage of 2004 assets stood at 76.72%, and for bank loans, at 57.42%[1]. APBEF-CI[2] also revealed that bank deposits reached 8,350 billion CFA francs in 2018 against 7,480 billion in 2017. Credits disbursed by Ivorian banks, meanwhile, amounted to 7,006 billion CFA francs in 2018 against 6,280 billion in 2017.

These figures show that banks operate in an environment where the need for investment is not entirely satisfied by bank production, yet banks have an abundance of resources. The question that challenges us then is to know if, in this context of excess liquidity, the banks exploit in an optimal way the resources at their disposal. In other

[1] Balance sheet of WAMU banks and financial institutions

[2] Professional association of banks and financial institutions of Côte d'Ivoire

words, are the banks technically efficient in transforming their resources into credits? Are public banks more efficient than private banks in Côte d'Ivoire? Do the internal factors of Ivorian banks influence their efficiency? Based on these questions, the central question that the study attempts to answer is the following: What are the factors likely to influence the efficiency of banks in Côte d'Ivoire? Thus, the general objective of this study is to analyze the factors influencing the efficiency of banks in Côte d'Ivoire. To do this, this study has the following specific objectives:

Specific objective 1: Determine the internal factors influencing banking efficiency in Côte d'Ivoire

Specific objective 2: Identify the type of banking efficiency in Côte d'Ivoire

In relation to our objectives, we postulate the following hypotheses:

Hypothesis 1: Return on equity, size, regulatory capital, and credit ratio positively influence the efficiency of Ivorian banks.

Hypothesis 2: Ivorian banks are more efficient at scale than at the technical level

The interests of this study are multiple and are integrated into the objectives of economic growth in Côte d'Ivoire. The concept of efficiency occupies an important and crucial place in economics. The examination of the determinants of banking efficiency will make it possible to propose solutions that will help improve the performance of banks in Côte d'Ivoire. In addition, the study will contribute to making the banking system more competitive.

From a methodological point of view, we will study the technical efficiency of the Ivorian banking sector, based on a sample of fifteen banks. The analysis of the determinants of banking efficiency is done in two stages. First, using the non-parametric method of data envelopment analysis, we determine the efficiency scores of the banks. This score is analyzed at three levels: technical efficiency, pure technical efficiency, and scale efficiency. On the other hand, we use these scores to evaluate the determinants using a Tobit regression.

This paper is organized as follows: Section 2 is devoted to a review of the literature on banking efficiency. Section 3 will present the methodology of the study. Section 4 will present the data source and the description of the variables. Section 5 will discuss the empirical results, particularly the econometric analysis of the determinants of banking efficiency in Côte d'Ivoire. Section 6 is reserved for the conclusion of the study.

2. Review of Litt érature on Bank Efficiency

This literature review is structured as follows. First, we discuss the theoretical contributions on banking efficiency and second, the empirical work.

2.1 Theoretical Contributions on Banking Efficiency

With regard to theoretical contributions, it is possible to distinguish between factors endogenous to the banking firm and exogenous or environmental factors.

Regarding the factors internal to the banking firm, several variables can influence banking efficiency. To this effect, we have first the size of the bank which is perceived as a strategic factor of the efficiency of banks. According to Goddard and Mester (2004), small banks are more efficient than large ones because they can achieve relatively large financial margins especially when they operate in a weakly developed and uncompetitive banking system. This is a structural advantage that they enjoy. Small banks also have an advantage in managing agency problems because of their proximity and friendly relationships with small and medium-sized enterprises (informational advantage and relational advantage). On the other hand, Becker et al. (2003) believe that a large bank is able to reduce costs because of its expertise and risk diversification. However, according to De Jonghe (2010), size has a neutral effect on bank efficiency. Second, regulatory capital has been identified in the theoretical literature as affecting the efficiency of banks. Theoretically, a highly capitalized bank faces crises better than a poorly capitalized bank. Moreover, highly capitalized banks operate more efficiently than less capitalized ones (Hughes and Mester, 1998). But a high level of regulatory capital can encourage excessive risk-taking (Altunbas et al. (2007). Good bank risk management is also a factor in bank efficiency. Indeed, an increase in the credit risk borne by the bank can have negative repercussions on bank profitability. For Gabriel-Jiménez et al (2007), the problem of bank insolvency is mainly the consequence of the non-control of credit risk and the accumulation of non-performing loans. In addition to credit risk, liquidity problems can also influence bank efficiency. According to Ben Naceur et al (2011), most liquid banks tend to focus on short-term financing and refuse to finance risky projects, which makes them more efficient. Finally, diversification has been linked to bank efficiency. Banks with significant diversification can reduce the average cost of funding, shifting resources from inefficient operations to more profitable activities (Stomper, 2006). In this way, they are able to

achieve economies of scale and benefit from tax advantages. In the same vein, Jiang et al. (2003) points out that more diversified banks can generate more sources of income, thereby reducing their dependence on interest income, which is easily affected by the adverse macroeconomic environment.

With regard to external factors, market structure is often cited. For Bain (1951), there is a positive link between market structure and banking efficiency. Through the Structure-Comport-Performance hypothesis, he links market structure to firm performance. In other words, market structure affects the behavior of firms in an industry and this in turn affects performance. Neuberger (1998) transposes this analysis to the banking firm, where he shows that the performance of a firm depends on the behavior (pricing, quantity) of the industry, which then depends on its structure (the number of buyers and sellers, concentration). In contrast, for Demsetz (1973) and Peltzman (1977), it is the efficiency of a firm that shapes the structure of the market. Thus, banking efficiency is not the result of the structure of the banking market. Apart from market structure, banking regulation is considered to contribute to efficiency (Humphrey, 1993; Jayaratne and Strahan, 1998). Good regulation of the banking sector promotes financial stability and allows for control of corruption contributing to improved bank efficiency (Barth et al. 2013). But the doctrine of financial liberalization has emphasized the positive effects of banking deregulation on banking efficiency (Fethi et al. 2011). Financial liberalization would reduce government intervention and make the banking market conducive to competition, which reduces costs, improves bank management, reduces risk, and offers new financial services. The macroeconomic environment, namely GDP and inflation, is related to banking efficiency. It is recognized that periods of expansion are synonymous with periods of profitability for banks, while periods of economic downturn increase bank lending problems (Berger and De Young, 1997). For example, Bolt et al. (2012) show that adverse economic conditions such as a recession in economic activity can cause deposits and loans to decline, as well as household debt. But economic boom times can lead banks to misjudge credit risks, control their costs less, and thus become inefficient (Berger et al. 2000; Chortareas et al. 2012). Besides GDP, other macroeconomic variables can influence bank efficiency, in this case, inflation. According to Revell (1979), variations in bank profitability are largely explained by the level of inflation. Indeed, there is an important indirect influence on commercial banks as inflation changes their customers' demand for financial services. In addition, unexpected increases in inflation lead to cash flow difficulties for borrowers, which can result in the premature termination of loan contracts and precipitate loan losses. In addition, inflation is one channel through which bank operations and margins can be influenced through interest rates, making it difficult to assess lending decisions (Hoggarth et al. 1998). After this brief review of theoretical contributions, proper treatment of the study merits a discussion of the empirical work on the determinants of bank efficiency.

2.2 Empirical Work on the Determinants of Banking Efficiency

This empirical review addresses, on the one hand, the external factors and, on the other, the internal factors of banking efficiency in both developed and developing countries.

Regarding factors internal to the banking firm, diversification appears to be one of the determinants of banking efficiency. In a study for Austria, Rossi et al. (2009) analyzed the effect of banking diversification and bank regulatory capital on risk, cost and efficiency. Using the SFA method, the results indicate that diversification has a negative effect on cost efficiency and a positive effect on efficiency-profit. In addition, diversification reduces risk and increases the capitalization level of banks. Analyzing the determinants of profitability of Japanese banks between 2000 and 2007, Liu and Wilson (2010) find that highly capitalized banks are efficient, as credit risks are lower, which ensures good profitability. Yet, the results of Deelchand and Padgett (2009) indicated that over the period from 2003 to 2006, Japanese banks, the least efficient, were the most capitalized. With respect to size, using a sample of 19 Nigerian banks in 2009, Eriki (2015) shows that bank size is positively related to bank efficiency. In this sense, Cook et al. (2005), specify, for Tunisian banks, that small size banks are more efficient and perform better than other banks. On the other hand, Ramadan et al. (2011) find no link between bank size, and bank efficiency for Jordanian banks. Apart from diversification, regulatory capital and size, other internal factors influence banking efficiency, in this case, return on equity. On a sample comprising 17 Libyan banks during the period from 2004 to 2010, using the DEA method, Khalad et al. (2014) indicate that Libyan banks record profitability of equity capital. Moreover, this profitability has a positive impact on bank efficiency, size of operations, and capital adequacy. On the other hand, in the case of Maghreb countries, over the period from 2003 to 2015, Henni (2018) reveals that the profitability of equity has a significantly negative impact on banking efficiency. We also note that bank efficiency can be influenced by liquidity. Studying the determinants of the efficiency of commercial banks in Nepal, Jha et al. (2013) come to the conclusion that liquidity has a significant influence on the efficiency of commercial banks. Kamarudin et al (2019), arrive at similar results in the case of Malaysian banks.

Regarding external factors, for developed countries, Berger and Humphrey (1997) find that banking regulation positively influences bank efficiency. Using the DEA method to estimate the efficiency of a sample of banks in 22 European Union countries over the period 2000-2008, Chortareas et al. (2012) indicate that tighter capital restrictions and supervisory powers improve bank efficiency. In the African case, Nyantakyi and Mouhamadou (2015) show that only strong regulation can make banks efficient. In this sense, Mehdian et al (2007), show that deregulation and financial globalization are at the root of the deterioration of the efficiency of commercial banks in the United States, during the period from 1990 to 2003. But for the period 1984 to 1990, again in the United States, Mukherjee et al. (2001) show that financial liberalization had a positive impact on the efficiency and productivity of banks. As for the structure of the banking market, in Germany, Eber (2000) shows that banking efficiency can be influenced by bank concentration. For their part, using a sample of 4050 banks from 72 countries, Barth et al. (2013) indicate that competition is positively related to banking efficiency.

Competitive pressure would encourage bankers to be more vigilant and improve their performance. However, in Central and Eastern European countries, from 1999-2006, Lapteacru and Nys (2011), find that increased competition has increased the risk-taking of investment banks, thus reducing their solvency. The implication is that strong competition in the banking market is not necessarily associated with greater efficiency. In a study of the determinants of commercial bank efficiency in European transition countries (Czech Republic, Hungary, Poland, Slovakia, and Slovenia), Grigorian and Manole (2006) find that over the period 1995-1998, bank efficiency is positively related to several factors, including GDP per capita. In a sample of 7,000 banks in 11 European Union countries over the period 1996-2004, Hasan et al. (2009) show that economic growth positively influences efficiency in periods of expansion or contraction. In Africa, Kablan (2010) also reports that economic growth positively influences the efficiency of 137 banks in 29 African countries between the years 2000 and 2004. In contrast, Řepková (2014) finds a negative influence of GDP growth on Czech bank efficiency from 2003 to 2012. Similarly, Chortareas et al. (2012) find a negative and significant relationship between economic growth and bank efficiency, in 11 European countries during the period from 2000 to 2006. This is explained by the fact that during economic booms, banks have difficulty controlling their costs and granting more credit without controlling risks, thus generating bank inefficiency.

3. Model and Methodology

In this section, we will present the specification of the basic model on which this study is based and the estimation process.

3.1 Model Specification

Our study is based on Henni (2018). After a redesign, our specified model takes the following functional form:

$$DEA = f(ROE, LIQ, TAL, PROPR, CRD, CAP, TXPIB, INFL) \quad (1)$$

The regression model takes the following explicit form:

$$DEA_t = \alpha_i + \beta_1 ROE_{it} + \beta_2 LIQ_{it} + \beta_3 TAL_{it} + \beta_4 PROPR_{it} + \beta_5 CRD_{it} + \beta_6 CAP_{it} + \beta_7 TXPIB_{it} + \beta_8 INFL_{it} + \varepsilon_{it} \quad (2)$$

Where DEA is the technical efficiency that will denote (ET) in the first model, in the second, the pure and technical efficiency (ETP) and in the third, the scale efficiency (EE).

Thus, the models tested are the following:

$$f(ROE, LIQ, TAL, PROPR, CRD, CAP, TXPIB, INFL) = \begin{cases} ET\ (1) \\ ETP\ (2) \\ EE(3) \end{cases}$$

With ETG: overall technical efficiency score, ETP: pure technical efficiency score and EE: scale efficiency score.

The choice of inputs and outputs is a delicate operation. Indeed, in order to determine the components of inputs and outputs, one must first know the nature of the banking technique. In the literature, there are two main approaches: the production approach and the intermediation approach. The first focuses on the operating costs of banks. It considers banks as entities that combine their resources to achieve the maximum possible transaction. The second approach considers the bank as a financial intermediary that collects resources, mainly in the form of deposits, in order to grant credits. In our case, the intermediation approach is adopted. In this approach, the bank uses three inputs: physical capital, represented by fixed assets, financial capital, represented by deposits, and labor, represented by general operating expenses. Since data for personnel costs are not available for all banks,

the general operating expenses consider that a large part of the costs is personnel costs.

Outputs are composed of the total loans that banks make to their customers. This output fits the traditional activity of banks and the main services that banks offer. The return on assets is used as the second output. Thus, note ROE is the return on equity (net income to equity), LIQ the bank liquidity (cash and reserves in banks divided by total assets), TAL,, the size of the bank (logarithm of Total Assets), $PROPR$ the ownership of the bank (1 if the bank is public and 0 if it is a private bank), CRD the bank credit ratio (bank claims divided by total assets), CAP the banks regulatory capital (capital divided by total assets), $TXPIB$ the growth rate of gross GDP, $INFL$, the inflation rate calculated with consumer price indices, and ε_it the residual term of the model. α_i is a constant and β_1,……, β_8, the coefficients of the regression to be estimated.

We can now proceed to the choice of the study model and the appropriate estimation technique.

3.2 The Estimation Process

The choice of the model to be estimated cannot be made a priori without first conducting econometric tests. In the following lines, we first present the preliminary econometric tests and the estimation technique.

3.2.1 Preliminary Economic Tests

The econometric approach begins with descriptive statistics. Indeed, the main purpose of two-dimensional descriptive statistics is to examine whether there is some form of association between two variables. The purpose of descriptive statistics is to structure and represent the information contained in the data. In our study, it will consist of presenting the means of the effectiveness scores and the correlation between our study variables. Let us recall that an average is a calculation tool allowing to summarize a list of numerical values in a single real number. Its incompleteness leads to the standard deviation, which is an indicator of dispersion. It informs us about the way individuals are distributed around the mean. In addition, the correlation coefficient is an index that measures the intensity of the linear association between two variables. A positive correlation coefficient indicates a positive linear dependence, while a negative coefficient indicates a negative linear dependence.

3.2.2 The Estimation Technique

Our study uses a non-parametric efficiency estimation method. In general, non-parametric methods, the FDH (Free Disposal Hull) and the DEA (Data Envelopment Analysis) are based on data envelopment techniques. The economic approach of these analyses is linked to the notion of X-efficiency (Leibenstein, 1966), and the central hypothesis is that a producer is relatively inefficient if he uses more resources than another producer, for a given value added. Efficient production, thus located on the efficiency frontier, defines the relationship between inputs and outputs by depicting the maximum value obtained from the inputs consumed. In doing so, it is linked to the current state of technology available to the entity. Ignoring all links between actors and decision levels, an entity is considered efficient only if it operates on the efficiency frontier. The estimation technique adopts two steps: the identification of the frontier and the measurement of the efficiency factor. The first step is dedicated to the identification of the frontier. According to the hypothesis postulated on returns to scale, there are essentially two categories of DEA models, namely the DEA-CCR situation (de Charnes, Cooper, and Rhodes, 1978) linked to constant returns with a constant frontier, and the so-called DEA-BCC situation (de Banker, Charnes and Cooper, 1984) allowing for variable returns to scale. The BCC models are therefore more flexible in the sense that they allow the model to determine the returns to scale by itself. In addition, among the different techniques for measuring efficiency, there are, among others, input-oriented and output-oriented measures. Indeed, efficiency can be measured through the distance between the observed DMU and the production frontier, either horizontally (input-oriented) or vertically (output-oriented). We will focus on the output-oriented BCC model, as this is the one we have chosen to use in this study. We determine the efficiency scores under the constant and variable efficiencies of scale. Once the efficiency scores have been calculated, it is useful to look for the sources of productive inefficiencies. This is the purpose of the second step, which is carried out through an econometric regression of efficiency scores. At this level, the estimation technique used is Tobit regression. In theory, Tobit regression gives more consistent estimates of the coefficients of the regression when the dependent variable is limited. It is suitable for data in the interval [0 - 1]. The Tobit model is an extension of the Probit model, developed by Tobin (1958). For panel data, the Tobit model is based on a random effects model. Indeed, the absence of sufficient statistics does not allow the fixed effects to be conditioned outside of probability. Formally, the Tobit regression model can be presented as follows. A variable called $Effic^*$ is assumed to depend on a number of independent variables clustered in the vector X, whose effects are clustered in the vector β. The observed values of $Effic^*$, the $Effic_i^*$, are assumed to be the combination of the value predicted by the deterministic component of the model $X_i\beta$, and a residual, ε_i, whose value varies randomly for each individual. However, it is assumed that the variable $Effic^*$ is not directly observable, but rather the variable $Effic$ is

observed. The Tobit model can be written:

$$Effic_i^* = \alpha + X_i\beta + \varepsilon_i \quad (3)$$

Where $Effic_i^*$ is the latent variable of efficiency scores and X_i is the vector of explanatory variables.

$$Effic_i = 0 \; si \; Effic_i^* \leq 0$$

$$Effic_i = Effic_i^* \; si \; 0 \leq Effic_i^* \leq 1$$

$$Effic_i = 1 \; si \; Effic_i^* \geq 1$$

The random-effects Tobit model first includes an equation that relates the model's dependent variable, $Effic_i^*$, to the independent variables, to which both a random effect and a residual are added:

$$Effic_{it}^* = \alpha + X_{it}\beta + v_i + \varepsilon_{it} \quad (4)$$

$$\forall \; i = 1, \ldots\ldots\ldots\ldots, N, \qquad \forall \; t = 1, \ldots\ldots\ldots\ldots\ldots, n_i$$

In equation (4), $Effic_{it}^*$ represents the value that the continuous latent variable can take for the observation of individual i at time t, α represents the value of the intercept, Xit denotes the set of independent variables as measured at time t for individual i, β is the vector of coefficients affecting these variables to be estimated, vi represents the random effect size associated with individual i, and ε_{it} is the error of the model, which differs for each observation. Note also that v_i is distributed according to the N (0, σ_v^2) distribution and ε_i also follows an N (0, σ_v^2) distribution. From the above, our model can therefore be written as follows:

$$Effic_{it}^* = \alpha + \beta_1 ROE_{it} + \beta_2 LIQ_{it} + \beta_3 TAL_{it} + \beta_4 PROPR_{it} + \beta_5 CRD_{it} + \beta_6 CAP_{it} + \beta_7 TXPIB_{it} + \beta_8 INFL_{it} + v_i + \varepsilon_{it}$$

4. Data, Sources and Descriptive Statistics

In this section, we present, first, the source of the data and the definition of the variables and indicators, and second, the statistics of the variables.

4.1 Data Sources and Key Variable Definitions and Indicators

For this study, we use annual data from the World Bank databases (WDI, 2018) and the Central Bank of West African States' (2018) bank balance sheets and income statements. The study covers the period from 1986 to 2016, given the availability of data. The sample of banks is composed of 12 foreign private banks, one domestic private bank, and two public banks. The foreign private banks are: Afriland First, BACI, BICICI, BHCI, BOA-CI, BRIDGE BANK, CITIBANK ECOBANK, ORABANK, SGBCI, SIB and STANDARD CHARTED BANK. The national private bank is NSIA BANK and the two public banks are BNI and VERSUS BANK. These banks can be grouped into three categories:

- 8 large banks with a balance sheet of more than 500 billion FCFA. These are SGBCI, Ecobank, BACI, NSIA Bank, SIB, BICICI, BOA and BNI;

- 4 medium-sized banks with balance sheets between 100 and 500 billion FCFA. These are Bridge Bank, Citibank, Orabank and Standard Chartered Bank;

- 3 small banks with balance sheets of less than FCFA 100 billion. These are BHCI, Versus Bank and Afriland First Bank.

Table 1 below provides information on the variables used and the expected effects.

Table 1. Table of expected signs

Explained variable: bank efficiency score.		
Explanatory variables	Notation	*Sign expected*
Regulatory capital	CAP	+
Return on equity	ROE	-
Bank liquidity	LIQ	+
Credit ratio	CRD	+
Bank size	TAL	+
Bank ownership	PROPR	-
Inflation	INFL	-
The growth rate of the Gross Domestic Product	TXPIB	+/-

Source: Author, based on literature review

Having presented our data sources and sample, we can now make a brief descriptive statistics to better understand the evolution of the data.

4.2 Descriptive Statistics of the Variables and Efficiency Scores

In the following, we will perform a descriptive analysis of the variables and the correlation matrix. The descriptive analysis consists in making a synthetic and explicit description of the observed data, in order to better analyze them. Thus, for this work, the study of the variables will focus on their average, their standard deviation, as well as their minimum and maximum. For the evaluation of the inputs and outputs used on average by the banks, the measurement of their efficiency scores will be done using the non-parametric method (DEA). Each observation is considered independent and has an appropriate efficiency score. The descriptive statistics of the data are reported in Table 2 below.

Table 2. Descriptive analysis of variables

Variables	Mean	Max	Min	Standard deviation
ET	0.533	1	0	0.1851396
ETP	0.649	1	0	0.2297914
EE	0.836	1	0	0.1611295
ROE	0.693298	19.74344	-27.1085	2.469821
LIQ	0.0388805	0.1311986	0	0.0265637
CRED	0.7296691	0.9525641	0.291	0.1450177
TAL	5.076752	6.220789	3.342	0.958201
PROPR	0.1333333	1	0	0.3407469
CAP	9.704674	179.0564	0.935	18.43053
TXPIB	4.492857	10.7	-4.4	4.202095
INFL	2.154633	6.308528	0.4486821	1.683644

Source: Author, using data from BCEAO (2018) and WDI (2018)

From Table 2, it appears that the average pure technical efficiency during the study period is 0.694, i.e., an estimated pure technical inefficiency of 0.306, while the scale efficiency has an average of 0.836. It follows that the losses in pure technical inefficiency of Ivorian banks are counterbalanced by the efficiency of scale. Similarly, the return on equity recorded its maximum value with Versus-Bank (2009) and the minimum value with BACI (in 2011). In addition, on average, the size of banks is 5.076, corresponding to that of Orabank (in 2005) which has the lowest size and maximum size of 6.22 corresponding to that of SGBCI in 2017. However, this bank has the lowest regulatory capital of the sample at the same period, while in 2011, Afriland has the highest regulatory capital. Note also that the lowest credit ratio of 0.291 is BNI in 2006 and the highest 0.952 is Versus-Bank in 2004. On the other hand, the least liquid bank during the study period was Orabank in 2005 and the most liquid was SIB in the same period.

In terms of statistics, the correlation matrix provides important information because it summarizes the degree of correlation between our variables. Table 3 allows us to appreciate the degree of relationship between the variables.

Table 3. Correlation matrix

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
[1]ET	1								
[2]ROE	0.154	1							
[3]LIQ	-0.153*	-0 .081	1						
[4]CRED	0.378*	0,114	-0.043	1					
[5]TAL	0.195*	-0.037	0.534*	0.224*	1				
[6]PROPR	-0.078	0.107	-0.180*	-0.025	-0.117	1			
[7]CAP	0.042	-0.023	-0.208*	-0.096	-0.319*	-0.064	1		
[8]TXPIB	0.066	0.093	-0.065	-0.152*	0.182*	0.000	0.039	1	
[9]INFL	-0.056	-0.125	0.029	0.111	-0.079	0.000	0.046	-0.576*	1

Source: Author, based on data from BCEAO (2018) and WDI (2018)

Note: * significance at the 5% level.

Table 3 reveals that size and liquidity are moderately correlated (0.5340); however, technical efficiency and credit ratio are moderately correlated (0.3781). So are size and credit ratio (0.224), GDP growth rate and size (0.182) and then inflation and credit ratio (0.111). On the other hand, inflation and liquidity are very weakly related (0.0299). Apart from these relationships, there is a weak correlation between the other variables.

Now we can make some comments on the efficiency scores which are recorded in Table 4.

Table 4. Decomposition of the technical efficiency of Ivorian banks

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
MOY	0.637	0.594	0.478	0.493	0.519	0.530	0.469	0.483	0.463	0.564	0.587	0.562	0.559	0.560
MAX	1	1	0.729	0.807	1	1	0.887	1	1	1	1	0.805	0.803	0.840
MIN	0.402	0.419	0.207	0.254	0.259	0.230	0.219	0.213	0.211	0.333	0.286	0.379	0.385	0.424
ETYP	0.173	0.160	0.159	0.157	0.197	0.211	0.182	0.176	0.196	0.227	0.186	0.116	0.124	0.105
NBE	1	1	0	0	1	1	0	1	1	2	1	0	0	0

Source: Author, using data from BCEAO (2018) and WDI (2018)

Max: refers to the highest efficiency score in the sample during the year under study.

Min: refers to the minimum efficiency score in the sample during the year under study.

Etyp: refers to the standard deviation

NBE: denotes the number of 100% efficient banks in the sample during the year under study

Table 4 shows that the efficiency of Ivorian banks declined over the period 2004 to 2017. Indeed, over this period, the average efficiency of banks fell by 13.75% (0.637 in 2004 and 0.560 in 2017). In 2004, the inefficiency rate of Ivorian banks was 37% (1-0.637), which implies that some expenses could be avoided. The least efficient bank in that year was SIB with a score of 0.402. This score reflects the inefficiency of the bank, which uses 60% of its resources during its production process for unproductive expenses. In 2005, the efficiency score decreased by 6.75% compared to the previous year. Nevertheless, the bank furthest from the border is the public bank BHCI with a score of 0.419. In 2006, there was a deterioration of 19.52%. The closest score to the efficiency frontier is 0.729 (Citibank) and the least close is 0.207 (Bridge Bank). This could be explained by the fact that Bridge Bank started operations during this year. However, in the two years that followed (2006 and 2007), none of the banks in the sample managed to be fully efficient. It is from 2008 onwards that an improvement in efficiency scores is recorded. In 2009, the average efficiency of Versus-Bank increased to 2.11%. However, in 2010, there was a drop in average efficiency to 0.469, certainly due to the socio-political crisis that shook the country, paralyzing the economy from the last quarter of 2010 to early 2011. In 2011 and 2012, the only fully efficient bank was CITIBANK (a foreign bank) and the less efficient Orabank (formerly BRS), which was in deficit, not making a profit. The pivotal year is 2013, when an increase in banking efficiency was recorded. This is probably due to the recovery from the political crisis, which led to the arrival of new investors on the banking market. Moreover, in 2013, there were two fully efficient banks (Orabank and Afriland first Bank), the least efficient was the BHCI. In 2014 the improvement benefited the public bank BNI, which was a completely efficient bank. But from 2015 to 2017, it was Orabank that recorded the technical efficiency scores closest to the efficiency frontier (0.80 in 2015, 2016 and 0.84 in 2017). These different results indicate that large banks do not do better in terms of efficiency than small banks. Our results are consistent with those obtained previously by other authors who clearly indicate that large banks have diseconomies of scale (Vettori, 2000; Rouabah, 2006). We find that small banks in Côte d'Ivoire make more efforts to reduce input consumption than large banks. Moreover, the efficiency of scale is higher the closer the bank is to its optimal size.

To better appreciate the efficiency of banks, it is necessary to analyze the pure technical efficiency and the scale efficiency that make up the technical efficiency. Indeed, the technical efficiency of a bank is the product of pure technical efficiency and scale efficiency. Pure technical efficiency reflects the way in which a bank's resources are managed, and scale efficiency characterizes banks that operate at an optimal scale, which allows them to proportionally increase the quantity of all their factors. Ivorian banks operate differently as shown in Table 5.

Table 5. Breakdown of the efficiency of Ivorian banks

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
MOY ETP	0.724	0.625	0.551	0.617	0.607	0.621	0.560	0.582	0.554	0.661	0.707	0.762	0.772	0.780
MOY EE	0.886	0.833	0.900	0.880	0.874	0.869	0.867	0.857	0.864	0.854	0.836	0.761	0.756	0.754

Source: Author based on data from BCEAO (2018) and WDI (2018)

From 2004 to 2014, banks achieve a scale efficiency that is more than pure technical efficiency. It is only from 2015 that the pure technical efficiency of Ivorian banks gains momentum and becomes higher than their scale efficiency. Moreover, the pure technical efficiency of Ivorian banks was constantly declining. This decline could

be due to a general decline in liquidity, as the majority of Ivorian banks are experiencing a decline in liquidity, which may have forced them to reduce lending. This situation has caused the liquidation of several banks such as the Agricultural Finance Bank (BFA) and the COFIPA Investment Bank Côte d'Ivoire (CIBCI) has seen its license withdrawn. At the same time, mergers and absorption of other banks such as BRS, Omnifinance, Access Bank are recorded. It is remarkable to note that the measures aimed primarily at improving the supervision of the banking sector by the Banking Commission, enacted by Law No. 2009-385 of December 1, 2009, have produced their effects from 2013 where we note a clear increase in pure technical efficiency, standing at 78%, in 2017. From these findings, it follows that the efficiency of Ivorian banks is leaning towards scale efficiency than pure technical efficiency (from 2004 to 2015). This could be explained by bank concentration. In most cases, the banks with the highest degree of scale efficiency are those with the largest size and market share. The oligopolistic nature of the Ivorian banking market remains a valid explanation. Its relative decline since 2013 could be explained by the renewed competition in the Ivorian banking sector

After these various descriptive statistics, we can now present the results of our estimations.

5. Results and Analysis

To examine the factors that influence bank efficiency, a two-step approach is used. The first step is to obtain efficiency scores using the DEA method. The efficiency scores calculated (first step), are not only explained by managerial errors attributable to managers or maladjusted productive structures, but they can also be influenced by the structural environment specific to each country. This is why Ray, S. C. (1988) proposes to look for the sources of productive inefficiencies through an econometric regression of efficiency scores (second step). The second stage consists of using the scores obtained previously as the dependent variable, and factors specific to macroeconomic or sectoral conditions at the bank are presented as independent variables. We now present the results of the Tobit model estimates before making the economic interpretations.

5.1 Results of the Estimations with the Tobit Model

The regression of the explanatory variables on the dependent variable (technical efficiency, pure technical efficiency and scale efficiency), using the Tobit method, gives the results reported in Table 6. From this table, we can say that the three models (ET, ETP and EE) are all statistically validated. Indeed, for each of the estimated models, the P-value associated with the LR-stat is less than 0.05. This means that there is at least one variable with a non-zero coefficient, in other words, there is at least one variable that explains the efficiency of banks in Côte d'Ivoire. In addition, the probabilities of Lr test being lower than the critical threshold of 5%, it follows that the random effect model is appropriate for the estimation of coefficients and the results are robust to the quadrature test.

Table 6. Regression results

Variables	Model (1) : ET	Model (2) : ETP	Model (3) :EE
Constant	-1.095***	-2.077***	1.979***
	(0.000)	(0.000)	(0.000)
Return on equity (ROE)	0.008**	0.009**	-0.001
	(0.022)	(0.005)	(0.320)
Credit Ratio (CRED)	0.745***	0.871***	-0.0787*
	(0.000)	(0.000)	(0.067)
Liquidity (LIQ)	-2.343***	-2.800***	-0.265
	(0.000)	(0.000)	(0.383)
Property (Propr)	-0.046	-0.093	0.038
	(0.502)	(0.180)	(0.240)
Capitalization (CAP)	0.003***	0.004***	-0.0005*
	(0.000)	(0.000)	(0.056)
Size (TAL)	0.222***	0.420***	-0.205***
	(0.000)	(0.000)	(0.000)
Growth rate of the GDP (TXPIB)	-0.002	-0.003	0.0001
	(0.289)	(0.205)	(0.928)
Inflation (INFL)	-0.0002	-0.002	0.0009
	(0.971)	(0.626)	(0.721)
Lr test	49.05***	49.87***	44.41***
	(0.000)	(0.000)	(0.000)

Source: Author, using data from BCEAO (2018) and WDI (2018)

With all these precautions regarding the robustness of the results, it is possible to give economic interpretations to our results.

5.2 Economic Interpretations of Results and Validation of Assumptions

With respect to bank size, it has a positive effect on technical efficiency and pure technical efficiency. These results could be explained by the fact that large banks can take advantage of economies of scale to control their costs. These results are similar to those of Becker et al (2003). On the other hand, bank size negatively influences the scale efficiency of banks. This counterintuitive result could be explained by the heterogeneity (different sizes) of banks in the sample.

As for the influence of bank liquidity, it has a negative effect on bank efficiency according to the three measures of bank efficiency retained. This could be explained by the fact that in situations of uncertainty, banks' preference for liquidity increases. This could lead to opportunity costs as banks do not benefit from the income generated by loans. For a given level of burden, this may create banking inefficiencies. Our results are consistent with those of Femise (2011).

As for the effect of return on equity, it positively influences technical efficiency and pure technical efficiency. This result could be explained by the fact that banks with high levels of equity manage risks better, thus increasing their performance. It also indicates optimism that banks will overcome their profitability problems after the socio-political crisis of 2011. These results are similar to those of Khalad et al. (2014).

As for the influence of regulatory capital, the results indicate that it has a positive effect on technical efficiency and pure technical efficiency, but negatively influences scale efficiency. The likely reason is that bank deposits are high in highly capitalized banks, thus reducing agency problems between managers and shareholders. In addition, a highly capitalized bank increases its ability to make loans. Moreover, managers are able to better control performance management, thus ensuring the efficiency of the bank. These results are similar to those of Liu and Wilson (2010).

Regarding the influence of the credit ratio, it has a double effect on the banking sector. It stimulates technical efficiency and pure technical efficiency. By lending to several sectors of the economy, banks manage to accumulate a quantity of information that allows them to reduce costs. In contrast, the credit ratio reduces scale efficiency. This can be explained by the fact that Ivorian banks grant a large proportion of their assets in bank loans, they maximize their revenues but incur more risk and are therefore not very efficient. They do not manage risk very well in an environment where information asymmetries are high. These results are similar to those of Stomper (2006).

These results allow us to verify our initial hypotheses. In view of the low-efficiency scores, we can say that our first hypothesis, which postulates that Ivorian banks are not technically efficient, is verified. Indeed, technical efficiency evolves in a decreasing manner. This result can be explained by the fact that banks do not use their available resources efficiently to finance profitable projects. Banks probably use some of the resources for unproductive expenditures instead of financing the activity. This conclusion is similar to that of Benzai (2016) who found the same phenomenon regarding commercial banks in Algeria.

In addition, the second hypothesis which stated that profitability, bank size, regulatory capital, and credit ratio positively influence bank efficiency, is confirmed.

6. Concluding Remarks

The objective of this study was to analyze the variables likely to influence banking efficiency in Côte d'Ivoire. To achieve this objective, the non-parametric DEA method was used on annual data from 15 Ivorian banks covering the period 2004 to 2017.

The estimates show that the technical efficiency of Ivorian banks is decreasing, but the scale efficiency and the pure technical efficiency are increasing from year to year. Applying the Tobit method to the efficiency scores, we find two major results. The first is that bank size, regulatory capital, credit ratio and return on equity positively influence efficiency. On the other hand, liquidity negatively influences bank efficiency. The second is that macroeconomic variables (inflation and GDP growth rate) and bank ownership do not have a significant impact on the efficiency of Ivorian banks.

In terms of economic policy implications, these results raise questions for monetary authorities about the measures to be adopted to make these banks efficient. Indeed, since regulatory capital increases the efficiency of Ivorian banks, it would be wise for the monetary authorities to ensure that regulatory standards are respected. Given that the size of banks influences the efficiency of Ivorian banks, banks should optimize their balance sheet. They would benefit from balancing their balance sheet through optimal management of the liquidity they possess. Banks should grant more credit to the economy while optimizing the management of risks related to the supply of credit. Banks could put in place robust methods to reduce risk, which will allow them to increase profits,

equity and reduce costs. Ultimately, concerted action is needed between the monetary authorities and the Ivorian banks. The banks must adopt a rational management style that would enable them to finance the economy efficiently. At the level of the monetary authorities, they must ensure that the banks apply the standards.

The results of our study suggest further research opportunities. An in-depth analysis of the role of ownership on efficiency and productivity differences deserves to be addressed. Instead of the distinction between public and private banks, a future study could include a distinction, this time, between domestic and foreign banks. It is also important to identify the factors that explain the efficiency or inefficiency of Ivorian banks since the advent of financial reforms and, more specifically, to analyze the role of governance mechanisms in the performance levels recorded. In addition, it is well known in the recent literature on efficiency that, as noted (Simar & Wilson, 2011), the Tobit estimation in the second phase produces biased and inconsistent estimates. The work of Simar & Wilson (2000) provides a bootstrap method to eliminate the bias of such coefficients. A subsequent study will be conducted taking into account the criticisms and innovations in the works of Simar & Wilson (2007) and Daraio et al., (2016).

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Appendix 1. Efficiency scores of some Ivorian banks

Année	Banques	ET	ETP	EE
2004	Afriland First Bank	0.743555	0.743555	1
	BACI	0.585446	0.604981	0.967710
	Bridge Bank Group	inexistant	Inexistent	inexistant
	BICICI	0.516911	0.710730	0.727295
	BHCI	0.509083	0.509083	1.000000
	BNI	0.705621	1.000000	0.705621
	BOA-CI	0,761513	0,825660	0,922309
	ORABANK	inexistant	Inexistent	inexistant
	CITIBANK-CI	0,862149	0,882762	0,976649
	ECOBANK	0,489944	0,587428	0,834050
	NSIA-Bank	0,454957	0,538213	0,845311
	SGBCI	0,595428	0,876749	0,679131
	SIB	0,402973	0,468501	0,860133
	Standard Chartered	1	1	1
	VERSUS-BANK	0,664320	0,668672	0.993491
2005	Afriland First Bank	0.466676	0.504297	0.925400
	BACI	0.548570	0.566082	0.969066
	Bridge Bank Group	inexistant	inexistant	inexistant
	BICICI	0.480616	0.641568	0.749128
	BHCI	0.419402	0.420132	0.998264
	BNI	0.637634	0.828197	0.769906
	BOA-CI	0.687001	0.746357	0.920473
	ORABANK	1	1	1
	CITIBANK-CI	0.838562	0.838562	1
	ECOBANK	0.478924	0.593018	0.807606
	NSIA-Bank	0.468143	0.551720	0.848516
	SGBCI	0.570235	0.825322	0.690923
	SIB	0.548376	0.667580	0.821438
	Standard Chartered	0.636789	0.636789	1
	VERSUS-BANK	0.542980	0.549581	0.987990
2006	Afriland First Bank	0.469133	0.504713	0.929505
	BACI	0.567181	0.612895	0.925412
	Bridge Bank Group	0.207887	0.207887	1
	BICICI	0.491539	0.691455	0.710877
	BHCI	0.396154	0.396154	1
	BNI	0,214806	0,22398	0.959042
	BOA-CI	0.663592	0.736067	0.901538
	ORABANK	0.257414	0.257414	1
	CITIBANK-CI	0.729392	0.729392	1
	ECOBANK	0.6429	0.877278	0.732835
	NSIA-Bank	0,460276	0,543466	0,846928
	SGBCI	0,604586	0,865811	0,698289
	SIB	0,572923	0,706449	0,81099
	Standard Chartered	0,474317	0,474317	1
	VERSUS-BANK	0,429417	0,436897	0,982878
2007	Afriland First Bank	0.390676	0.415154	0.941039
	BACI	0.572304	0.666080	0.859213
	Bridge Bank Group	0.339666	0.339666	1
	BICICI	0.483826	0.668956	0.723255
	BHCI	1	1	1
	BNI	0.254086	0.273219	0.929971
	BOA-CI	0.807800	0.974547	0.828897
	ORABANK	0.404793	0.404793	1
	CITIBANK-CI	0.685426	0.685426	1
	ECOBANK	0.630777	0.903221	0.698364
	NSIA-Bank	0.444112	0.527514	0.841895
	SGBCI	0.589338	0.816207	0.722045
	SIB	0.519032	0.651628	0.796516
	Standard Chartered	0.516396	0.516396	1
	VERSUS-BANK	0.269837	0.269992	0.999426
2008	Afriland First Bank	0.319239	0.348369	0.916381
	BACI	0.414652	0.523634	0.791873

	Bridge Bank Group	0.452184	0.452184	1
	BICICI	0.503849	0.720370	0.699431
	BHCI	0.372508	0.372508	1
	BNI	0.316131	0.363875	0.868790
	BOA-CI	0.844308	0.997401	0.846508
	ORABANK	0.259838	0.259838	1
	CITIBANK-CI	1	1	1
	ECOBANK	0.583089	0.776013	0.751390
	NSIA-Bank	0.473842	0.584717	0.810379
	SGBCI	0.519972	0.726076	0.716140
	SIB	0.593099	0.832885	0.712102
	Standard Chartered	0.621778	0.621778	1
	VERSUS-BANK	0.519860	0.520277	0.999199
2009	Afriland First Bank	0.230083	0.246479	0.933478
	BACI	0.358377	0.447824	0.800263
	Bridge Bank Group	0.488918	0.488918	1
	BICICI	0.513570	0.771127	0.665998
	BHCI	0.430439	0.430439	1
	BNI	0.285556	0.328648	0.868880
	BOA-CI	0.651062	0.756444	0.860687
	ORABANK	0.262406	0.262406	1
	CITIBANK-CI	0.834727	0.834727	1
	ECOBANK	0.590294	0.809610	0.729109
	NSIA-Bank	0.535604	0.682815	0.784405
	SGBCI	0.521775	0.790631	0.659947
	SIB	0.559248	0.770012	0.726285
	Standard Chartered	0.697298	0.697298	1
	VERSUS-BANK	1	1	1
2010	Afriland First Bank	0.219355	0.227421	0.964537
	BACI	0.313226	0.389025	0.805158
	Bridge Bank Group	0.424871	0.424871	1
	BICICI	0.548339	0.750795	0.730344
	BHCI	0.350205	0.359992	0.972813
	BNI	0.268715	0.313747	0.856473
	BOA-CI	0.608232	0.708817	0.858095
	ORABANK	0.228766	0.228766	1
	CITIBANK-CI	0.887424	0.903666	0.982026
	ECOBANK	0.583812	0.870427	0.670719
	NSIA-Bank	0.488529	0.621061	0.786603
	SGBCI	0.503616	0.758349	0.664095
	SIB	0.577542	0.795823	0.725717
	Standard Chartered	0.651827	0.651827	1
	VERSUS-BANK	0.394459	0.397379	0.992652
2011	Afriland First Bank	0.439857	0.483888	0.909007
	BACI	0.328301	0.405937	0.808749
	Bridge Bank Group	0.468913	0.4689135	1
	BICICI	0.531137	0.746543	0.711461
	BHCI	0.353138	0.362977	0.972892
	BNI	0.366398	0.448842	0.816318
	BOA-CI	0.577049	0.685285	0.842057
	ORABANK	0.213447	0.213447	1
	CITIBANK-CI	1	1	1
	ECOBANK	0.600546	0.897979	0.668775
	NSIA-Bank	0.451931	0.568837	0.794482
	SGBCI	0.483381	0.755298	0.639987
	SIB	0.542801	0.790363	0.686774
	Standard Chartered	0.508747	0.508747	1
	VERSUS-BANK	0.385445	0.386037	0.998466
2012	Afriland First Bank	0.211517	0.215514	0.981453
	BACI	0.356602	0.442644	0.805618
	Bridge Bank Group	0.496699	0.498268	0.996853
	BICICI	0.474774	0.652178	0.727983
	BHCI	0.313592	0.320738	0.977720
	BNI	0.304170	0.370783	0.820346

	BOA-CI	0.568223	0.717763	0.791659
	ORABANK	0.219663	0.219663	1
	CITIBANK-CI	1	1	1
	ECOBANK	0.697995	1	0.697995
	NSIA-Bank	0.452360	0.577173	0.783752
	SGBCI	0.470613	0.737801	0.637859
	SIB	0.487182	0.652957	0.746117
	Standard Chartered	0.472399	0.472399	1
	VERSUS-BANK	0.426015	0.426910	0.997905
2013	Afriland First Bank	1	1	1
	BACI	0.519323	0.716720	0.724583
	Bridge Bank Group	0.452732	0.494072	0.916328
	BICICI	0.447162	0.584325	0.765262
	BHCI	0.333874	0.341245	0.978400
	BNI	0.455812	0.571472	0.797611
	BOA-CI	0.504642	0.621874	0.811485
	ORABANK	1	1	1
	CITIBANK-CI	0.964183	0.964183	1
	ECOBANK	0.586188	0.845431	0.693360
	NSIA-Bank	0.452833	0.591653	0.765368
	SGBCI	0.432407	0.669267	0.646091
	SIB	0.517886	0.721523	0.717768
	Standard Chartered	0.402746	0.402746	1
	VERSUS-BANK	0.390698	0.390698	1
2014	Afriland First Bank	0.286807	0.295112	0.971857
	BACI	0.546373	0.826219	0.661293
	Bridge Bank Group	0.527407	0.651439	0.809603
	BICICI	0.473918	0.656744	0.721618
	BHCI	0.835678	0.835678	1
	BNI	1	1	1
	BOA-CI	0.548284	0.728777	0.752335
	ORABANK	0.709739	0.709739	1
	CITIBANK-CI	0.865137	0.901122	0.960067
	ECOBANK	0.509641	0.776824	0.656058
	NSIA-Bank	0.496465	0.708203	0.701020
	SGBCI	0.453093	0.727797	0.622554
	SIB	0.520974	0.740369	0.703668
	Standard Chartered	0.574262	0.587154	0.978042
	VERSUS-BANK	0.461313	0.461313	1
2015	Afriland First Bank	0.455288	0.472536	0.963500
	BACI	0.551488	0.910138	0.605938
	Bridge Bank Group	0.556206	0.806505	0.689650
	BICICI	0.491237	0.715137	0.686914
	BHCI	0.379434	0.387692	0.978701
	BNI	0.497438	0.737797	0.674221
	BOA-CI	0.691328	0.927373	0.745470
	ORABANK	0.805855	0.904193	0.891242
	CITIBANK-CI	0.763834	1	0.763834
	ECOBANK	0.591284	0.955622	0.618743
	NSIA-Bank	0.512501	0.780699	0.656464
	SGBCI	0.468151	0.760333	0.615718
	SIB	0.575804	0.916645	0.628164
	Standard Chartered	0.605035	0.671911	0.900468
	VERSUS-BANK	0.486033	0.486033	1
2016	Afriland First Bank	0.452532	0.471927	0.958902
	BACI	0.557693	0.961621	0.579951
	Bridge Bank Group	0.524660	0.728831	0.719865
	BICICI	0.531002	0.777887	0.682621
	BHCI	0.385083	0.406428	0.947482
	BNI	0.442874	0.706773	0.626613
	BOA-CI	0.795625	1	0.795625
	ORABANK	0.803369	0.919951	0.873274
	CITIBANK-CI	0.693341	0.960518	0.721841
	ECOBANK	0.599922	0.972159	0.617103

	NSIA-Bank	0.551163	0.85172	0.647112
	SGBCI	0.486995	0.873251	0.557681
	SIB	0.615129	1	0.615129
	Standard Chartered	0.433188	0.433188	1
	VERSUS-BANK	0.517076	0.517076	1
2017	Afriland First Bank	0.429354	0.448632	0.957029
	BACI	0.570822	1	0.570822
	Bridge Bank Group	0.538779	0.689055	0.781911
	BICICI	0.498399	0.728279	0.684352
	BHCI	0.424364	0.447750	0.947769
	BNI	0.414364	0.606773	0.636613
	BOA-CI	0.578895	0.861200	0.672195
	ORABANK	0.840189	1	0.840189
	CITIBANK-CI	0.671859	0.829665	0.809796
	ECOBANK	0.605510	1	0.605510
	NSIA-Bank	0.545554	0.875198	0.623349
	SGBCI	0.539676	1	0.539676
	SIB	0.602274	1	0.602274
	Standard Chartered	0.476898	0.518714	0.919386
	VERSUS-BANK	0.524004	0.524282	0.999470

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Changing Behaviours and Its Theories to Achieve the Desire for Entrepreneurship in Future Generations in the UAE and Gulf Region

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Abstract

The Gulf region has been emerging as a prosperous hub of entrepreneurship and commercial innovation and is, at present, portraying continuous development. The success of this region is due to several different factors such as the size of the region, youth generation; digital economy; and its progressive access to technology. This study is a literature review and adopts a five-stage process to recruit studies that align with the aim of this study. The data was collected from journal articles, blogs, government websites, and articles from Google Scholar, Proquest, EBSCO, and EconLit. A total of 31 journal articles were reviewed and analyzed. This paper (1) identified variations in entrepreneurial activities, attitudes and perceptions, and aspirations among UAE youth; (2) explored factors defining the nature and level of UAE entrepreneurial work; and (3) presented the potential of entrepreneurship through education in the UAE; (4) need to strengthen technological transfers to entrepreneurial approach and networking opportunities. Initiatives taken by the UAE government in supporting entrepreneurial development were also presented and emphasized. Entrepreneurs are observed as a core aspect that encourages creativity and innovation, generates employment opportunities, and brings prosperity to society. This paper emphatically focuses on entrepreneurship research by presenting policy implications to improve UAE's entrepreneurship in the country's economy.

Keywords: desires, education, entrepreneurship, gulf, motivation, policy

1. Introduction

The importance of entrepreneurship is evident in innovation, job creation, and economic development. An entrepreneur has been defined as one who possesses, initiates, administers, and believes in the perils of economic ventures (Greve & Salaff, 2003). According to (Farzanegan, 2014), entrepreneurship is a core pillar of employment, innovation, international political openness, and economic development. A successful enterprise maintains its processes in the same realm while developing sustainably toward a more extensive social-ecological system (Parrish, 2010).

Extant literature has progressively emphasized comprehending entrepreneurship and entrepreneurial activities throughout the Gulf region. According to (Cao and Shi, 2021), the notion of entrepreneurial activities is a matter of attention and interest for the practitioner, policy architects as well as among researchers for a long time. Thus, the authors conducted a systematic review aiming to review the ecosystem and published literature on entrepreneurship with the help of a proposed theoretical model. This model elucidates the three dynamics of the entrepreneurial ecosystem which are denoted as resource, governance logic, and interaction. More specifically, this study presented 4 key findings that challenge the undeviating application of the model from entrepreneurial ecosystems of advanced economies to emerging economies. Similarly, another study conducted by (Shi & Shi, 2021) revealed the process of allocation of resources, mobilization, and circulation unfolds in entrepreneurial ecosystems. The study offers a dynamic resource account of the entrepreneurial ecosystem which compliments the resource provision perspective in the existing literature. The study also sheds light on the reciprocities between regional resources and regional entrepreneurship. The study concludes by presenting some implications for the entrepreneurs and the government for the provision of guidance regarding policy initiatives and to measure the long-term growth that takes place in the regional entrepreneurial ecosystem.

The Gulf region has been emerging as a prosperous hub of entrepreneurship and commercial innovation and is, at present, portraying continuous development. The success of this region is due to several different factors such

as the size of the region, youth generation; digital economy; and its progressive access to technology. The environment of the Gulf region offers market opportunities to boost its sustainable development, which results in the development of new ventures and their associated economic activities (Lordkipanidze, Brezet, & Backman, 2005). The number of published papers has witnessed a rise of 1.79% since 1977, examining entrepreneurship in the Gulf region (Faghih & Zali, 2018).

However, entrepreneurship is not a new topic in the region; with an emphasis from a rising number of studies, it remains unexamined considering its significance. According to (Bruton et al., 2008), the Middle East was entirely distant from the literature. Given to review of the literature concerning the entrepreneurship articles from 1990 to 2006 from the top management journals, they could find one article on the topic related to entrepreneurship in the region of the Middle East. Previously, Bastian, Sidani, and El-Amine (2018) and Hattab (2012) have examined entrepreneurship, whereas (Ismail et al., 2018) and (Kirby and Ibrahim., 2013) have examined entrepreneurship with a generalized approach. The dearth of research in this area of interest is well-documented (Hoskisson et al., 2000). According to (Momani, 2017), even though the Arab region has acclaimed the benefits of entrepreneurship, the region is far behind in developing an economy that is conducive to boosting entrepreneurship. Therefore, this study bridges the void not by emphasizing one topic but rather by providing an in-depth examination of the current status and offering a holistic perception concerning entrepreneurship research in the Gulf region, specifically in the UAE. To be precise, this paper aimed certainly emphasizes the research on entrepreneurship. The research objectives are stated in the following:

- To identify variations in entrepreneurial activities, attitudes and perceptions, and aspirations among UAE youth.
- To explore factors defining the nature and level of UAE entrepreneurial activity.
- To present the potential of entrepreneurship through education in the UAE.
- To present policy implications to improve UAE entrepreneurship in the UAE economy.

2. Literature Review

2.1 Entrepreneurial Activities in the Gulf Region and UAE

Middle-Eastern and Northern Africa (MENA) countries have undertaken the significance of entrepreneurship activities to mitigate their reliance on oil and restructure their social structures and income sources because of diverse circumstances in the region influence entrepreneurship activities. According to (Valliere & Peterson, 2009), entrepreneurial activities throughout the gulf region are distinguished in form of economic growth. While incorporating the endogenous growth theory, entrepreneurship played an immense role in promoting economic development (Wennekers & Thurik, 1999). (Wong, Ho, & Autio, 2005) have further claimed that entrepreneurship is essential in the same vein. Furthermore, (Hattab, 2012) has identified an association between economic development and entrepreneurship and economic consequences and innovation. Irrespective of the Endogenous Growth Theory, the exogenous growth theory claims that country-wide economic development is triggered by regional activity, which significantly improves local development (Ennis, 2018). Therefore, individual entrepreneurs add up to national economic growth while exploiting opportunities and starting new ventures. Some Gulf countries might stimulate local entrepreneurial activities since most of the countries in the Gulf region have other start-ups compared to established experiences (Gupta & Mirchandani, 2018). For instance, 70% of adults in Sudan and Saudi Arabia explore opportunities for entrepreneurship and possess the capability to embark on a business.

Numerous emerging countries, such as the UAE, are experiencing diversification from the current global economy. Previously, the success and failure of an economy were dependent on conventional assets, including cheap labor and land. In contrast, today, a new classification of assets is born to shape economic opportunities, including lifestyle amenities, access to information and capital, innovation and entrepreneurship activity, and workforce skills (Abdo & Paris, 2017). The preliminary step in progressive development is to measure the assets of an economy to understand its competitive abilities and offer a better comprehension of the new economic growth drivers. Thereby, apprehending the role of entrepreneurship in economic growth is essential to understanding society's dynamics and prosperity (Facchini, Jaeck, & Bouhaddioui, 2020). According to (Grant et al., 2007), UAE has marked remarkable growth and head ambitious entrepreneurial programs in the pursuit of modernization. Stimulating an entrepreneurial culture and encouraging small and medium enterprise (SME) development is the focal point of the UAE government's plan to become a competitive knowledge-based economy since the government identifies that SMEs establish any thriving economy to derive employment, investment, and innovation opportunities (Jabeen, Faisal & Katsioloudes, 2017).

The UAE leverages its existing wealth to develop a more sustainable and stabilized economy and has successful socio-economic development initiatives emphasizing SME expansion. Government support is triggered to create an adequate legislative situation supporting and encouraging SMEs and establishing and boosting entrepreneurial perceptions. The UAE pursues creating substantial opportunities for the UAE youth to play an essential part in developing a thriving economy via new business formation and development of small-scale firms into larger, internationally-oriented firms. The above studies focused on different types of entrepreneurial activities in the Gulf region, especially UAE, and how the country is thriving to develop a sustainable and stabilized economy by emphasizing the expansion of small-medium enterprises. Also, the government is creating opportunities for the youth to play a vital role in developing a thriving economy via business formation on small scales changing to larger and internationally oriented organizations.

2.2 Youth Entrepreneurs

The focus of employment development initiatives on youth is witnessed in the UAE. According to (Dana, 2021), in UAE, 65% represent the population aged 24, whereas 20% are under the age of 24, which would highlight the pre-requisite to emphasize the youth as they make a large population and create and maintain an expanding knowledge economy. Youth unemployment has substantial outcomes for the country's development entirely, and no economy can tolerate underutilizing the asset that the young population represents. Still, it is also fundamental to integrate inclusion tactics that emphasize promoting entrepreneurship and developing entrepreneurial abilities (Jabeen, Faisal, & Katsioloudes, 2017).

Entrepreneurship is progressively approved as an essential means to create jobs and enhance opportunities and the economic autonomy of young people. Entrepreneurship can be a thriving aspect toward uncovering the potential of the UAE youth potential and allowing them to become more active members of their societies, invested in creating a better and more innovative environment for their firms (Gupta & Mirchandani, 2018). It has been observed that 30% of the UAE youth are either interested in starting a firm or embarking on a start-up business. On the contrary, entrepreneurial capital is confined among the UAE youth population, which encompasses the appropriate skills, financial credibility and capital, social networks, and commitment to make a new business network (Okasha, 2020). In this regard, they must implement tailored measures from all stakeholders to address specific obstacles they are experiencing in the entrepreneurial ecosystem.

The social enterprise model of venture philanthropy was used in the Emirates Foundation for Youth Development to invest in youth development using numerous initiatives and programs that intend to positively influence the lives of the UAE youth by aiding them in reaching their maximum potential (Bodolica, Spraggon, & Badi, 2021). The Emirates population has developed several sustainable solutions toward social issues that motivate and guide the UAE population using programs for developing their leadership and confidence skills. Social inclusion, empowerment, and community engagement are the three areas in which the Foundation works (Facchini, Jaeck, & Bouhaddioui, 2020). Significantly, the Takatof program successfully trained volunteers for local institutions and community events. This program offers and teaches the youth population the ability to effectively prepare them for forthcoming events. The earlier studies discussed young entrepreneurs in different countries and factors influencing the more youthful population's entrepreneurship.

2.3 Female Entrepreneurship

It becomes vital to examine the UAE female entrepreneurship as an essential uncovered source of economic development because previously, the importance of unleashing the economic potential was discussed in the context of the UAE youth. Female entrepreneurs can further create new employment opportunities and wealth creation (Gupta & Mirchandani, 2018). Their different attributes can offer society various solutions to the organization, business issues, and management and exploit entrepreneurial opportunities. The UAE, at present, leads the MENA region in empowering women (Alexandre & Kharabsheh, 2019). Therefore, encouraging female entrepreneurship will improve an entrepreneurial culture and make entrepreneurship a clear choice for women both at governmental and societal levels through educational programs (Abdulkadir & Müller, 2020).

A massive gender imbalance embarks on the UAE entrepreneurship landscape. The UAE males were 50% more likely than the UAE females to commence a business even though the female population is 49%. Similarly, in the business world, females still reflect merely 30% of the UAE entrepreneurs, even though there has been a refreshing change in the proportion of females working as entrepreneurs (Patterson, Varadarajan, & Salim, 2020). The proportion of women among the national population was not reflected in the balance of entrepreneurs or the proportion of the labor force that were Emirati women. Moreover, Emirati females have lesser participation rates as entrepreneurs than men; therefore, their risk aversion is higher (Faisal, Jabeen, & Katsioloudes, 2017). Confidence was reported among fewer Emirati females in their competence for commencing and successfully

running a business.

The retail and services sectors have mainly observed businesses run by female entrepreneurs. On the contrary, there are several business opportunities considered by female entrepreneurs. The heritage, geography, and rich culture of the UAE can offer several unique opportunities for boutique and craft businesses (Caputo et al., 2017). Much more can be considered in establishing markets, making associations with other artisanal enterprises, and aiding product development in the home and fashion furnishings to implement Emirati design and handicrafts into their products (Farouk Abdel Al, Jabeen, & Katsioloudes, 2017).

2.4 Entrepreneurial Attitudes

Boosting an entrepreneurship culture is essential for the UAE, which needs optimistic perceptions, motivations, and societal attitudes towards entrepreneurship. Intentions are fundamental actions of likely entrepreneurs in society as they are entirely associated, indicating that the entrepreneurship rate is expected to be high if many individuals aim to commence a business in the region (Miniaoui & Schilirò, 2017). Future entrepreneurs should consider entrepreneurship and think seriously about future opportunities in the market being an entrepreneur. It becomes essential to measure entrepreneurial attitudes as they represent the population's feelings towards entrepreneurship and entrepreneurs (Fenech, Baguant, & Ivanov, 2019). Entrepreneurial perspectives toward entrepreneurship define the level to which individuals believe that there are better prospects to start a business or the level they link with the high status of entrepreneurs.

Identifying opportunity is a significant step in the entrepreneurial procedure, and those exploring many opportunities may portray a better readiness or awareness for entrepreneurial activities. As a whole, UAE women have the highest perceptions regarding the occurrence of opportunities and entrepreneurship as the best career option compared to their male counterparts. On the contrary, Emirati women are less confident regarding their competencies than males, with which the proportion of Emirati males exceeding that of women by 10% (Ahmad, Ahmad, & Bakar, 2018). Similarly, Emirati male entrepreneurs tend to explore entrepreneurs throughout their social networks and substantially supersede the Emirati female population by 50% concerning intentions for starting a business. Emirati males are further inclined to have a reduced fear of failure than Emirati counterparts by almost 10% concerning fear of failure discouraging an individual from commencing a new venture (Al Matroushi et al., 2020).

The studies stated above discussed the different attitudes of entrepreneurs, which help them seek several opportunities in the market to start their business in the UAE. In conclusion, societal attitudes toward entrepreneurship are positive, with a significant level of perceived abilities and opportunities to commence a business (Vracheva, Abu-Rahma, & Jacques, 2019). Still, there are significantly low intentions to start a business because of the high failure levels.

2.5 Perceptions

The decision of an individual to become an entrepreneur relies on identifying opportunities in the region where one lives and on the motivation in an individual's abilities for starting and operating a business. However, perceived chances are lesser than perceived abilities in most innovation-driven countries (Thomson & Minhas, 2017). Emirati entrepreneurs have high perceptions regarding better opportunities to start a venture throughout six months, with merely 51% reporting that they have the essential abilities to commence their own business. The entrepreneurship process begins when a business opportunity is recognized and when the preference to grab it occurs (Bose & Mugambi, 2017). It is conceptualized by the proportion of individuals who argue that there are better environments that are conducive to embarking upon a business at a nearby place throughout the next six months.

Since 2006, opportunity identification has shown a constant elevation in Emiratis, which shows that more Emiratis are aware of entrepreneurship as an adjunct or extension of career selection and are competent to identify prospects to a much greater level compared to those of the latter other nationalities living in the UAE (Minhas, 2018). In addition, compared to men, more UAE women have seen the prospect of commencing their own business and are the most important demographic group in the country. However, it is unlikely that they will start trading. Once they have discovered business opportunities, they will verify their abilities and knowledge during the entrepreneurial process (Chakravarti, 2021). Employers ask themselves whether their talents and experience allow them to seize opportunities and succeed in business.

Responding to the questions of self-assessment of the knowledge and skills that are prerequisites of initiating a business, only five out of ten Emirates assume they have the competencies required to start their venture (van Ewijk & Belghiti-Mahut, 2019). Due to the low level of understanding of entrepreneurship in the Emirates, this

also indicates the need to take an active part in entrepreneurship through entrepreneurship education programs that can cultivate general entrepreneurial skills, particularly entrepreneurship (Vardhan et al., 2020). In addition, despite a particular opportunity and willingness to utilize it, despite its abilities, some entrepreneurs gave up the perception of starting a business for fear of failure. The studies above discuss individual's perceptions of starting a business in the UAE markets.

2.6 Motivations

Entrepreneurial motivation is an essential factor in determining entrepreneurial success. The main results of several studies indicate that companies have been established because they are willing to seize specific opportunities, have a higher survival rate, and are more successful (Ahmad, Al-Mazrouee, & Ranova-Fredrick, 2017). Compared to other countries, the United Arab Emirates is unique in highly opportunistic entrepreneurship. When it comes to entrepreneurship, people are driven by various motives. In most cases, a leading motivation comes with a particular venture prospect and intends to grab it, but the motivation may also be different (Al Khayyal et al., 2020). Many people have started new businesses out of necessity or lack better job opportunities. For others, the primary motivation is to maintain or increase personal income. Special incentives to start a business need to meet the need for independence; this is often the case for individuals, especially UAE women, who, despite having a permanent job in the public sector, decide to start a company to be their boss (Jeong & Alhanaee, 2020).

In contrast, a study conducted by (Bugshan, 2012) in UAE's Dubai School of Governance showed that in the Gulf Cooperation Council (GCC) region, a plethora of ambitious female entrepreneurs are lacking in confidence owing to the dearth of business skills. Resultantly, it does not embolden them to generate wealth. However, the incentive for entrepreneurs in the United Arab Emirates to increase their independence has dropped from a 100% peak in 2006 to a five-year low of 20.6%. In 2011, two out of three entrepreneurs in the United Arab Emirates set up their own companies to increase their income - less than 0% five years ago. Comprehensive motivation encourages a willingness to seize opportunities and the need to start a business; the necessity/maintenance of income is a necessity-driven incentive, not an opportunity-driven factor (Bhatt, Sujatha, & Mishra, 2020).

The above-cited literature focuses on a motivational factor to become an entrepreneur in UAE. Men are more afraid of entrepreneurship, which may be due to the prevailing national culture and the traditional role of men in the United Arab Emirates. One explanation for this could be that women are better able than men to see what could happen, not just what they see. Women tend to see opportunities in everything and everyone. They have the creative skill to discover opportunities. The decision maker's main challenge is leveraging the expertise and opening more entrepreneurship opportunities for more UAE women. Entrepreneurial Aspirations, Product and process innovation, globalization, and high-growth ambition are considered key to success for ambitious or ambitious entrepreneurship (Sitaridis, 2019). In addition to entrepreneurship and awareness aimed to address the origins of the company and entrepreneurship, taking into account the number of companies ascertained in different situations, entrepreneurial beliefs can also address questions associated with the company's quality initiative and the expectations of entrepreneurs (Al Saiqal, Ryan & Parcero, 2019). This can be used as a good forecast for future growth. Indeed, the expectations of entrepreneurs can create a huge impact to make them successful, so it is essential to understand what drives entrepreneurship (Balawi, 2021). Employers may vary in their desire to promote new products and production procedures, enter foreign markets, build important organizations and use external capital to finance growth. If these wishes become a reality, they will significantly impact the economic effect of this entrepreneurial activity.

2.7 Innovation

The United Arab Emirates owns an economy that is driven by innovation, which indicates that knowledge has become a fundamental growth factor, and innovation can generate more than 30% of economic activity. This shows that the effect of innovation on the UAE economy can possess a crucial role in boosting the global economy. However, it should be borne in mind that innovation comes from large companies and small, powerful companies, which can positively impact innovation and sustainable economic growth. Due to globalization, small companies have not become outdated, but their contribution has been modified as their comparative advantage shifts to knowledge-based business. Large manufacturing companies in high-cost areas have lost most of their competitive advantage, while small start-ups have an excessive proportion of new product innovation (Audretsch et al., 2007). Innovation is an essential factor in economic development and productivity. But given the changing nature and environment, it is complicated to measure. Employers commence and expand their businesses by developing new procedures, products, and services to create jobs and wealth. Entering or creating a new market means getting few or no other companies providing the same products or services (Romero &

Martínez-Román, 2012).

According to (Nelson, 2013), the number of women entrepreneurs involved in technology is higher in UAE than in other countries. 35% of women consist in all such businesses in the region compared to the global average of 10%. However, entrepreneurs in the United Arab Emirates rarely engage in high-tech fields, which can be for various reasons, such as high-risk and high-cost technological innovations. It is necessary to create a multi-class incubator with private and public partners. Government agencies need to work with educational institutions, communities, and community groups to encourage entrepreneurs in the United Arab Emirates to start, develop, and develop their innovative effect on business. Industrial research centers should be adapted to support basic and applied research in high-growth industries to move forward and overcome their problems. Innovative research and development in collaboration with researchers in the United Arab Emirates, rooted in academic institutions, can be a way to encourage human resource development and elevate opportunities for small and medium-sized enterprises to solve research-based problems.

Entrepreneurship in the UAE has focused on an international organization known for rapidly monitoring the development of influential companies in emerging markets. Endeavor Global is a non-profit organization that alters dynamic markets by ascertaining significant entrepreneurship as a dominant force in economic growth. It has connected with Abraaj Capital, one of the region's dominant private equity firms, to encourage this massive effect on company growth. The Endeavor model is widely accepted for selecting highly influential entrepreneurs with high growth potential, creating significant job opportunities, and the chance to motivate others in the area. With their attention to effective entrepreneurship, they can show how the cultivation of small and medium-sized companies with significant growth potential can positively contribute to job creation and wealth creation. The above studies emphasize innovations and technology in the UAE market, which is beneficial for entrepreneurship and the country's economy.

2.8 Unlocking Entrepreneurship through Education

Entrepreneurship is essential for economic growth, employment, innovation, and productivity. Since economic development and entrepreneurship are closely associated, there is also a necessary connection between education, risk creation, and entrepreneurial performance (Ghafar, 2020). To a certain level, entrepreneurship education can be an essential promoter of societal change, a necessary supporter of all disciplines, and provide more entrepreneurship and extraordinary entrepreneurial performance (Chakravarti, 2019). Not everyone requires an entrepreneur to benefit from entrepreneurship education, but all members need to be entrepreneurs to promote an efficient ecosystem. Entrepreneurship encourages and supports entrepreneurial culture (Huang et al., 2020). A more robust entrepreneurial culture and entrepreneurial mindset should be developed so young people can think affirmatively, explore opportunities to achieve goals, have the self-assurance to accomplish goals, and utilize their talents to build a better society economically and socially (Mozammel & Zaman, 2018). The establishment of an entrepreneurial community is involved in all, and the education system and the media play an essential role in promoting positive attitudes towards entrepreneurship.

Building an entrepreneurial society requires significant reforms in teaching with new ways of thinking and active teaching (Halaweh, 2019). A study conducted by (Wang, Zhou, Zhang, & Sun, 2022), intended to evaluate the significance of self-efficacy in entrepreneurship and expectancy-value belief concerning the digital economy among students in China who were enrolled in universities. The results of the study show that in the era of digitalization, the elements of expectancy-value belief and entrepreneurial success are precursors of transforming a digitally run economy. Notably, entrepreneurial success is reckoned as a prominent mediator in creating entrepreneurial self-efficacy as well as the digital economy.

The growing popularity of entrepreneurship education in the UAE means substantial changes, especially in supporting the new role of educators in UAE educational institutions, including universities. This change requires developing the support system needed for teacher education, the dissemination of experience, the provision of cultural entrepreneurship courses and teaching development training, and good practice and high-quality teaching materials (Thani Al Dhaheri, 2020). It also means helping teachers or tutors at all levels to build a broad network and connect them to the resources available to the public and the business community. Entrepreneurship teachers from entrepreneurship schools and universities train and nurture a new generation of entrepreneurship leaders (Jones & Mosteanu, 2019).

A study by (Saeed, 2014) among Pakistani university students found that the most crucial factor in developing student's entrepreneurial self-efficacy is perceived educational support. In addition, another study among 1500 undergraduate Arab students in a government university found entrepreneurial curricula and universities to work in their capacities as influencers to derive the entrepreneurial attitudes of the students (Al Bakri & Mehrez, 2014).

In recent years, public education in the UAE has undergone significant changes at the federal, emirate, and local levels. Reforms have been formulated to improve student achievement and provide parents with more educational opportunities. These reforms aim to encourage creativity, leadership, and entrepreneurship by applying truly new learning methods. However, many entrepreneurship education practices are often temporary, vary in quantity and quality, and are not systematically discussed in the curriculum.

To date, entrepreneurship education, especially in primary and secondary schools, has usually depended on the interest and initiative of individual teachers and schools and the support network they have established. Many programs and initiatives have been formulated to foster an entrepreneurial culture among young people at the university level. However, there is still a lot of work to be done to integrate entrepreneurship skills as an essential part of the curriculum of the UAE education system at all levels. Educational institutes are cognizant of the significance of the potential of entrepreneurship and the requirement of the provision of exchangeable skills to enable students to master the skills and understanding necessary to promote the creation and innovation of companies in the organizations they join. At the basic level, projects should be carried out to stimulate active student participation, personal initiative, creativity, and an adventurous spirit. At the upper secondary level, activities should increase economic awareness and promote entrepreneurship education through imitation and micro-enterprises. In universities, all students should be educated about entrepreneurship and risk creation to unlock their entrepreneurial potential and thus increase their employability and develop their innovative skills.

Become more competitive and start your own business. INJAZ-UAE is a well-known organization for developing young people in the United Arab Emirates. It is a good case study of an initiative that complements the existing education system with an educational program for entrepreneurs and works with private and public bodies to enable young people to progress in their competencies. Their programs link business volunteers with mentors (11-24 years old) to prepare students from primary school to university at different levels of education to enter the world of work with interactive, influential, and practical guidance and successful meetings. Volunteers will receive advice and training before they begin their experience to strengthen mentoring courses and prepare to encourage young people today. INJAZ-UAE has helped more than 15,000 students via more than 1,500 volunteers from more than 43 schools and universities since 2005. They have been actively encompassed to stimulate creativity, novelty and entrepreneurship, and employment among UAE youth. Another area where entrepreneurship education can greatly value vocational education with programs that tackle existing modifications in the labor market.

Federal and the UAE government investments in fundamental sectors such as aluminum, aerospace, and tourism can offer Emiratis a unique opportunity to establish a place company to encourage the anchor firms constructed by such investments. These new sectors need new skills acquired through vocational training institutions. Entrepreneurship and work and technical skills can offer the essential incentives to guide young people to self-employment, economic sustainability, and improved employability (Romero & Martínez-Román, 2012).

Teacher's entrepreneurship education can be considered differently from primary school to university, from vocational institution to university. One thing is for sure, though. It is assumed that the entrepreneurship of our youth and the UAE citizens can improve the country's economic and social prosperity. The advantages of entrepreneurship education are many. Learning of this kind can awaken entrepreneurial exposure from an early age, cultivate the mentality of entrepreneurs, foster creativity and innovation, and a positive attitude towards autonomy, risk-taking, and learning from mistakes. As attitudes and cultural references are formed at a very young age, entrepreneurship education can play an essential role in shaping the youth's thinking, improving entrepreneurship, and offering enduring learning. These studies can also be utilized in regions outside the economy.

Entrepreneurship education in traditional schools. Practitioners and academics are aware that education policy can lay the roots for the cultivation of entrepreneurship. Still, the actual situation in which entrepreneurs in education have to work has seldom received targeted and progressive attention. Entrepreneurship education is now an essential aspect of national programs in most countries. Some countries (Norway, Finland, & Denmark) have identified the gains of entrepreneurship education programs and have positively integrated policies for ensuring that all students receive some form of education. However, in the United Arab Emirates, although some reasonable measures have been taken at all levels, there is no specific national program for education and entrepreneurship. It is assumed that cultivating a new business culture in the UAE needs a clear and comprehensive policy for entrepreneurship education across the education system.

2.9 Ways through which the UAE government Promotes Entrepreneurship

UAE hosts several platforms that offer international business opportunities in various sectors from tourism to

technology. In the past 40 years, the country has made a successful diversification of its oil-based economy that aimed to diminish its dependence on energy-based industries. Subsequently, the country has been offering international business opportunities in manifold sectors. With its positive efforts, the UAE government continues to grow, including an increase in the number of incentives that are particularly designed to motivate professionals and individual business entities all around the world and offer support to businesses on a small scale. According to a report prepared by (Anish, 2019), the measures taken by the government include the following:

Allow foreign-owned businesses: The UAE government, in May 2019, announced that foreign entrepreneurs would become 100% shareholders in the local incorporated market. This foreign ownership had previously been restricted to the UAE free zone, meaning that businesses incorporated onshore were 51% locally owned. This change will bring businesses from other countries quickly access the UAE business market. As a result of this, the demand for international entrepreneurs will look attractive alongside other developments.

Offer entrepreneurs extended visas: The UAE government actively began issuing a 5-year plan visa to entrepreneurs interested in setting up businesses there. The UAE government, in May 2019, started a new residency visa system of five-to-ten-year. It aims to enable outstanding non-UAE investors and specialists to get an education, live, and do business or jobs without having a national sponsor. At present, nearly 125 business areas indicated that the UAE ex-pats can opt to operate without being locally sponsored.

Attract tech-oriented businesses to support UAE: In various parts of the world, the term entrepreneurship is identical to technology. The UAE government is thriving strategically to become a tech hub. Therefore, the government has announced the creation of a tech space recently. The heart is based in Abu-Dhabi and it is a joint venture of Microsoft. The government held investment worth AED 500 million as an initiative which shows the government's commitment to attracting technical talent. The government's other programs, such as Ghadan 21, which is a 3-year development plan worth AED 50 billion, show how much UAE has become ambitious by creating a more thriving tech scene in the country.

Provide funding and support to SMEs: In addition to the provision of help and support to entrepreneurs, the UAE has been incorporating a digital system for ensuring online access to government and administrative services. For instance, the government has recently vowed a substantive investment as capital projects that will be allocated to SMEs. This is done to motivate and encourage them to take a step toward taking up major government project contracts. The government has decided to invest 20% of its capital in contracts taken up by SMEs. Moreover, to provide greater liquidity to SMEs, those who are working on UAE government projects they will be entitled to be paid within 30 days.

Providing a promising environment for living and working: Besides weather, there are a plethora of reasons for the UAE being a perfect and attractive country for entrepreneurs to live and work. From the commercial point of view, the country is ranked 11th worldwide for providing overall ease to carry out businesses. Besides, there are no personal or corporate taxes or requirements to submit returns for most companies. As a result, this helps reduce the burden of operational activities that occur due to running a company there. Apart from it, the country welcomes and stimulates young talented individuals across the globe for living and work there. Entrepreneurs who can get hold of the initiative programs by the government are provided with options to access the support programs that are to foster the growth of business in the country.

Based on the above literature, it can be found that there is a need to find the variations in entrepreneurial activities, attitudes, perceptions, and aspirations among the UAE youth. There is a need to find the factors that define the nature and level of UAE entrepreneurial activity and the potential of entrepreneurship through education in the UAE. Moreover, there is a dire need to look into the initiatives taken by the UAE government to support entrepreneurial development, encourage creativity and innovation, generate employment opportunities, and bring progress and prosperity to society. Table 1 shows the summary of the reviewed studies.

Table 1. Summary of the Studies

Studies	Methodology	Aim	Findings	Conclusion
Valliere and Peterson, (2009).	Literature review	Shows an extension of the economic growth model developed by Wong, ho, and Autio (2005) to show the differences in the economic effects of opportunity and necessity-based entrepreneurship in emerging and developed countries.	In developed countries, a significant portion of economic growth rates can be attributed to high-expectation entrepreneurs exploiting national investments in knowledge creation and regulatory freedom. However, in emerging countries this effect is absent.	It is hypothesized that a threshold exists for entrepreneurs to gain access to the formal economy, below which entrepreneurial contributions act through informal mechanisms
Romero and Martínez-Román, (2012).	Quantitative Approach (survey)	The study aims to investigate the determinants of innovation in small businesses with self-employed workers in Andalusia (Spain).	The study found that the key influence of education comes from management style and motivation. Moreover, the size of the firm does favor innovation but it does not have a determining role.	The study concludes that the determinants of process innovation and product are significantly different.
Gupta and Mirchandani, (2018).	Quantitative Approach (survey)	To investigate the key factors affecting the success of women entrepreneurs who own and manage Small and Medium Enterprises (SMEs) in UAE.	The findings state that the personal, and environmental factors and government support affect positively and significantly the success of women-owned SMEs in UAE.	The study results will provide some insights to policymakers and business practitioners to design strategies intended to promote unveiled potential among women entrepreneurs in UAE.
Abdo and Paris, (2017).	Qualitative Approach	The study aims to explore current challenges facing social entrepreneurs in the United Arab Emirates and provide recommendations that can contribute to the development of the growing and vibrant community of social entrepreneurs in the UAE.	Several key challenges were identified related to lack of institutional support and lack of social and cultural awareness regarding social entrepreneurship within the UAE. Further challenges include a lack of clear benchmarks related to monitoring and measuring social impact.	The challenges identified to highlight the need for more government and institutional support, as well as a stronger link between the corporate sector, academia, and the social enterprise sector.
Jabeen, Faisal, and Katsioloudes, (2017).	Mixed Approach	This study aims to provide insight into the factors that impact the mindset of youth in the United Arab Emirates (UAE) in choosing entrepreneurship as their future employment.	The study findings state that individual and environmental factors influence the entrepreneurial mindset of both males and females in the UAE.	The results of the study support recognition of the factors that induce educational programs and economic incentives targeted at the development of sustainable entrepreneurial culture and ventures in the UAE.
Bodolica, Spraggon, and Badi (2021).	Case Study Approach	The study examined the role extracurricular activities and student-led activity clubs at institutions of higher education play in the development of social entrepreneurial competencies of the graduating youth in emerging market settings.	The study shows a critical role that the sanction-free university environment plays in the activation of social entrepreneurial behaviors and intentions of students in the UAE.	Universities that invest in social entrepreneurship education contribute to the development of social leaders of tomorrow and also attract more scholarships through their strengthened network of alumni.
Facchini, Jaeck, and Bouhaddioui, (2020).	Survey-based study	The study seeks to explain the cultural foundations of the lack of entrepreneurship among UAE nationals.	The study result shows that the student's culture is holistic and rather hostile to entrepreneurship. Such disinterest is stronger because of fear of stigmatization associated with business failure and because of social prestige associated with public sector jobs.	The study results not only confirm the cultural specificity of Rentier States but also invite the launching of educational programs aimed at modifying students' beliefs about entrepreneurship.
Abdul kadir, and Müller, (2020).	Literature review	Focusing on the UAE, this study provides an overview of the	Women's leadership in the public sphere of GCC states still	The study examined who the UAE's female leaders

		current state and complex nature of women's leadership in the Emirates.	lags what has been achieved in other parts of the world.	are, their socio-economic backgrounds, and the specific social arenas they most often obtain leadership positions in
Al Matroushi, Jabeen, Matloub, and Tehsin, (2020).	Survey Approach	The study aims to develop a push-pull factors theory of women entrepreneurship, identify and prioritize the factors influencing Emirati women entrepreneurs, and also aims to implement the proposed theory in two cases: Emirati women entrepreneurs with business family and non-business family backgrounds.	The study findings show that education, skills, and training are the three main criteria considered to be the most important factors that influence the growth and success of Emirati women entrepreneurs.	The findings can help policymakers and related associations develop various policies based on the specific factors found to empower Emirati women entrepreneurs effectively.
Ghafar, (2020).	Quantitative Approach	The study aims to explore the extent to which 21st-century skills assume "a priori" as an integral part of entrepreneurship education with the intent of producing graduates who are not just primarily driven to start new ventures but also empowered and enabled to create entrepreneurial impact within organizations.	Findings of the study suggest that teaching detailed and nuanced industry knowledge is arguably beyond the scope of entrepreneurship education systems, but to an extent, it is of paramount importance that students are exposed to organic industry knowledge through interaction and experiential experiences.	The study provides avenues for further development of entrepreneurship education, particularly the integration of 21st-century skills.

3. Methods

3.1 Study Design

The current study is a literature review, and therefore, to find relevant literature, the author used the five stages model of the selection process. It was designed by (David & Han, 2004) and used by (Pukall & Calabro, 2014). However, it went through some modifications to make it more applicable to fit into the scope and context of this research. The study conducted a content analysis of 31 articles that were published during the period 1977 - 2022. The data was analyzed through four themes: strong linkages with HEIs between the UAE government and entrepreneurial activities, strengthening technological transfer advanced entrepreneurship and network opportunities, need to develop the entrepreneurial sector, and, business developers ad policymaker's need to collaborate with the universities.

3.2 Data Collection

From the perspective of the scope, this review paper integrates published journal articles that were published in 2021 and had no specified timeframe (Campopiano & Sciascia, 2017). This search process allowed to take only studies focusing on entrepreneurial activities, attitudes and perceptions, and aspirations among UAE youth, focusing on exploring factors defining the nature and level of UAE entrepreneurial activity, the potential of entrepreneurship through education in the UAE, and the initiatives taken by the UAE government to support entrepreneurial development. Furthermore, the database was used to search relevant articles from EBSCO, ProQuest, Google EconLit, and Scholar. To ensure that appropriate reports are extracted, the keywords stated below were considered in the title or abstract to find the potential papers: entrepreneurship education, youth entrepreneurship, motivation, UAE/Gulf region, and initiatives taken by the government to support entrepreneurship.

3.3 Inclusion and Exclusion Criteria

The inclusion criteria were only to undertake studies published articles related to entrepreneurship activities in the UAE and Gulf region published in English only. This procedure allowed to include only quality and scientifically consistent articles to be analyzed. After the screening process, 110 articles published in 31 journals met the set criteria, whereas 15 articles were excluded as they did not meet the inclusion criteria of this study.

4. Result and Discussion

The UAE government supports local Emirati entrepreneurial activities by encouraging the nationals to start their businesses. The government aims to uphold competitiveness and have workable innovation rates among entrepreneurs in Emirates. In this instance, the government is providing an environment by building strong linkages with higher educational institutions as it is essential to do so. The HEIs are significant players in the

growth and further development of entrepreneurship. The universities of UAE have to recognize and optimize their actions to accelerate the business sector while providing qualified human resources that are competent in starting up companies that can grow extensively and create a positive change holistically. For this to occur, the teaching of subjects like mathematics, science, engineering, and technology at all levels of education in the UAE should be promoted and excelled as it is a precursor to the availability of skilled human capital. In the pursuit of hosting an innovative economy, the government envisions maintaining sustainable competitiveness e innovation rate among entrepreneurs of the UAE. There is a need to strengthen the ease of technological transfers, advance entrepreneurial education and networking prospects, and ease of early funding to actualize this vision. There is also a need to address changes in demographics, as shown by a close evaluation of the differences in regional entrepreneurial activities, which Is the need of the hour.

In UAE, it's high time to start an innovation-driven entrepreneurial sector with the support of new companies having high value and potential to grow and expand internationally along with efficient support programs. Business developers and policymakers have to team up with universities and research institutes to form a support system that initiates supply-oriented policies. These policies must have a central focus on innovation, ecological sustainability, and infrastructure irrespective of limitations to local needs. In the words of (Gallant, 2010), a specialized entrepreneurship training program should be introduced to allow hands-on entrepreneurship experience to aspiring entrepreneurs in the UAE. Figure 1 shows the diagrammatic Analysis of the findings.

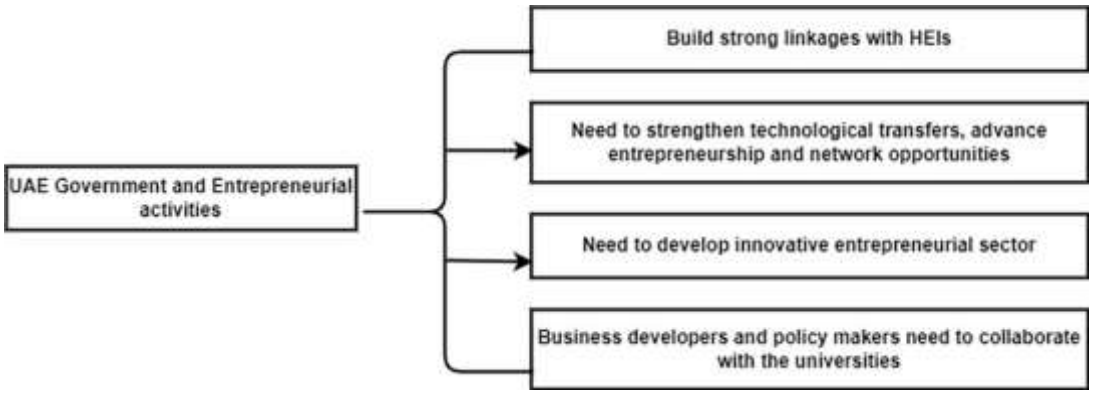

Figure 1. Diagrammatic Analysis of the Findings

4.1 UAE Government and Entrepreneurial Activities Build Strong Linkages with HEIs (Higher Education Institutions)

Teaching is the first academic revolution. For the economic growth in the education industry, high education organizations like universities are considered to be entrepreneurial universities. According to the theory, any rapid versatile opportunity faces many challenges to survive in nature which Entrepreneurial opportunities have faced many exogenous shocks. This emerging field has obstruction and the study has many limitations. According to Kirzner's approach information asymmetries focus on producers regarding the nature of demand or the means of supply(Eckhardt al., 2003). Young entrepreneurs of the new generation with high academic backgrounds have many qualities like good quality work and trailing personality(Zhang et al., 2019). New generation entrepreneurs are quite different from old generation entrepreneurs. They are born in the internet era and survive in modern technology. Their perspective to approach education or business or lifestyle is broad-minded, anti-traditional, and nonconservative and internet thinking is embedded in a higher level of education.

Development characteristics of the economic era need higher education and an international perspective. Older generation entrepreneur is more focused on special industry and producing a solid foundation of competitive products (Lorrain J & Raymond, 2013). ―New generation entrepreneurs" have developed new concepts by combing the research with new-generation (Cooke FL & Xiao M, 2021). The phenomena are changed: (a) In 2004 the famous American writer Staurt has a new definition of entrepreneurs the wealth creator and the reshapers of business in the new era. This study has described briefly influencing the factors of innovation in many aspects. (1) Behavioural attitude (2) Subjective Norms (3) perceived behaviour (4) and impact of technology on entrepreneurial approach.

Lal and Ronald W determined the guidance in characteristical changes in the political orientation of generation entrepreneurs (Lal AK & Clement RW, 2005). For bright and better future development the good universities

need to increase the level of urgency to adopt the new techniques for future development in the unpredictable environment instead of becoming globally isolated, competitive, and regulated and focusing on organizing the different strategic planning to initiate entrepreneurial development like HEInnovate community at European universities (Gibb et al., 2019). Entrepreneurial skills of individuals not only depend on the environment but also on the requirement of the environment which is increasingly navigating specific environments (Aparicio et al., 2015) along with adaptability and flexibility, strong leadership, and an environment conducive to entrepreneurial processes. Table 2 shows the summary of the reviewed studies.

Table 2. Studies representing entrepreneurial activities build strong linkages with HEIs

Author	Focus of study	Method	Conclusions
Jonathan T. Eckhardt, Scott A.and Shane (2003).	Examine the importance of the framework of entrepreneurship through disequilibrium which focuses on entrepreneurial opportunities	Systematic Review	Opportunities of typologies of entrepreneurship present the perspective logical arguments to outline the scholarly effects of empirical evidence on entrepreneurial activities in the sustainable society
Hongjun Gaun, Zhen Zhang, Aiwu Zhao, Jinyuan Jia and Shaung Gaun (2019).	Entrepreneur innovational behavior to improve the theory for government to cultivate the innovative spirit and innovative ability of new generation entrepreneurs	Literature Review	Entrepreneur's personal and academic backgrounds affect their perception of innovation. There is always a risk to influence the effect of social capital. An innovative mind can lead to organizational performance change
Lorrain, Jean, and Louis Raymond (2013).	A young entrepreneur faces a challenge by business and government representatives for credibility acceptance based at a young age	Empirical study	Discrimination by business, health, and education organizations on young entrepreneurs on account of their age are unethical, and proper constitutional law should be legislative by the government.
Lal, Anil K., and Ronald W. Clement (2005).	Strategy to recognize the moral principles of the constitution and political guidance for the new generation of entrepreneurs	Literature Review	The strategy which was determined was education should be based on entrepreneurial skills, Financial and networking supports among potential entrepreneurs and their experienced counterparts
Cooke, Fang Lee, and Mengtian Xiao (2021).	Political, social, cultural, organizational, and individual barriers women entrepreneurs may encounter	Theoretical perspectives	In the future, critical socio-technological perspective research should be done to approach feminist discourse analysis
Magnus Klofstena, Alain Fayolleb Maribel Guerreroc Sarfraz Miand David Urbanoe Mike and Wrightf (2019).	Entrepreneurial development at European universities	Mixed-methods approach and in-depth interviews	University managers and policymakers are responsible to implement and enhance the number of academic entrepreneurs
Aparicio, Sebastian, David Urbano, and David Audretsch (2016).	Entrepreneurship opportunities to achieve higher rates of economic growth	Three-stage least-square method	Theoretical discussion with additional elements was added to analyze the importance of institutions as a framework to understand determinants and effects of opportunity entrepreneurship.

4.2 UAE Government and Entrepreneurial Activities Need to Strengthen Technological Transfer Advance Entrepreneurship and Network Opportunities

According to the strengthening technological categories of organizations the entrepreneur classification is of two types (Liu et al., 2014). One is guided by the innovation process; for example, Christensen believed that the transformation of organizational creativity and innovation technology depends on innovation performance results

(Christensen, 1995) Another one is guided by the innovation results; for example, (Prajogo & Hamed, 2006) believed that organization performance is one of the indicators to measure corporate profits, which can be achieved through products and services.

Digital Media utilization is one of the key factors for enhancing and facilitating business, particularly, Small and Medium-sized enterprises (SMEs). In United Arab Emirates (UAE) scenario, awareness could increase the performance of SMEs by boosting the business market value for better customer satisfaction after product sales. To understand the strategy of integrated knowledge for increasing awareness of practitioners and end users in SMEs. UAE is considered a nation that is affectionately influenced by digital media and adopted innovative positive linkages for business development. SMEs customers globally consider the digital communication, and marketing environment, for a better business perspective for a sustainable environment (Nuseir, 2018). Majority of the entrepreneur are enrolled in universities after graduation and continue their education abroad to maintain their competitiveness. The factors like managerial ability and learning ability are affecting innovative entrepreneurs' behavior. The important guarantees for entrepreneurs are good organizational management ability, personnel management ability, and operation management (Mahoney et al., 2019).

The model of alliance-driven corporate emphasizes the manufacturing firms for technological corporate entrepreneurship activities such as investment for creating proprietary technologies, pioneering and experimentation in technological developments, R&D and technological innovation, and designing new processes and methods of production for their growth and better performance of firms (Bostjan et al., 2008). Table 3 shows the summary of the reviewed studies.

Table 3. Studies representing entrepreneurial activities strengthen technological transfer advance entrepreneurship and network opportunities

Author	Focus of Study	Method	Conclusions
Liu, Xuefeng, and Yuying Xie (2014).	Exploratory innovation and exploitative innovation of entrepreneurs	Conjoint Analysis	Young entrepreneurs have a negative moderating effect on the relationship between exploratory innovation and firm performance
Christensen, and Jens Frøslev (1995).	Technological innovation requires the activation of only one asset type, which is a more specific constellation of more asset types that have to be mobilized	Literature Review	The coupling between assets gives a great illustration of innovative asset profiles and has wide product categories inter–asset specificity and the concept of technological trajectories is reinterpreted in terms of profile oscillations and regroupings.
Prajogo, Daniel I., and Pervaiz K. Ahmed (2006).	The integration of the human and technological aspects of innovation management by modeling the innovation stimulus	Survey	To achieve high innovation performance organizations need to develop: behavioral and cultural context, practices for innovation within the conducive environment to develop innovative capacity in R&D, and development of technology to deliver more innovation outcomes and performances
Mohammed T Nuseir, (2018).	Digital Media utilization in enhancing and facilitation of business, particularly (SMEs)	Descriptive study (online survey)	SMEs may work on the framework for utilizing digital media and management strategies to address possible losses in SMEs operating in the Middle East and UAE markets
Paige Mahoney, Susie Macfarlane, and Rola Ajjawi, (2019).	Video feedback encompasses three formats: talking head, screencast, and combination screencast to raise entrepreneurship activities digitally	A qualitative synthesis	Digital mediums such as Video feedback influence and facilitate sound marketing transformation and its effects on entrepreneur learning activities
Antoncic, Bostjan, and Igor Prodan (2008).	Importance of Corporate entrepreneurship for organizational performance, and its innovative developments in technologies of SMEs firm	Conjoint Analysis	Model of alliance-driven corporate technological entrepreneurship activities impact on organizational performance

4.3 UAE Government and Entrepreneurial Activities Need to Develop the Entrepreneurial Sector

UAE government needs to develop an entrepreneurial sector to resolve the global social economical system to secure the environment. According to one of the studies, environmental economics causes the degradation results from the failure of markets. On the contrary side of entrepreneurship, literature claims that strategic opportunities are responsible for market failure. The compound literature declares that environmental market failures represent opportunities for achieving profit while simultaneously reducing environmentally degrading economic behaviors. It also implies conceptualizations of sustainable and environmental entrepreneurship to seize the opportunities

that are inherent in environmentally relevant market failures (Thomas J et al., 2007). The theory of entrepreneur innovation behavior and government guiding policies are implemented policies to cultivate the innovative spirit and the innovative ability of new generation entrepreneurs. The research comprises three aspects that can influence the sustainability of entrepreneurs in society.

Entrepreneur with good qualification has strong innovative perceptions. The influence on social capital and innovation content has good risk awareness. Big organizational changes change require innovation. Therefore, the government should provide more opportunities for entrepreneurs to broaden their knowledge, social resources, and innovative environment (Hongjun Guan, 2019). The skill and potential that entrepreneurs refer to are to create new methods and theories based on their original knowledge and experience and their skills in the process of innovation, to bring change to the environment (Pellegrino et al., 2015). According to the higher education influencer and authorities, entrepreneurs are quick thinkers, good analysts, strong observation critical sense of hypothesis with a higher sense of innovation. Their exploratory and detailed behavior acknowledges which shows that innovation consciousness largely determines innovation ability. The secret to controlling the innovative consciousness is the art of entrepreneurs to achieve new goals (Green W & Cluley R, 2014). Corporate technological entrepreneurship is the success of organizational support and commitment to alliances. The success of vertical partnerships indicates the willingness of extra effort to fulfill the commitment (Gudmundson et al, 2003). Table 4 shows the summary of the reviewed studies.

Table 4. Studies representing UAE government entrepreneurial activities need to develop the entrepreneurial sector

Author	Focus of study	Method	Conclusions
Thomas J. Dean, Jeffery S.and McMullen, (2007).	The global socio-economic system contrives by entrepreneurship	Literature review	Environmental entrepreneurship seizes the opportunities that inherent in the environmentally relevant market failure
Hongjun Guan , Zhen Zhang , Aiwu Zhao , Jinyuan Jia and Shuang Guan, (2019).	Factors influencing innovative behavior in new generation entrepreneurs and how they inspire others	Review & research method	Entrepreneur knowledge, social resources, and innovative environment strengthen their backbone in the society
Pellegrino, Gabriele, Mariacristina Piva, and Marco Vivarelli, (2015).	Italian young innovative companies analyze determinants of product innovation	Tobit approach-a joint study	Italian innovative entrepreneurs brought a revolution to their daily routine. Creative strategies were not only the target
Green, William, and Robert Cluley, (2014).	SME digital-design agency developed a radical innovation for the market research industry	Longitudinal case study	Social theories and practices of innovation introduce temporal and cultural dynamics in managerial methodology
Gudmundson, Donald; C Burk Tower; Hartman, and E Alan, (2003).	Relationships between ownership structure, and customer are variants of a variable of innovation	Empirical study	Cultural support for innovation can be used for improvement in SMEs

4.4 UAE Government and Entrepreneurial Activities, Business Developers ad Policymakers Need To Collaborate with the Universities

Corporate culture is very conducive to the development of innovative enterprises and encourages employees to work in an open and free working environment (Chang YS et al., 2015). Internet is considered to be one of the best advertisement tools for booking orders, promoting identity, calculating stock availability, and communicating with customers all over the world, allows to identify enterprises new market opportunities which lead to business expansion. (Aral et al., 2013) recommended that traditional methodologies and techniques must be replaced by Digital media.

Entrepreneurial action creates the specialized supplier by creating opportunities for the assembler. For example, in the Indian context, the recycling industry has risen in informal settlements such as Dharavi in Mumbai by exploiting the ability of microenterprises. In these areas, extraction and commercialization of different recyclable materials, such as plastics or metals are common practices (Curry JA et al.,2016). Table 5 shows the summary of

the reviewed studies.

Table 5. Studies representing UAE government entrepreneurial activities, business developer ad policymakers need to collaborate with the universities

Author	Focus of study	Method	Conclusions
Chang, Yu-Shan, and Kuang-chao Yu, (2015).	Relationship between perceptions of innovative environment and creative performance in a web-based synchronous environment	A survey consisting of pretest and posttest quasi-experimental design	Innovative essence should be introduced in the traditional classroom which helped learners to do better in terms of novelty, feasibility, and creative product design
Sinan Aral, Chrysanthos Dellarocas, and David Godes, (2013).	The special issue was designed to stimulate innovative investigations of the relationship between social media and business transformation.	Literature review	Flexible framework outline help to guide future research and develop a cumulative research tradition
Curry, John A., Han Donker, and Paul Michel, (2016).	Community-owned development corporations do match closely with the concepts and mission of social entrepreneurship.	Empirical study	Implementation of development corporations with a social mission is key to the success of First Nations communities.

4. Study Limitations

The study was limited to a review and did not incorporate how veteran academicians or owners of the business may help students in applying their learning in real-life situations. Moreover more themes with aspects to beaurucratic hurdles, red – tapism, low enrolment rate in rural and sub-urban areas, and gender biasness as hurdles on entrepreneurship in the gulf region should be considered for future research.

5. Recommendations

Therefore, higher education institutions, including universities, must involve entrepreneurship material in their coursework. It is recommended that in the future researchers can conduct longitudinal studies about the careers of young graduate entrepreneurs. The students can be involved based on activities of enterprise-building. For example, creating competitions and events could be difficult if the supervisors are business owners and the academicians are supervising them. It will be useful for the students for the implementation of the learning in real life. Thus, models for entrepreneurs can be developed by future researchers to ameliorate the growth of business in the best managerial proficiencies.

6. Conclusion

This review provides an advanced apprehension regarding prevailing and developing areas of interest in the field of entrepreneurship in the UAE in particular in the emerging areas of education. This review study specifies that entrepreneurs and future young entrepreneurs irrespective of their gender need to augment their business competencies. The study encourages policymakers to design policies that may increase entrepreneurship among Emirati citizens and support open market competition. This can start with the help of some extra funding for the universities so that they can develop programs in mathematics, technology, science, and, engineering. It can be accelerated by facilitating an entrepreneurial mindset and creating an educational infrastructure that could inculcate creativity, innovation, and readiness for product development in the mind of students. Also, the endowment of government-funded scholarships to obtain high education and entrepreneurial study programs is another pragmatic approach in this regard. The role of universities is crucial for reinforcing entrepreneurial trends and trends in the country. Taking this supportive measure will increase collaboration among the government, educational institutes, and industries. Besides, making business studies more attractive for Emirati students can also promote the culture of entrepreneurship in the UAE. To foster a new business culture in the UAE, the government has to support the youth to become innovative and well-educated entrepreneurial people, requiring the successful integration of an explicit and collaborative entrepreneurial education policy that runs through all stages of the education system. Different studies mentioned above discuss how educational institutes can help the younger population gain knowledge and a better understanding of entrepreneurship and help them seek opportunities in the UAE market. Formulating a standard long-term policy for the entrepreneurial community further needs the coordination of federal states and municipalities and the active engagement of the social partners and all stakeholders. This study also suggests that there should be no discrimination between Emirati and non-Emirati who want to pursue a career in entrepreneurship or social entrepreneurship are free to work independently and can establish social enterprises for the betterment of the country. This would give rise to a higher interest in responsibility, and ends the unreasoned judgment of gender in every field of competency.

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