An-Najah National University
Faculty of Graduate Studies

THE EFFECT OF INTELLECTUAL CAPITAL ON FINANCIAL PERFORMANCE AND SUSTAINABLE GROWTH OF THE CORPORATIONS LISTED ON THE MENA STOCK EXCHANGE MARKETS FOR THE PERIOD 2014-2021

By
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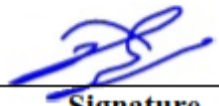
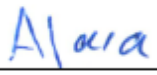
Dr. Abdul Muttalib Sartawi **External Examiner**	 **Signature**
Dr. Aladdin Dwekat **Internal Examiner**	 **Signature**

Dedication

أُهْدِي ثَمَرَةَ عِلْمِي وَاجْتِهَادِي إِلَى وَطَنِي الْغَالِي أَوَّلًا،

وَإِلَى شَمْسِي الَّتِي لَا تَغِيبُ، أُمِّي،

وَإِلَى الَّذِي بِطِيبِ ذِكْرِهِ أَرْفَعُ رَأْسِي، وَالِدِي الطَّبِيبِ نَصْر عَبْدِ الْحَافِظِ،

وَإِلَى الَّذِينَ كَانَتْ تَجَارِبُهُمْ قِنْدِيلًا يُنِيرُ دَرْبِي، إِخْوَانِي وَأَخَوَاتِي،

وَإِلَى الَّذِينَ انْتَقَيْتُهُمْ أَصْدِقَائِي كَجَوَاهِرَ بِصِفَاتٍ خُلُوقِيَّةٍ مُشِعَّةٍ نَادِرَةِ الْوُجُودِ،

. وَإِلَى كُلِّ مَنْ سَاهَمَ فِي تَعْلِيمِي وَإِرْشَادِي وَإِنَارَةِ رُؤْيَتِي

قال تعالى: ﴿ وَقَالَ يَٰٓأَبَتِ هَٰذَا تَأۡوِيلُ رُءۡيَايَ مِن قَبۡلُ قَدۡ جَعَلَهَا رَبِّي حَقّٗاۖ ﴾[يوسف: 100]

Acknowledgment

قال تعالى: ﴿ فَلِلَّهِ ٱلْحَمْدُ رَبِّ ٱلسَّمَٰوَٰتِ وَرَبِّ ٱلْأَرْضِ رَبِّ ٱلْعَٰلَمِينَ ﴾[الجاثية: 36]

الْحَمْدُ لِلَّهِ الَّذِي مَنَّ عَلَيَّ وَأَكْرَمَنِي بِإِتْمَامِ رِسَالَتِي فِي الْمَاجِسْتِيرِ، آمِلَةً أَنْ تُسْهِمَ فِي تَكْوِينِ رُؤْيَةٍ عِلْمِيَّةٍ قَيِّمَةٍ.

أَمَّا بَعْدُ، أَتَقَدَّمُ بِجَزِيلِ الشُّكْرِ وَالتَّقْدِيرِ لِلْوَطَنِ الَّذِي يَحْتَضِنُ كُلَّ بَاحِثٍ عَنِ الْعِلْمِ (جَامِعَةِ النَّجَاحِ)، وَإِلَى كُلِّ قَامَةٍ عِلْمِيَّةٍ قَدَّمَتْ لِي مُوسُوعَةً مِنَ الْعِلْمِ وَالْحِكْمَةِ، وَسَاهَمَتْ بِشَكْلٍ كَبِيرٍ فِي تَطَوُّرِ قُدُرَاتِي الْعِلْمِيَّةِ. وَأَخُصُّ بِالذِّكْرِ مُشْرِفِي الْأَوَّلَ أ. د. عَبْد النَّاصِر نُور، وَمُشْرِفِي الثَّانِي د. مُعِزّ أَبُو عَلْيَا، وَالدُّكْتُور سَامِح الْعَطْعُوط، و د. إِسَلام عَبْد الْجَوَاد، و د. غَسَّان دَعَّاس.

الشُّكْرُ مَوْصُولٌ إِلَى الَّذِي أَبْدَعَ فِي إِثْرَاءِ قِسْمِ التَّحْلِيلِ الْإِحْصَائِيِّ د. كَامِل جِبْرِين.

وَكُلُّ التَّقْدِيرِ وَالِامْتِنَانِ إِلَى كُلِّ مَنْ سَانَدَنِي وَآمَنَ بِنَجَاحِي.

أَسْأَلُ اللَّهَ تَعَالَى أَنْ يَقْبَلَ عَمَلِي وَعِلْمِي هَذَا خَالِصًا لِوَجْهِهِ الْكَرِيمِ

Declaration

I, the undersigned, declare that I submitted the thesis entitled:

THE EFFECT OF INTELLECTUAL CAPITAL ON FINANCIAL PERFORMANCE AND SUSTAINABLE GROWTH OF THE CORPORATIONS LISTED ON THE MENA STOCK EXCHANGE MARKETS FOR THE PERIOD 2014-2021

I declare that the work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

Student's Name	Ro'ya Nser Khader Abd El-Hafez
Signature:	
Date:	11/12/2024

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Abstract

This study investigates intellectual capital's (IC) impact on sustainable growth. The study used annual reports from 99 manufacturing companies over the period 2014-2021. IC is measured using the Modified Value Added Intellectual Coefficient (MVAIC) model, and sustainable growth is measured using the Sustainable Growth Rate (SGR). The researcher incorporated both fixed and random effect regressions to ensure a robust understanding of the underlying interactions.

The findings reveal that IC has an overall negative effect on sustainable growth. Among its components, only Capital Employed Efficiency (CEE) shows a significant negative impact on sustainability, suggesting that the way capital is utilized may hinder long-term growth. These results provide decision-makers with critical insights into the complex relationship between IC and sustainable growth. While intellectual capital is often viewed as a driver of performance, this study highlights the need for a more strategic and balanced approach to managing its components to avoid potential negative outcomes. However, the study has certain limitations, particularly the lack of a clear classification system for industrial companies listed on the Egyptian Stock Exchange, which includes 244 companies across 17 diverse sectors.

Keywords: Intellectual capital, Capital employed efficiency, human capital efficiency, structural capital efficiency, sustainable growth, Palestine exchange, Egyptian stock exchange, Abu Dhabi stock exchange.

Chapter One
Introduction and Literature Review

1.1 Introduction

In the era of globalization, knowledge, and rapid growth taking place around the world, new technology is enhanced for companies to face intense competition (Sandhu, Doha, & Hussain, 2024). Traditional capital, such as physical assets, financial resources, and natural resources, has become less important than technology-based and knowledge-based capital in the knowledge-based management system (Khalil, Malik, & Ahsan, 2024). Companies have paid more attention to IC as an intangible asset as a potential corporate competitiveness and sustainability driver (Baraka, Zayed, Wahba, & Ragheb, 2024). IC is a value and scarcity that can help companies obtain a sustainable competitive advantage according to the resource-based view (RBV) (Barney, 1991). Therefore, in recent decades, IC as the knowledge carrier has attracted most of the attention of practitioners, scholars, and researchers (Asiaei, Jusoh , & Bontis, 2018; Dumay & Rooney, 2018).

The goal of any company is to maximize the value of shareholder wealth by raising the price of its shares (Gao & Nose, 2024). The difference between the book value of the company's assets and the price of its shares is referred to as the hidden value. The market assessment of IC is believed to be the hidden value (Paryati, 2022). Therefore, there is an increasing recognition that the IC partly drives the company's performance and market value (Chen, Cheng, & Hwang, 2005). While managers are able to improve Financial Performance (PERF), it is difficult for them to affect the company’s sustainable long-term growth similarly, especially in terms of how it is affected by IC (Cantele & Zardini, 2018). Investigating the impact of IC on the sustainability of corporate growth is useful. Besides, IC may exert indirect effects on performance and sustainable growth by including some intermediate or moderate variables in the relationship (Tseng, Lan, Lu, & Chen, 2013).

The Palestine Exchange, Abu Dhabi Stock Exchange, and Cairo Stock Exchange represent diverse economic and political contexts, offering a unique lens for studying the role of IC in sustainable growth. Palestine's firms face resource constraints and political instability, requiring innovative IC utilization (Dwikat, Arshad, & Shariff, 2023). Abu

Dhabi's stable economy, fueled by state investments, must also contend with challenges like migrant labor dynamics, which affect organizational strategies and resource management (Menezes, 2024). Egypt's environment is shaped by challenges such as a highly stratified class structure and significant population density, which create unique pressures on resource allocation and corporate strategies (Balbaa, 2024).

Considering what was mentioned above, this research aims to identify the effect of IC on sustainable growth for corporations listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.

1.2 Problem statement

Globally, the business operates in an environment characterized by high competition and risk, especially in developing countries. Accordingly, companies are under external and internal pressures to enhance their ability to be sustainable. The accelerated globalization trend and technological advances in recent years have exacerbated this phenomenon. The profitability and continuity of companies depend on their ability to keep pace with technological development and global growth to be able to produce products that compete with global industries in terms of quality and cost. Therefore, companies, especially in developing countries, are required to consider their organizational capabilities, knowledge, and IC adequately. They have to invest heavily in technological capabilities and employee qualifications in a way that also affects the financing decision.

Reviewing the existing literature revealed that many studies were conducted, particularly in developed countries. These studies address IC and its relationship with different variables, especially company performance and growth. However, there remains a significant research gap in understanding how IC influences sustainable growth in developing economies, where market dynamics, regulatory environments, and managerial practices differ. While prior research has established a link between IC and company performance, limited studies have explored its impact on sustainable growth, particularly within industrial companies in emerging markets. This study aims to fill this gap by providing empirical evidence from three stock exchanges in developing countries, offering new insights into the role of IC in driving sustainable growth in these economies.

1. Does IC affect the sustainable growth of the industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange?

   From the first main question, the following set of sub-questions emerges:

   a. Does capital-employed efficiency affect the sustainable growth of the industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange?

   b. Does HCE affect the sustainable growth of the industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange?

   c. Does Structural Capital Efficiency (SCE) affect the sustainable growth of the industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange?

2. Do firm size, liquidity, asset efficiency, profitability and GDP growth affect the sustainable growth of industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange?

3. Is there a statistically significant difference in the effect of IC on sustainable growth between the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange?

1.3 Study hypothesis

H01: IC significantly affects the sustainable growth of industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.

From the first hypothesis emerges the following hypotheses:

H01a: Having a greater CEE leads to higher sustainable growth in industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.

H01b: Having greater HCE leads to higher sustainable growth in industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.

H01c: Having a greater SCE leads to higher sustainable growth in industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.

H02: Firm size, liquidity, asset efficiency, profitability and GDP growth significantly affect the sustainable growth of industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.

H03: There is a statistically significant difference in the effect of IC on sustainable growth between the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.

1.4 Importance of the study

This research elucidates how IC plays a role in the sustainable growth of firms. Targeting industrial companies listed on the Palestinian Exchange, Abu Dhabi's stock exchange, and Cairo's stock exchange, this study adds several specific insights into the industrial sector in the MENA region.

This study provides practical implications for management regarding the strategic management of IC. It highlights the importance of aligning all IC components—human capital, capital employed, and structural capital—with the company's strategic goals. The research also brings to light the risks associated with IC and how mismanagement can negatively impact sustainability. Special emphasis is placed on HC as the most critical element while acknowledging that capital employed and structural capital must be properly utilized to drive long-term objectives toward sustainable growth.

From a policy-making perspective, further transparency, measurement, and strategic development on intangibles must be fostered for sustainable growth and corporate adaptability to globalization. Annual, board-approved reports on intangible spending would significantly enrich financial disclosure in that stakeholders could appraise the impact of IC investments on corporate performance. Furthermore, Proper IC strategies will assist companies in overcoming challenges in the economic, political, and cultural arenas for continued development and economic stability. Additionally, developing an index to measure sustainable growth potential would clearly give policymakers and

regulators a tool to identify firms whose strategic changes have gradually been momentarily unable to match growth requirements.

The research draws attention to the broader societal consequences of neglecting intellectual capabilities. It warns of possible socio-economic impediments-diminished market sustainability, economic stagnation, and soaring unemployment rates-by the incapacity of companies to effect changes. This study further bridges the immediate challenges of companies and policymakers in ensuring the viability of their long-term growth, competitiveness, and sustainability.

1.5 Objectives

A company's PERF and SGR are important indicators that show its success and continuity in using its available resources. Therefore, this research aims to investigate the direct effect of the independent variables (IC and its components) on the Sustainable Growth of the industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange. The study covers the period from 2014 to 2021. So, the study objectives can be presented as follows:

1. Identifying the effect of IC on the sustainable growth of the industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.
    a. To identify the effect of CEE on the sustainable growth of the industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.
    b. To identify the effect of HCE on the sustainable growth of the industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.
    c. To identify the effect of SCE on the sustainable growth of the industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.

2. To identify the effect of firm size, liquidity, asset efficiency, profitability and GDP growth on the sustainable growth of companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.

3. To identify if there is a difference in the effect of IC on sustainable growth between the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.

1.6 Literature Review

Recently, issues related to IC have become one of the issues that researchers largely address due to its importance and potential impact on PERF and the sustainability of growth in companies. The good PERF of the companies is an indication that this company has a strong IC, which is a type of hidden asset that represents the difference between the book value of the assets and the market value of the company's shares, which is difficult to determine its value and does not have any specific form. It is based on unique and incomparable knowledge (Jin & Xu, 2022).

1.6.1 Intellectual Capital

IC is a multidimensional phenomenon of assets of knowledge, experience, and practical capabilities that have an important role in improving the value and performance of the company (Dumay, 2016). Non-material and non-monetary resources contribute through knowledge to create organizational value (Yong, Yusliza, & Fawehinmi, 2019). The most common classifications in the literature for IC are human, structural, and Relational Capital (RC) (Alvino, Vaio, Hassan, & Palladino, 2021). IC is important because of its ability to make a big difference between a company's book value and its market value. It is considered a corporate weapon in today's business world and a competitive advantage because intellectual assets represent the hidden force that ensures the improvement of the performance and survival of these companies (Anghel, Marian, Cristea, Sichigea, & Noja, 2018). Since we live in the era of knowledge and technological progress, knowledge, skills, and information are the standard of competition today. Companies are working to develop these things that represent the components of IC (Kalio, Tamunomiebi, & Ikenna-Amadi, 2019). Whereas Nazir, Tan, & Nazir (2020) based on the Resource Based View (RBV) theory, concluded that the company could attract more investors, enhance success, create value, and improve its achievement by focusing on developing its IC. The

study confirmed that IC positively affects company performance and Employee Productivity. Also, previous studies showed that companies having higher IC help increase innovation and enhance performance. Many studies have also found that developing IC. It enables companies to continue to perform highly (Wang, Cai, Liang, Wang, & Xiang, 2018). In developing economies, previous research has found that IC increases company performance as it is an important source of competitive advantage (Hussin, et al., 2020). When studying this topic, according to Barney's RBV Theory (1991), a resource must meet four criteria: rare, valuable, irreplaceable, and cannot be imitated in order to become a potential resource. Therefore, it can be said that IC meets the criteria based on this theory as a unique resource to create a competitive advantage and thus improve the performance of the company in order to create added value for companies that help them achieve sustainable growth.

IC is also associated with the theory developed by Reed, Lubatkin, & Srinivasan (2006), "IC based theory," asserting that IC is the only basis for the entity that generates value-added and economic benefit because it is supernatural and difficult to replicate. Physical capital is a source that can be sold on and obtained from the open market and is exchangeable and imitable. Therefore, regardless of geographic location and Company Size (Size), IC is a performance enhancer of a company (Nadeem, Gan, & Nguyen, 2017).

There are a lot of intellectual assets in the form of human assets with a high level of academic degrees, intelligence, and intellectual property, such as trademarks, copyrights, patents, licenses, etc. Where even in the largest companies, to withstand intense competition, these companies must decide whether it is better to dismiss or retain the Directors and members of the board of directors, including Chief Executive Officers, as well as designers and technicians who receive large salaries and compensation in exchange for obtaining their fruitful intelligence output on Company performance and growth. According to traditional accounting standards, all such costs are treated as human and are written off periodically in the income statements. Pulić (1998) identified these costs as human assets and developed an IC assessment formula called VAIC.

Although IC is an intangible asset owned by the company, it is considered a driver of PERF and a producer of wealth in order to create a competitive advantage and sustain the company (Xu & Wang, 2018). However, knowledge related to IC is generated and

disseminated both internally and externally (Uzliawati & Djati, 2015). Over the past two decades, scholars have unanimously agreed that IC consists of three important components, namely human capital (HC), Structural Capital (SC), and RC (Sardo & Serrasqueiro, 2018).

HC represents the employees' creation of IC through their capabilities, knowledge, and competence, in addition to their agility, motivation, commitment, and loyalty (Morris, 2015). However, other components must be present to support HC, company culture, and sustainability, such as SC Bontis, Ciambotti, Palazzi, & Sgro (2018), which is organizational capital that includes organizational infrastructure, structures, and processes, such as databases and company plans as well as innovative capital (Smriti & Das, 2018; Chen, et al., 2013). Finally, RC represents the knowledge that belongs to the corporation as a whole (Tether & Tajar, 2008). It is believed to have a significant role in communicating with customers and suppliers (Xu & Wang, 2018).

Firms with strong SC can find a better match with RC and HC (Yaseen, Dajani, & Hasan, 2016). The added value that comes from the organization's relationship with suppliers, customers, and other stakeholders refers to RC which is known as customer capital (Midiantari & Agustia, 2020). The RC organizes and manages the company's external relations (Smriti & Das, 2018).

Moreover, the IC owned by the company and that is used to develop the company requires the support and effort of the employees and managers to continue to pay attention to the quality of work and to maximize everything they control in their field to increase the value of the company (Midiantari & Agustia, 2020).

The measurement of IC has received wide attention from researchers. Among the many methods developed by researchers to measure IC are the Intangible Assets Monitor (Sveiby, 1997), the balanced scorecard approach (Kaplan & Norton, 1996), and the value-added intellectual coefficient (VAIC) (Pulic, 2000). The measurement of the VAIC model was based on the efficiency of three types of firms' inputs: physical capital, HC, and SC, namely, CEE, HCE, and SCE. Their sum is the value of VAIC.

Many studies have examined the relationship between IC by focusing on HC and PERF. For example, Nour & AL Momani (2021) study was conducted in Amman. They found

that HC is the most important component of IC. However, the study found no effect of HC on PERF measured by ROE.

In line with the resource-based theory, Xu & Wang's (2018) research found that IC has a significant and positive impact on the PERF of Korean companies as well as on their sustainable growth. In addition, the three components of IC, HC, physical capital, and RC, are positively correlated with corporate performance and sustainable growth. And it was shown through this study that the most influential factor is RC. These results are consistent with the results of Mukherjee & Sen (2019) conducted in India, in which it was concluded that IC as a whole, physical capital, and all components of IC have an important role in explaining the sustainable growth of companies. The results also indicated that physical capital is the most important factor in explaining the sustainable growth of companies. The results of Lu, Li, Luo, Anwar, & Zhang (2021) also confirmed that IC has an important impact on sustainable growth in Pakistani and Chinese companies. At the same time, the results of this study indicated that RC and SC have insignificant sustainable growth in Chinese companies. Finally, Aseanty (2016) study believes that the sustainability of SMEs in Java in Indonesia will be more when the IC of human resources is increased.

1.6.2 The importance of intellectual capital

The concept of IC has gained significant traction within accounting research circles over the past two decades (Bamel, Pereira, Giudice, & Temouri, 2022). Recent research underscores the multifaceted nature of IC and its diverse components. IC, encompassing human, structural, and RC, is a critical resource in today's knowledge-based economy. Each component plays a unique role in creating value and driving organizational performance (Bontis, 1998).

The evolving business landscape demands a shift in accounting practices beyond the traditional focus on tangible assets. IC, encompassing a company's knowledge, experience, and practical capabilities Dumay (2016), represents a hidden reservoir of value with significant influence on corporate performance (Anghel, Marian, Cristea, Sichigea, & Noja, 2018). For instance, studies by Ahmed et al. (2023), "Intellectual Capital, Management Accounting Practices and Corporate Performance," and others demonstrate a clear connection between IC and financial success. IC fosters a competitive

advantage by promoting innovation and employee effectiveness, ultimately leading to improved organizational function and market value (The relationship between IC, firms' market value, and PERF). Furthermore, research by reference titled "Exploring the impact of IC on company reputation and …" suggests that HCE, a key component of IC, directly contributes to a strong brand reputation. This positive brand perception likely translates to stronger customer relationships crucial to long-term success. Finally, reference "Valuation of Intellectual Capital: the Performance Contribution Model …" explores the relationship between IC investment and its impact on profits. Their findings suggest that strategic investments in IC can generate additional earnings, highlighting the potential for direct financial benefits.

These studies collectively urge a paradigm shift within accounting, advocating for the recognition and measurement of IC alongside traditional tangible assets. By embracing a more holistic approach, accounting practices can accurately represent a company's true value and inform strategic decision-making for sustainable growth.

1.6.3 Determinants of Intellectual Capital

Many researchers have investigated the determinants of IC, and a number of key factors have emerged that impact its development, management, and disclosure. Brüggen, Vergauwen, & Dao (2009) point out that industry and firm size are affecting disclosure practices. This study says that knowledge-intensive industries where intangible assets are critical tend to disclose more information about their IC in annual reports. Besides, larger firms with more resources may be more transparent because of stakeholder expectations and their capacity to invest in solid reporting systems.

El-Bannany (2008) further elucidates the determinants of IC by focusing on the banking sector. His study in UK banks emphasizes the role of investment in information technology in enhancing IC performance. Banks investing heavily in IT infrastructure tend to have better IC performance. This shows that an organization's IT system must be sound for efficient knowledge management and effective utilization of its intellectual resources. The study also identifies bank efficiency as a positive IC performance determinant and high entry barriers into the market as a possible hindrance.

The study conducted by Hidayah and Adityawan (2017) considers IC performance in Indonesian Syariah Banks, identifying key factors that determine this performance. Their findings contradict the conventional belief that high PERF leads to high IC performance. Curiously, they found a negative association between bank profitability and risk, on the one hand, and the bank's IC performance, on the other hand. This indicates that there are other factors unrelated to mere financial success that influence having strong IC in Syariah Banks.

The study also uncovered a positive relationship between market concentration and IC performance. The implication is that Syariah Banks are able to reap a greater benefit from investing in knowledge creation, innovation, and employee development in a less competitive environment, eventually leading to the strength of IC. Barriers to entry, bank size, and bank age exhibited no significant influence on IC performance in this regard. Therefore, there is a need for further exploration into the dynamics of factors distinguishing IC in the domain of Islamic banking.

1.6.4 Measures of Intellectual Capital

Establishing a robust measurement for IC is crucial for capturing its multifaceted value within organizations. This section explores three prominent approaches documented in the accounting literature, each offering unique insights into quantifying IC. Building the foundation for empirical measures of IC Bontis, Ciambotti, Palazzi, & Sgro (1998) employed robust statistical techniques like principal components analysis and partial least squares. This groundbreaking work resulted in a structural model that establishes a significant causal link between the various dimensions of IC and a company's business performance. While the model incorporates some subjective measures, its validity and reliability have been well-established. This model's subjective measures and structural specifications have proven valid and reliable, contributing substantially to understanding and developing organizational IC (Bontis, Ciambotti, Palazzi, & Sgro, 2018).

Bontis (2004) introduced the National Intellectual Capital Index (NICI) to expand the scope of measurement beyond the firm level. This comprehensive methodology provides a framework for assessing nations' IC. The NICI model emphasizes HC as a critical component of a country's intangible wealth and utilizes a structural equation model to test national IC development hypotheses. This macro-level perspective on IC measurement

offers valuable insights for policymakers and planners. By analyzing a nation's intellectual resource base, policymakers can formulate strategic plans that nurture and strengthen this critical asset for sustainable development (Bontis, 2004).

Another work by Jardon and Martinez-Cobas (2021) proposed a quantitative approach that utilizes readily available financial data to measure IC. Their innovative method goes beyond simple financial measures. It employs triangulated indices, combining component indicators like Research And Development (R & D) expenses with holistic indicators like Tobin's Q. This allows for the differentiation of individual IC components from the overall stock, ultimately providing a monetary valuation of IC. Utilizing a structural equation model, this method facilitates cross-country and cross-industry comparisons of IC, making it a valuable tool for companies seeking to benchmark their intangible assets against competitors. More importantly, Jardon and Martínez-Cobas' approach opens up novel opportunities for IC disclosure, potentially leading to greater transparency in financial reporting (Jardon & Martinez-Cobas, 2021).

1.6.5 Human Capital

The first component of IC is HC. HC is a critical component of the company. A company's ability to innovate, know-how, be competent, have skills, and have other invisible workforce characteristics that can generate value for the firm stems from its HC, which is currently its most prized asset. HC encompasses the company workforce's human resources and more precise individual competency needs in the form of employee knowledge, skills, and qualities (McGregor, Tweed, & Pech, 2004). Employees are regarded as the proprietors of their HC. Therefore, it is moveable and does not belong to a certain organization. Stewart (1998) defines HC as "the place where all the ladder begins: the source of innovation, the first page of insight." According to Bontis, Keow, & Richardson (2000), HC is crucial since it serves as a strategic source of innovation for firms. Companies will gain more if they can effectively utilize and expand their knowledge, skills, and competencies. According to HC theory, organizations can benefit from their employees' talents, experience, and knowledge. Kannan & Aulbur (2004) argued that the worth of an organization's HC is determined by how much it invests in its employees' education, skills, and opportunities for development. According to Luthy (1998), HC refers to an organization's ability to overcome business issues through the combined efforts of its employees.

1.6.6 Capital Employed

Different settings may have an impact on the definition of capital utilized. The amount of capital the business has put into current and non-current assets is referred to as "capital employed." It equals the total future liabilities minus current obligations plus shareholders' equity. It measures how much cash a company needs to operate and how it is spending that capital. Net debt and owners' equity finance are two popular fundraising methods. Often included are stocks, machinery and equipment, and accounts receivable (Muhammad, Isa, & Ismail, 2008). According to Onyekwelu & Ubesie (2016), the CEE ratio will be used to measure how much value has been added to the total book value of assets. Capital employed will be considered financial capital, and CEE is computed by dividing Value Added (VA) by Capital Employed (CE). It acts as a barometer of managerial efficacy with respect to revenue, profitability, and other performance indicators, as well as in contrast to other companies in the same sector. VA/ CE is the formula used to determine CEE. The amount of money used affects the ability to generate revenue. The ability to generate income is influenced by the amount of money used, so using capital wisely can enhance a company's success (Okpe, Emmanuel, & Blessing, 2022).

1.6.7 Structural Capital

When a company talks about its SC, it means that its business functions, production processes, business culture, management philosophies, and all forms of intellectual property are all part of the company. These structures and procedures support employee efforts to generate the highest appropriate intellectual performance as well as increased profitability. A company's rules and practices may prevent its IC from performing at full capacity, even if a person is bright. The infrastructure that allows individuals to perform to their full potential comprises the organization's market access, organizational structure, intellectual property rights, and ability to promote employee productivity (Bontis, 2001). SC allows for the creation of IC while acting as a conduit and engine for human resources. Following the input of human skill, the enterprise's expertise or "know-how" becomes SC (Bontis, 1998). Businesses own SC, which includes organizational systems, RC, and innovative capital (Roos, Roos, Dragonetti, & Edvinsson, 1997). As previously stated, Muhammad, Isa, & Ismail (2008) defined SC as the supporting architecture that allows an organization to use its IC. Employee trust, transparency, and culture are the three

pillars of completely intangible success. Consequently, organizations with strong SC generate an environment where people are encouraged to experiment, gain knowledge, and practice (Bontis, Keow, & Richardson, 2000).

1.6.8 Corporate Sustainable Growth

From a financial perspective, sustainable growth is defined as “an affordable growth that can be sustained profitably for future benefits” (Mukherjee & Sen, 2018). Higgins (1977) proposed the concept of SGR, through which he showed that under the assumption of specific financial framework conditions and a certain strategy, optimal growth is described from a financial perspective. Van Horne & Wachowicz (2009) explain the concept of SGR as sales growth that corresponds to the financial market and the company's reality. In a clearer sense, The Company can use its internal funds without borrowing from financial institutions or banks at the maximum rate to achieve its growth. The SGR is widely used for long-term planning regarding sustainable growth, cash flow forecasts, capital acquisitions, and borrowing strategies.

1.6.9 Factors Affecting Corporate Sustainable Growth

The multifaceted nature of corporate sustainable growth necessitates a thorough understanding of the factors influencing it. This section synthesizes prominent research within accounting literature to illuminate these key determinants. Ya-mei, Ling, & Ya-xing (2012) employed a factor analysis model, incorporating considerations of corporate governance and resource utilization, to test the impact of various factors on sustainable growth. The analysis identified eight key elements, including shareholders' cash flow rights and the Herfindahl-Hirschman Index (HHI), which captures market concentration. Significantly, the results highlight the critical role of both improved resource utilization and enhanced governance capacity in driving sustainable growth for private listed companies.

Shifting the focus toward strategic management, Drobyazko, Okulich-Kazarin, Rogovyi, Goltvenko, & Marova (2019) emphasize the dependence of corporate sustainable development on an interplay of internal and external factors. The study identifies several key factor groups influencing sustainable development: economic factors (resource availability, regional well-being, GDP, organizational factors (management systems, production organization), technical and technological factors (level of automation, the

latest products, and technologies), social factors (income level, social security, socio-psychological climate, relationships in the external and internal environment), and psychophysiological factors (product satisfaction, consumer preferences, substitute products, cultural considerations, habits). Furthermore, the internal or external nature of each factor's impact is crucial to consider. By acknowledging this multifaceted nature, companies can develop more comprehensive and effective strategies for achieving long-term sustainable growth.

From a financial stability perspective, Viktoriia, Borisova, & Lazarev (2021) delve into the problems of evaluating corporate growth and propose growth models centred on the rate of profit reinvestment. They argue that this metric forms a company's financial health foundation, which is essential for achieving sustainable development. The study emphasizes that a company's life cycle stage primarily influences the level of profit reinvestment. Therefore, determining the optimal growth rate, calculated by these models, becomes crucial for ensuring sustainable development. The universality of these models lies in their applicability across various companies regardless of factors like share availability, dividend payments, or organizational form. Interestingly, the dynamics of the average growth indicators mirrored changes in general market trends, highlighting the critical role that the growth of large, system-forming companies plays in driving the overall economic growth of a nation.

Liao et al. (2022) introduce a groundbreaking perspective by investigating the influence of green innovation on corporate sustainable development. Their research unveils a significant positive correlation between a company's engagement in green innovation and its ability to achieve sustainable growth. Interestingly, the study delves deeper, revealing that only invention patents associated with green innovation demonstrably improve sustainable development.

1.6.10 Financial performance

The company's PERF indicates a financial procedure so that the company works to manage its assets (current and non-current) to achieve profits, which contributes to increasing the firm's value (Naz, Ijaz, & Naqvi, 2016). Various measures are used to measure PERF, such as ROE, which is the ratio of net income divided by shareholders' equity, and ROA, which is the ratio of net income divided by the company's total assets.

1.6.11 Other variables used in the research, such as Size, liquidity, and Asset Efficiency (AE)

The size of the company is considered one of the important determinants that affect its performance of the company. On the one hand, large companies enjoy the resources they need to enable them to invest in technological development, which is positively reflected in their performance (Tang, Park, Agarwal, & Liu, 2020). On the other hand, the larger the company's size will reduce the amount of cash available in the company since the increase in the size requires an increase in the number of funds needed for active payment and thus will negatively affect the performance and the SGR of companies (Mumu, Susanto, & Gainau, 2019). However, having a company with large total assets indicates that it has reached maturity., This is reflected in the longevity of good expectations and positive cash flows. Large Companies are more profitable and relatively more stable compared to companies with lower total assets (Bandanuji & Khoiruddin, 2020).

According to the free cash flow theory, the presence of cash flow in excess of the company's need (excess liquidity) prompts managers to use this liquidity in excess projects that do not benefit the company, which causes one of the agency's problems. Accordingly, excessive liquidity negatively affects the company's performance. The study of Susanti, et al. (2021) justified that the excessive increase in the liquidity ratio indicates the presence of excessively idle cash in the company that is not being used effectively, which may negatively reflect the company's performance. Nevertheless, the company's reasonably high liquidity indicates its ability to manage its financial resources well, which will enable the company to pay off its current debts using current assets, leading to higher profits and better performance, which contributes to achieving sustainable growth.

Moreover, performance and the company's sustainable growth are positively affected by the increase in the efficiency of the company's assets (measured by the asset turnover increases in the sales generated for each round in assets) because sales growth will be achieved without the need for new assets (El Madbouly, 2022). In addition, the efficient use of the asset to increase income enables the company to quickly convert the asset to a sale or cash, which enhances the performance and sustainability of the company's growth, increasing shareholders' wealth (Miswanto & Oematan, 2020).

1.6.12 Theoretical basis

This section describes two literature topics that provide the theoretical basis for this research. First, it introduces the RBV, whereby a company based on a set of bundle resources uses them to achieve the company's performance. Second, the stakeholder theory demonstrates that all resources, especially those that underpin competitive advantage, must be managed to benefit all stakeholders, not just shareholders. Finally, this section presents other relevant theories that build the theoretical basis for this research.

Resource Based View (RBV)

RBV is widely accepted as one of the foremost theories for describing, explaining, and predicting the relationship between IC and various variables (Barney, 1991). According to the Resources-Based View Theory, the company is characterized by the resources that enable it to possess a competitive advantage, which makes the company achieve outstanding performance in the long term by its ability to manage these resources. The resources owned by the company are divided into three sections and include first, physical resources (such as equipment, factories, technology, and raw materials), secondly human resources (such as knowledge, experience, and training), and finally, organizational resources (such as formal structures). The Resources-Based View Theory assumes that a certain group of these resources represents the company. What makes companies different from each other is the way and nature of the resources that each company collects is different from the other. Companies that can distinctly manage all these resources gain a competitive advantage, allowing them to compete for a long time. Additionally, Barney (1991) indicates that a resource must meet four criteria, which are rare and valuable, cannot be replaced, and cannot be imitated in order to become a potential resource. Therefore, it can be said that IC meets the standards based on this theory as a unique resource to create a competitive advantage and thus improve the performance of the company in order to create added value for companies that help them achieve sustainable growth.

In IC literature, a large body of scholarly works has accepted the RBV as the key theoretical background to describe how IC can be a basis of competitive advantage, outstanding performance, and thus sustainable growth (Lu, Li, Luo, Anwar, & Zhang,

2021; Khan & Park, 2020; Nnubia, Okolo, & Emeka-Nwokeji, 2019; Mukherjee & Sen, 2019). In line with the RBV Theory (Khan & Park, 2020), the study found a positive relationship between HC and the PERF of the banking sector in Kenya. Moreover, the study results of Nnubia Okolo, & Emeka-Nwokeji (2019) conducted on Nigerian non-financial companies showed that both the efficiency of HC, SC, and the efficiency of capital employed positively impact performance.

Nazir, Tan, & Nazir'S (2020) study showed that the efficiency of IC in general positively and significantly affects the profitability of financial institutions. However, the study revealed that structural and HC do not significantly affect the performance of financial institutions in Hong Kong and Taiwan.

Though most of the previous studies that adopted the RBV indicate a positive impact of IC on company performance, Buallay's (2017) study found that IC does not significantly affect the operational performance of Saudi companies measured by ROA. However, HC has an important and positive impact on PERF, as measured by ROE. Moreover, this study finds that the efficiency of SC significantly and negatively impacts market performance. As for the efficiency of Capital Employed, it has a significant and positive impact on the performance of Saudi companies in the market.

Further, the resource-based theory considers that owning companies' technological resources and efficiently using unique technological capital is important as a means of growth and achieving competitive advantage, enabling companies to be profitable and achieve sustainability (Saadi & Razak, 2019). In addition, according to the basic competency theory, the company's possession of different capabilities is not easy for competitors to imitate through core competencies and technological resources, enabling the company to gain and maintain a competitive advantage (Park, Chung, Kim, Kim, & Lee, 2021).

- Stakeholder theory

The stakeholder theory offers novel insights to support further this research, which holds that companies should carry out activities beneficial to stakeholders such as shareholders, suppliers, consumers, government, communities, and other parties and not act solely for their interests. In addition, these companies are supposed to report on all these activities

for all stakeholders. Based on stakeholder theory, managers manage the organization for the benefit of all stakeholders by understanding the company's environment and, thus, more effective management. Managers are required to minimize losses to stakeholders and attempt to create value for the company through the ability to manage the company optimally (Ulum, 2017). The excellent management of all the company's capabilities is a tool that will create added value and contribute to achieving performance that leads to sustainable growth (Agustia, Asyik, & Midiantari, 2021).

Moreover, the results of Zeghal & Maaloul's (2010) study also agreed with the stakeholder theory, and the most prominent of these results is that the IC coefficient has a positive and significant role in the PERF of British companies. This finding supports that IC has an overall role in creating value for all stakeholders, including shareholders. This research also revealed that the main factor in determining the performance of the stock market and the PERF of companies is the capital employed, although the economic performance is negatively affected by it.

To create value for a company within the highly competitive and risky business environment, it is necessary to support IC with technological capabilities as essential resources to create a competitive advantage and business continuity and growth in this era as resources difficult to imitate by competitors from the point of view of resource-based theory (Wang, Su, Wang, & Zou, 2019; Wang, Liang, Zhong, Xue, & Xiao, 2012). However, these two resources are a great cost to companies and, therefore, must be managed optimally to achieve benefits more than their cost. Otherwise, they will negatively affect the company's ability to continue achieving profit and business growth. This will be reflected in one way or another in the degree of LEV adopted by the company according to the ability of these two resources that are indispensable for the company's growth to generate benefits that exceed their costs, which will ultimately affect all stakeholders according to the stakeholder theory.

- Other relevant theories

According to Trong & Nguyen (2020), the free cash flow theory stands out when there is excess cash and encourages managers to overinvest with the primary objective of increasing the investments under control, while these investments may not provide a company with any value. The researchers argued that the free cash flow theory indicates

that excessive investment behavior can be curbed by reducing the company's cash flow through several methods, including leverage and dividends. This will encourage managers to invest only in feasible projects to cover their obligations. This highlights the importance of using the policy of LEV as a tool to curb excess investment (which represents one of the agency's problems), which reflects positively on performance and sustainable growth. Further, IC should be considered as the driving force for LEV (Jin & Xu, 2022).

Moreover, according to RBV, sources of competitive advantage launch with the idea that a company's resources may be immobile and mixed (Barney, 1991). This can be obtained through the IC in addition to the necessity of technological capabilities that represent the basis for the growth and survival of the company. Previous studies combined RBV with other theories, for example, the IC-based theory (Reed, Lubatkin, & Srinivasan, 2006), the Competency theory (Park, Chung, Kim, Kim, & Lee, 2021), and the competitive strategy theory (Wang, Liang, Zhong, Xue, & Xiao, 2012). IC, on its own, may not meet the criteria for being a potential resource according to the RBV theory, and technological capabilities cannot create value in a vacuum (Chen, et al., 2013). Thus, IC must be combined with other technology capabilities to create value for a company in the business world.

1.7 Literature Review and Hypotheses Development

1.7.1 Intellectual capital and sustainable growth

As for the VAIC components, through which the IC is measured, investors set different values for them, whereas the value-added efficiency is measured by HCE by HC and SCE by SC. As for the dimensions of physical capital, it is measured by CEE. Xu & Wang (2018) found, through a study on Korean companies, that the various IC components positively affect the performance and sustainable growth of these companies.

As mentioned above, IC is necessary for corporate sustainability Smriti & Das (2017), as there was agreement in the majority of studies on the positive relationship between IC and the sustainable growth of companies. Mukherjee & Sen (2019) emphasized the positive relationship between IC and the sustainable growth of listed non-financial Indian companies. Ali & Ali (2012) concluded that IC is the basis for competitive leadership and sustainable growth. Also, the results of Lu, Li, Luo, Anwar, & Zhang (2021), using data

from Pakistani and Chinese companies, confirmed that all IC dimensions positively affect the differentiation strategy except for RC in Pakistani companies. In addition, IC has an important impact on the companies' sustainable growth. Based on this, the second hypothesis in the research can be formulated as follows:

H01: IC significantly affects the sustainable growth of industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.

The three components of IC (physical capital, HC, SC) may have different impacts on the sustainable growth of companies. Where companies can obtain physical capital resources such as cash assets, machinery and equipment, and accounts receivable freely and quickly from the market, so it is not considered rare. Generally, manufacturing companies depend on physical assets to a large extent in their daily operations, so a large percentage of investments such as these companies are in physical assets. Zhang & Yu (2008) found that physical capital has a greater effect than SC and HC on sustainable growth using data from 92 Chinese knowledge-based firms. Pulic (2004) emphasizes that for a comprehensive view of the efficiency of value-creating resources, it is important to consider physical and financial resources. However, previous studies indicate that the most important component of IC is HC. Companies with higher HCE showed superior commercial and PERF (Nassar, 2018).

Moreover, HC contributes in the long-term process of a company to the creation of SC Edvinsson & Malone (1997). However, it is a long-term process for SC to accumulate. Therefore, Zhang & Yu (2008) concluded that the lack of SC is dominant in the first stage in Chinese knowledge-based companies. Thus, from the first hypothesis emerges the following hypotheses:

H01a: Having a greater CEE leads to higher sustainable growth in industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.

H01b: Having greater HCE leads to higher sustainable growth in industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.

H01c: Having a greater SCE leads to higher sustainable growth in industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.

1.7.2 Control variables

Sundas & Butt (2021) concluded that the company's size is positively related to the company's performance measured by the ROA. The researchers pointed out that increasing the size of the company facilitates access to funding sources because, in the eyes of society, fairly large companies have a good reputation, which positively affects performance. The study of Susanti, et al. (2021) also found that the increase in the liquidity ratio of a company affects its performance measured by the ROA. The high liquidity of a company indicates its ability to manage its financial resources well, which will enable the company to pay off current debts using current assets, which will be positively reflected in achieving higher profits and, thus, better performance of the company. However, the company may not be in good condition if the liquidity ratio increases excessively because this indicates excessively idle cash in the company that is not used effectively, negatively affecting the performance. Further, Miswanto & Oematan (2020) concluded that the efficiency of assets positively affects performance, given that if the total turnover of assets increases, the same size of assets increases the volume of sales, which positively affects profitability and performance.

Referring to previous studies such as Mumu, Susanto, & Gainau (2019), it was found that there is a negative relationship between the size of the company and the corporate SGR. The larger the size of the company, the greater the amount of funds needed for active payment, which will reduce the amount of cash available in the company. Thus, the SGR of companies will be negatively reflected. This study also found that liquidity is positively and significantly related to the SGR. Since liquidity is the company's ability to pay off short-term liabilities, it is unlikely to lead to bankruptcy. So, sustainability may be negatively affected if the company does not have sufficient liquidity to pay its debts. In other words, sustainable growth will be positively affected as liquidity increases.

Further, (Rahim & Munir's (2017) study found that the SGR is positively affected by the efficiency asset since the company's performance will be better the faster it can sell the asset and convert it into cash. Finally, as mentioned in previous studies, the PERF variable

appears to impact all the variables mentioned in this research. At the same time, the PERF of companies provides information on the expectations of sustainable growth (Ullah, et al., 2021). Diversification of company revenues is important to PERF, which in turn supports healthy growth without facing any financial problems (Al-Slehat & Altameemi, 2021). A study by Johnson & Soenen (2003) proved that a profitable and large company with effective planning and capital management will achieve outstanding performance toward a high SGR. The performance and prosperity of companies can be measured through the rate of sustainable growth (Rahim, 2017). Sustainable growth is a major indicator for the company and is closely related to the company's performance, but it is expressed in a more comprehensive form than the traditional performance indicators.

H02: Firm size, liquidity, asset efficiency, profitability and GDP growth significantly affect the sustainable growth of industrial companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.

H03: There is a statistically significant difference in the effect of IC on sustainable growth between the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Cairo Stock Exchange.

Chapter Two
Research Methodology

2.1 Introduction

This section discusses the data sources, study sample, variable measurements, study models, and research methodologies used in this study.

2.2 The Sample of the Study and Data Collection

The research uses the data obtained from the annual reports of the industrial companies listed on the Palestine, Abu Dhabi, and Egypt Stock Exchanges from 2014 to 2021, as it closely fits the business environment required to measure the relationship between the research variables. This comprised 13 Palestinian industrial companies 18 companies from the industrial sector on the Abu Dhabi Stock Exchange. Similarly, the researcher focused exclusively on selecting industrial companies listed on the Egyptian Stock Exchange. However, the exchange did not explicitly identify a specific sector for industrial companies, with 244 companies distributed across 17 different sectors (Almor, 2024). To address this, the researcher classified Egyptian companies as industrial and thus part of the sample based on specific criteria aligned with the concept of industrial companies and the targeted sample period:

1. The shares of these companies were traded during the research period (2014-2021).
2. The stated purpose or objective in the companies' annual financial reports includes the production or manufacturing of any goods.
3. They have sufficient data available to measure the variables under study.

After the researcher's deliberate and selective determination, the number of industrial companies registered on the Egyptian Stock Exchange was 68, distributed across seven sectors (Industrial Goods, Services and Automobiles, Health Care & Pharmaceuticals, Food, Beverages and Tobacco, Textile & Durables, Paper & Packaging, Building Materials, and Basic Resources). This was after excluding the observations of companies that did not have published financial reports during the study period, companies with missing and undisclosed data required to measure the study variables, companies whose shares were suspended from trading during the study period, and companies that were delisted. Table (14) shows the tabulation of the industrial companies listed on the

Egyptian Stock Exchange included in the research sample according to the sectoral classification. Thus, the total final sample of companies for the research, distributed across the three stock exchanges (Palestine, Abu Dhabi, and Egypt), became 99 companies with a total of 708 observations. Table (13) in appendix (A) shows a summary of the final sample size used in the study.

The current study is based on a comprehensive examination of the financial statements of industrial companies listed on the Palestine Exchange, the Abu Dhabi Securities Exchange, and the Egyptian Stock Exchange, with a focus on a carefully selected sample that also includes Egyptian industrial companies. The data used included financial statements, detailed notes, and board of directors' reports, available in Egyptian companies' cases. This data was collected from reliable sources on the internet, including:

- The official websites of the Palestine Exchange, the Abu Dhabi Securities Exchange, and the Egyptian Stock Exchange.
- Mubasher website for financial information
- Misr Information Services & Trading (MIST)
- Egypt for Information Dissemination EGID

The selection of industrial companies listed on the Egyptian Exchange, the Abu Dhabi Securities Exchange, and the Palestine Exchange for this research is rooted in their strategic relevance and unique economic contexts. Industrial companies are typically capital-intensive and operate in highly competitive markets, requiring continuous product development at low costs to sustain their competitiveness. This makes them ideal for exploring the role of IC in driving sustainable growth, as such efforts often hinge on leveraging human, structural, and technological capital. In contrast, sectors like banking, insurance, and investment generally focus more on financial services and risk management rather than continuous innovation and cost efficiency. Egypt’s industrial sector faces the added complexity of operating within a densely populated, class-stratified society, while Abu Dhabi’s firms navigate the challenges of integrating advanced technologies and a diverse workforce. Palestinian industrial companies, under significant economic constraints, offer valuable insights into how IC fosters resilience and sustainability.

2.2.1 The Palestine Exchange (PEX)

The Palestine Exchange (PEX) aims to attract a wide range of regional and worldwide investors, including individuals from the Palestinian Diaspora. The Palestine Exchange was established as a private joint stock company in 1995. In response to the rules of good governance, the stock exchange in 2010 turned into a public joint stock company. It was listed for trading on April 4, 2012, placing second among Arab stock exchanges (The Palestine Exchange , 2019). In 2024, the number reached 49 companies with a Market value of 4,6 million dollars (The Palestine Capital Market Authority, 2024), categorized into five sectors: insurance, banking, investment, services, and industry. Where ordinary shares are traded in the currency of the dollar and the Jordanian dinar. Since its establishment, it has been subject to the supervision of the Palestinian Ministry of Finance until 2005, when the Palestinian Capital Market Authority was established, and the stock exchange began operating under its supervision. All companies listed on the Palestine Exchange are required to use IFRS standards (International Financial Reporting Standards Foundation, 2024).

2.2.2 The Egyptian Exchange

The Egyptian Exchange (EGX), founded in 1883, stands as one of the oldest stock exchanges in the Middle East and Africa. Initially established as the Alexandria Stock Exchange, it later expanded to include Cairo, cementing its role as a key financial institution in the region. Over the years, the EGX has undergone significant modernization and regulatory reforms, including implementing electronic trading systems and adherence to international standards, which have bolstered investor confidence and market efficiency. The exchange boasts a diverse array of sectors such as banking, real estate, Health Care & Pharmaceuticals, and Education Services, reflecting the broad spectrum of the Egyptian economy. Furthermore, the EGX has launched several strategic initiatives to enhance transparency, improve liquidity, and attract both local and foreign investors, ensuring its continued growth and resilience in a dynamic global market (The Egyptian Exchange , 2024).

2.2.3 Abu Dhabi Securities Exchange

Abu Dhabi Securities Exchange (ADX) was established on November 15, 2000, as a market for trading securities, including shares issued by public joint stock companies, debt instruments issued by corporations or governments, exchange-traded funds (ETFs), and other financial instruments approved by the UAE Securities and Commodities Authority. ADX aims to be a leading securities exchange by fostering a secure, transparent, and efficient marketplace that attracts local and international investors, thereby driving sustainable economic growth and contributing to the UAE's vision of becoming a global financial hub. Early in 2024, there were 82 companies with a combined market value of more than 2.5 trillion AED (CEIC, 2024) across a variety of sectors such as energy, industrial, and financial services. ADX is the second largest market in the Arab area, and its aim of delivering solid PERF with diverse sources of income is consistent with the UAE's "Towards the Next 50" agenda. The UAE's strategic development plan, which aspires to create a high-value, diversified, and sustainable economy that helps the world shift to a new paradigm for sustainable development, is outlined in the national plan (Abu Dhabi Securities Exchange , 2024).

2.3 Research variables

2.3.1 The Independent variable

There are various measurements of IC that capture its multifaceted value in businesses. Bontis (1998) employed advanced statistical techniques, resulting in a structural model that links various dimensions of IC to business performance. This model's validity and reliability have been well-established, making it a significant contribution to understanding IC. Bontis (2004) expanded this scope with the National Intellectual Capital Index (NICI), emphasizing HC as a critical component of a country's intangible wealth and providing valuable insights for policymakers. Jardon and Martinez-Cobas (2021) proposed a quantitative approach using financial data, combining component indicators like R&D expenses with holistic indicators like Tobin's Q. Among these, the Value Added Intellectual Coefficient (VAIC) and its three components— CEE, HCE, and SCE measures, developed by Pulic (2000), is chosen as the best for this research due to its comprehensive approach and practical applicability in capturing the strategic importance and breadth of IC activities (Xu & Wang, 2018).

2.3.2 The dependent variables

This research will use the companies' sustainable growth as a dependent variable. In sustainable growth models, several approaches offer unique perspectives on how firms can achieve and maintain growth. Van Horne's model defines the SGR as the maximum annual percentage increase in sales that can be achieved based on target operating, debt, and dividend-payout ratios. This model quantitatively describes SGR through the variance of sales income, incorporating factors such as net profit margin, asset turnover, retention rate of return, and equity multiplier. Zakon's model, often associated with the Boston Consulting Group, emphasizes the role of financial policies and profitability, using a formula that integrates the debt-to-equity ratio, ROA, interest rates, and retention ratio (Manaf, et al., 2018). The simple model, on the other hand, focuses on the retention rate, after-tax earning power, after-tax cost of borrowing, and debt utilization to determine a firm's sustainable growth (Fonseka, Ramos, & Tian, 2012; Amouzesh, Moeinfar, & Mousavi, 2011).

Van Horne's model is chosen as the best for this research due to its comprehensive approach and practical applicability in evaluating whether projected sales are realistic goals. This model's robust framework makes it particularly effective for assessing a firm's growth potential and guiding financial decisions. The SGR model is an effective tool for ensuring that a company's financial goals, operational efficiency, and sales growth targets are consistent (Xu & Wang, 2018).

2.3.3 Control variables

The following variables were used as control variables in the research:

1- Size: It is measured by the natural logarithm of total assets (Mumu et al., 2019).

2- Liquidity: It is measured by Quick ratio (current assets – inventories) / current liabilities (Trong & Nguyen, 2020).

3- Asset Efficiency: It is measured by the total asset turnover ratio (Rahim, 2017).

4- PERF: It is measured by ROE (Smriti & Das, 2018).

5- GDP Growth: Gross Domestic Product (GDP) growth is a key indicator of economic performance, measured as the percentage increase in the value of goods and services produced by an economy over a specific period, typically quarterly or annually.

Table (1)

Summary of the variables

Variable type	Variable	Symbol	Measurement method	Source
Independent variables	Intellectual capital (Value Added Intellectual Coefficient)	VAIC	The sum of capital employed efficiency, human capital efficiency, and structural capital efficiency	(Xu & Wang, 2018) (Al Momani et al, 2021)
	capital employed efficiency	CEE	CEE = VA/ capital employed = VA/ The difference between total assets and total liabilities	(Xu & Wang, 2018) (Al Momani et al, 2021)
	human capital efficiency	HCE	HCE = VA / human capital =VA/ salaries and wages of all employees	(Xu & Wang, 2018) (Nour et al., 2022)
	structural capital efficiency	SCE	SCE = structural capital / VA = the difference between VA and human capital/ VA	(Xu & Wang, 2018) (Nour et al., 2022)
dependent variable	Sustainable Growth Rate	SGR	SGR = Net profit ratio× Asset turnover ratio× Retention rate× Equity multiplier	(Xu & Wang, 2018) (Fonseka et al, 2012)
Control variables	Company Size	SIZE	Natural logarithm of total asset	(Mumu et al, 2019) (Vuković et al, 2022)
	Liquidity	Liquidity	Quick ratio (current assets – inventories) / current liabilities	(Trong & Nguyen, 2020), (Fosu, 2013)
	Asset Efficiency	AE	total asset turnover ratio(Sales / Total Assets)	(Rahim, 2017) (Rahim & Munir, 2018)
	financial performance	PERF	Return on Equity (Net Income / Total Shareholders' Equity)	(Zeitun & Tian, 2014) (Smriti & Das, 2018)
	Gross Domestic Product Growth	GDP Growth	(GDP in Current Period - GDP in Previous Period/GDP in Previous Period)×100	(World Bank, 2023)

Where VA is the net value created by a particular firm during the year; It is measured by

VA = C + D + A + OP

Where C is employee salaries, D is depreciation, A is amortization, and OP is operating profit.

2.4 Research Models

1. Models (1)–(2): are applied to examine whether those IC variables affect companies' sustainable growth (direct effect). Models (1)–(2) are as follows:

$$\mathrm{SGR}_{i,t} = \beta_0 + \beta_1 \mathrm{VAIC}_{i,t} + \beta_2 \mathrm{SIZE}_{i,t} + \beta_3 \mathrm{Liquidity}_{i,t} + \beta_4 \mathrm{AE}_{i,t} + \beta_5 PERF_{i,t} + \beta_6 GDP_{i,t} + \varepsilon_{i,t} \quad \ldots\ldots (1)$$

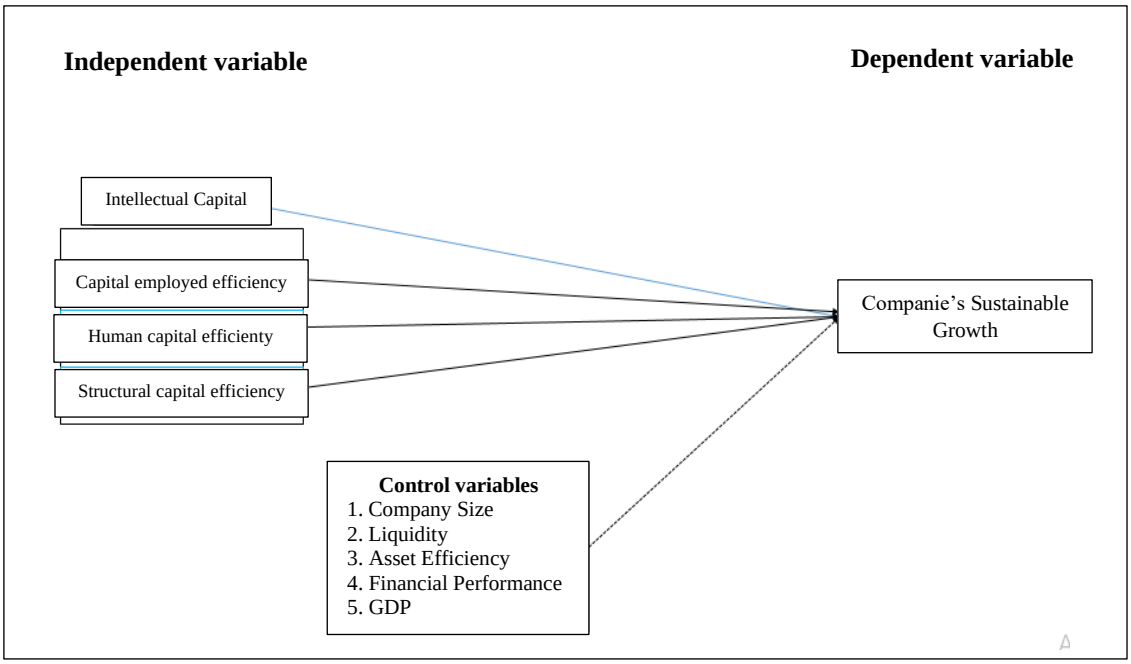
$$\mathrm{SGR}_{i,t} = \beta_0 + \beta_1 \mathrm{CEE}_{i,t} + \beta_2 \mathrm{HCE}_{i,t} + \beta_3 \mathrm{SCE}_{i,t} + \beta_4 \mathrm{SIZE}_{i,t} + \beta_5 \mathrm{Liquidity}_{i,t} + \beta_6 \mathrm{AE}_{i,t} + \beta_7 PERF_{i,t} + \beta_8 GDP_{i,t} + \varepsilon_{i,t} \quad \ldots\ldots (2)$$

B0 is a constant and B1 is the regression coefficient

εi,t are error term is i, at current time period t

Figure (1)

Research Model



2.5 Methodology

This study examines the effect of IC on Companies' Sustainable Growth for companies listed on the Palestine Exchange, the Abu Dhabi Stock Exchange, and the Egypt Stock Exchange. IC is measured using the VAIC model, including three inputs: CEE, HCE, and SCE (Xu & Wang, 2018). Regression analysis of data obtained from the annual financial reports for the period covers 2014-2021. Due to the lack of studies that dealt with these

variables combined around the world in general and in Palestine, Abu Dhabi, and Egypt in particular, according to the researcher's knowledge, the research will be conducted on Palestinians, Abu Dhabi, and Egypt, focusing on the industrial sector.

2.6 Statistical Analysis Methods

Statistical computing employs various techniques to analyze social and natural phenomena, using programs such as, SPSS, Minitab R, and Python. R, an open-source language and environment for statistical analysis, supports many methods, including linear and nonlinear modeling, statistical testing, and time series analysis. CRAN, established by Kurt Hornik and Friedrich Leisch in 1997, is a global network providing updated R code and documentation, with its primary site at the Vienna University of Economics and Business. This research uses R to analyze data, applying linear regression coefficients to evaluate the impact of independent variables on the dependent variable (Abualhassan, et al., 2024; Nawajah, et al., 2024).

Chapter Three
Data Analysis and Findings

3.1 Introduction

In order to pursue the objectives of this study, this chapter explores the analysis of data obtained from the annual financial reports of selected sample firms. Several statistical techniques were adopted in deriving the necessary results, thereafter answering the research question in either support or refutation of its hypotheses. The statistics were displayed by country. It should be noted that the R statistical computer program was utilized in the analysis of data. The approach taken in the analysis entails descriptive statistics to characterize the mean, median, maximum, minimum, and standard deviation of research variables. Additionally, correlation coefficient analysis was used to clarify the nature of the relationship that exists between the variables, and linear regression coefficients were then applied to assess the extent and intensity of the effect exerted by the independent variable on the dependent variables.

3.2 Descriptive Statistics

3.2.1 Overall Results of Descriptive Statistics

The descriptive data for the sample (Abu Dhabi, Palestine, and Egypt industrial companies) is presented in Table (2). The SGR ranges from -39.69 to 15.43, with a mean of 0.031 and a Standard deviation of 1.772. CEE ranges from -13.62 to 22.25, with a mean of 0.465 and a Standard deviation of 1.699. HC. Efficiency takes a value from -19.44 to 110.1, with a mean of 3.419 and a Standard deviation of 6.487. The SCE takes a value from -19.76 to 26.59, with a mean of 0.603 and a Standard deviation of 1.717. Size ranges from 5.89 to 10.7, with a mean of 8.665 and a Standard deviation of 0.913. Liquidity variable ranges from 0.007 to 113.1, with a mean of 1.624 and a Standard deviation of 4.772. ROE ranges from -41.37 to 13.78, with a mean of 0.103 and a Standard deviation of 1.809. ROA takes a value from -1.316 to 0.4111, with a mean of 0.034 and a Standard deviation of 0.123. VAIC variable takes a value from -19.7 to 111.3, with a mean of 4.487 and a Standard deviation of 7.093. A Negative VAIC might indicate companies are destroying value with their IC, perhaps due to poor management of it. AE variable ranges from 0.0002 to 9.38, with a mean of 0.839 and a Standard deviation of

0.881. GDP Growth varies from -11.3 to 8.9, with a mean of 3.724 and a Standard deviation of 3.008. All 708 observations are complete for all variables.

Table (2)

Results of Descriptive Statistics: ADX_EGX_ PEX

Variable	Mean	Median	Standard dev.	Minimum	Maximum	1st quartile	3st quartile
SGR	0.031	0.032	1.77	-39.69	15.43	-0.026	0.112
CEE	0.465	0.31	1.699	-13.62	22.25	0.13	0.57
HCE	3.419	2.203	6.487	-19.44	110.1	1.458	3.557
SCE	0.603	0.598	1.717	-19.76	26.59	0.399	0.775
SIZE	8.666	8.772	0.913	5.89	10.7	8.055	9.308
Liquidity	1.624	0.907	4.772	0.007	113.1	0.52	1.531
ROE	0.103	0.078	1.809	-41.37	13.78	0.008	0.194
ROA	0.034	0.036	0.123	-1.316	0.4111	0.001	0.09
VAIC	4.487	3.293	7.093	-19.7	111.3	2.321	4.909
AE	0.839	0.646	0.881	0.0002	9.38	0.361	0.987
GDP Growth	3.724	3.954	3.008	-11.3	8.9	2.955	4.898

3.3 Correlation analysis

3.3.1 Overall correlation analysis for Abu Dhabi, Palestine, and Egypt industrial companies

The correlation matrix elucidates the relationship between variables that can be utilized to understand the nature of the relationships among the studied variables. It aids in measuring the linear correlation between the dependent variable and each independent and mediating variable and determining the strength and degree of correlation among all variables. Independent or control variables with a correlation exceeding 80% will yield similar results and effects (Quddoos, Akhtar, & Rafique, 2020), indicating the presence of multicollinearity. Therefore, it is imperative to address this issue by separating the variables. The correlation matrix is a crucial tool for evaluating the sensitivity of the results when including or excluding certain variables.

Table (3) presents the results of the correlation matrix between the study variables and the overall sample, which includes industrial companies from Palestine, Egypt, and Abu

Dhabi. The table shows that the SGR is associated but not significant with CEE (correlation coefficient = 0.02), positively and significantly associated with HCE (coefficient = 0.09), and associated but not significant with SCE. VAIC as a whole is associated but not significant with sustainable growth (correlation coefficient = 0). This suggests that while HC is important for achieving sustainable growth, it is not sufficient on its own to ensure that IC as a whole has a significant positive impact on sustainable growth. Furthermore, the correlation results in Table (3) indicate a significant positive association between the control variables ROE, and AE with the dependent variable SGR. SIZE shows a positive but not significant relationship with the dependent variable (correlation coefficient = 0.05). While, Liquidity shows a negative but not significant relationship with the dependent variable (correlation coefficient = -0.01). The highest association (0.92) was observed between ROE and SGR, suggesting a potential direct causal relationship between these two variables, meaning that a change in one directly affects the other.

It is evident that the independent and control variables exhibit a correlation of less than 80%, with the exception of a highly significant association of 0.9 between VAIC and HCE. This indicates that HCE is a crucial component of VAIC, underscoring the substantial reliance on HC and its contribution to development and competitive advantage, as (Laing, Dunn, & Hughes-Lucas, 2010) suggested. This multicollinearity concern was mitigated by separating the VAIC variable as a composite in different model from those including its components, such as HCE, to test the hypotheses. This indicates that multicollinearity is absent, as it occurs only between independent and control variables. Based on this analysis, the study variables are confirmed to be free from multicollinearity.

Table (3)

Correlation matrix for overall manufacturing firm's sample

	SGR	CEE	HCE	SCE	SIZE	Liquidity	ROE	VAIC	AE	GDP
SGR	1									
CEE	0.02	1								
HCE	0.09 **	0.04	1							
SCE	-0.02	-0.12 ***	0.1 ***	1						
SIZE	0.05	0.1 ***	0.12 ***	-0.02	1					
Liquidity	-0.01	-0.09 **	0.04	0.04	-0.3 ***	1				
ROE	0.92 ***	0.12 ***	0.09 **	-0.03	0.09 **	-0.02	1			
VAIC	0	0.25 ***	0.9 ***	0.29 ***	0.11 ***	0.02	0.04	1		
AE	0.06 *	0.43 ***	-0.05	-0.16 ***	0.04	-0.14 ***	0.14 ***	-0.02	1	
GDP	-0.01	0.01	-0.02	-0.02	0.07 *	-0.06 *	-0.01	-0.03	0.04	1

p-value <0.01; **p-value < 0.05; *p-value < 0.1***

3.4 Regression results

The initial step involved conducting the Fixed Effects and Random Effects models to unveil the correlation among the study variables for all models. Based on the Fixed Effects and Random Effects regression panel results across all tables, the optimal model was selected based on the Hausman test. The Hausman test revealed the p-value > 0.05 for all tables, indicating that the Random Effects model is suitable for analysis.

3.4.1 Overall Intellectual capital and sustainable growth

In the random effects model, identified as the most appropriate for the analysis, the independent variable VAIC, utilized as a measure of IC, demonstrates a significantly negative and substantial impact on sustainable growth at a highly significant level (p-value < 0.001). This indicates partial confirmation of the alternative hypothesis (H1), aligning with the findings of (Kawilarang, Daromes, & Tangke, 2023). However, this result contradicts the majority of prior studies, such as those by (Baraka, Zayed, Wahba, & Ragheb, 2024; Handayani & Arsjah, 2024; Akmalia & Muharam, 2024; Rana & Hossain, 2023; Xu, Li, Wu, & Zhang, 2021), which have identified a positive relationship between IC and sustainable growth. Additionally, some research has reported no significant relationship between intellectual capital and sustainable growth, such as the study by (Lehenchuk, Zeytinoglu, Hrabchuk, & Zhalinska, 2023).

Knowledgeable employees, leveraging their expertise and capabilities, may engage in fraudulent activities that adversely affect organizational performance and sustainability. Moreover, significant investments in IC without effective management to align it with the organization's strategic objectives, vision, and mission—and without considering the company's financial capacity—can lead to a financial crisis, burdening the organization and reducing sustainable growth. Although IC is critical for organizational success, it is also highly "costly," requiring extensive training and a considerable period to realize its benefits. Effective management of IC demands advanced managerial capabilities and the implementation of robust measures to mitigate fraud, making the control of IC both challenging and essential to prevent its potential adverse effects. Additionally, many IC components are not reported in financial statements, complicating the evaluation of IC's overall benefits. Consequently, organizations often prioritize investments in assets that are more manageable and readily convertible into cash or cash equivalents.

Regarding the control variables, the results in Table (4) indicate that both size and asset efficiency are significantly and negatively correlated with sustainable growth (p-value < 0.01). This suggests that as a company's size increases, the available cash decreases, as larger companies require more funds for operational expenses, negatively impacting performance and sustainable growth. These findings are consistent with prior research by (Sayed & Nefzi, 2024; Mumu, Susanto, & Gainau, 2019), which argue that operational complexities increase with size, thereby reducing efficiency. Furthermore, companies pursuing sustainable growth often increase investments in human capital (e.g., training), technological innovation (e.g., research and development), and brand building. However, the positive effects of these investments typically do not materialize in the short term. Consequently, companies with higher long-term SGR may exhibit lower short-term asset efficiency, aligning with the findings of (Mamilla, 2019).

Additionally, Table (4) shows that profitability is significantly and positively correlated with sustainable growth (p-value < 0.01), indicating that higher profitability is essential for achieving sustainable growth, as supported by prior studies (Guliyev & Muzaffarov, 2024; Al-Slehat & Altameemi, 2021). However, the results also indicate a significant negative relationship between liquidity and SGR, with a p-value of <0.1. This supports the findings of (Pratama, 2019; Vuković, Tica, & Jakšić, 2022; Pratama, 2019), who emphasized the importance of effectively managing liquidity to facilitate business expansion. Hence, alternative hypothesis H02 is accepted concerning all control variables except GDP.

Table (4)

Regression results for Overall Impact of IC on SGR

Panel estimation of the impact of Intellectual capital on sustainable growth							
	Fixed random effect			Random effect model			
Variable	Estimate	SD	P	Estimate	SD	P	VIF
(Intercept)	0.363***	0.034	< 0.001	0.356***	0.034	< 0.001	
VAIC	-0.023***	0.006	< 0.001	-0.023***	0.006	< 0.001	1.016
SIZE	-0.038***	0.01	< 0.001	-0.037***	0.01	< 0.001	1.367
Liquidity	-0.009*	0.005	0.084	-0.009*	0.005	0.094	1.089
AE	-0.026***	0.008	0.001	-0.026***	0.008	0.001	1.091
ROE	0.868***	0.014	< 0.001	0.866***	0.014	< 0.001	1.025
GDP	0.002	0.01	0.842	0.004	0.01	0.711	1.039
Country - EG	-0.021***	0.007	0.004	-0.021***	0.007	0.004	
Country - PS	-0.025**	0.011	0.02	-0.025**	0.011	0.022	
	R – square = 0.84			R – square = 0.84			
Hausman test p value = 0.534							

Note: 1 – >> FORMULA = SGR ~ VAIC + SIZE + LIQUIDITY + AE + ROE ALL COUNTRY AT ONCE.

3.4.2 Overall Intellectual capital components and sustainable growth

The results shown in Tables (5) illustrate the impact of IC components on sustainable growth. The random effects model, identified as the most suitable for this analysis, indicates that the independent variable CEE, a component of VAIC, has a statistically significant negative effect on sustainable growth, with a p-value < 0.01. This finding suggests that as the CEE value increases, sustainable growth tends to decline. These results align with the findings of (Lehenchuk et al., 2023; Balaji & Mamilla, 2022), but contradict those of (Sayed & Nefzi; 2024; Akmalia & Muharam; 2024; Xu et al., 2021). Accordingly, the alternative hypothesis H1a is confirmed.

The CEE is a critical factor in supporting company performance, as it reflects the efficiency with which a company converts its capital into profits—an essential aspect of long-term sustainability and growth. However, as suggested by agency theory, managers may have incentives to prioritize short-term profits to enhance their performance or achieve financial rewards tied to short-term objectives. This approach often conflicts with shareholders' interests in sustainable growth and long-term returns. Acting as agents of

the company's owners, managers might focus on utilizing the company's financial resources to generate short-term outcomes, neglecting the long-term implications. Such decisions may appear beneficial initially but expose the organization to future risks, thereby negatively impacting sustainable growth. Additionally, companies that invest heavily in IC and technology may incur substantial short-term expenses. These investments typically require longer periods to deliver tangible benefits, which can reduce short-term profits and capital efficiency. However, in the long run, these investments contribute to sustainable profit growth, demonstrating the importance of aligning IC investments with the company's strategic goals.

Conversely, HCE has a negative but statistically insignificant effect on sustainable growth, as shown in Table (5). This finding suggests that HC, despite being a critical component of IC, does not significantly influence sustainable growth, possibly due to suboptimal management practices that prioritize ROE rather than long-term value creation. These results are consistent with the findings of (Akmalia & Muharam, 2024; Lehenchuk, Zeytinoglu, Hrabchuk, & Zhalinska, 2023; Balaji & Mamilla, 2022). However, this contradicts other studies that have identified a significant relationship between HCE and sustainable growth, such as research conducted by (Balaji & Mamilla, 2024; Sayed & Nefzi, 2024; Dwikat, Arshad, & Shariff, 2023). This means that alternative H1b is rejected.

Additionally, the results show a negative but statistically insignificant effect of SCE on sustainable growth, indicating that companies may lack the expertise or resources to effectively manage SC, thereby failing to fully utilize it for sustainable growth. These findings align with the research of (Lehenchuk et al., 2023; Balaji & Mamilla, 2022; Xu et al., 2021) but contradict the study of (Akmalia & Muharam, 2024). This indicates that the alternative hypothesis H1c is rejected.

Moreover, the results show that the control variables SIZE, AE, and Liquidity have statistically significant negative impacts on sustainable growth, with p-values < 0.01, p-values < 0.05, and p-values < 0.1, respectively. Larger companies tend to have less available cash, as increased size demands more funds for active payments, which negatively affects performance and sustainable growth if the focus is solely on increasing ROE, potentially through leveraging debt. This may lower equity and artificially inflate

the ratio without improving AE, leading to a decline in sustainable growth, consistent with the findings of Mamilla (2019), but contradicting the research of (Mumu, Susanto, & Gainau, 2019). This is evident in companies with high asset turnover rates, where investments in assets to increase sales might rely on external financing, raising leverage without necessarily improving ROA and exposing companies to risks that negatively impact sustainable growth.

It is also clear from the results that there exists a statistically significant positive relationship between profitability and sustainable growth at the 0.01 significance level, indicating that higher ROE becomes essential for sustainable growth. This finding is similar to that of (Guliyev & Muzaffarov, 2024; Al-Slehat & Altameemi, 2021).

Tables (4) and (5) additionally present results indicating that GDP has a positive but statistically insignificant effect on sustainable growth. Furthermore, the statistical tests show that the country effect—using Abu Dhabi as the base—on sustainable growth is negative and statistically significant. Notably, the effect for Egypt is significant at less than the 1 percent level, while for Palestine, it is significant at less than the 5 percent level. Thus, these findings confirm the alternative hypothesis (H03).

These findings suggest that while GDP may have a positive association with sustainable growth, it does not appear to significantly influence it within the studied context. The negative country effect implies that certain countries, such as Egypt and Palestine, face unique challenges or structural factors that hinder their sustainable growth, despite the positive impact of GDP. The differences in the country effects can be attributed to varying economic, political, and institutional environments, which may influence the ability of firms to leverage resources for sustainable growth effectively. This finding aligns with the research of Işık, Ongan, Islam, Jabeen, & Pinzon (2024) and underscores the importance of considering country-specific factors when analyzing the dynamics of sustainable growth. Understanding these contextual differences is crucial for developing effective strategies that enhance IC utilization and contribute to long-term corporate success.

Table (5)

Regression results for Overall Impact of IC Components On SGR

Panel estimation of the impact of Intellectual capital components on sustainable growth							
	Fixed effect regression model			**Random effect regression model**			
Variable	Estimate	SD	P	Estimate	SD	P	VIF
(Intercept)	0.368***	0.038	< 0.001	0.361***	0.038	< 0.001	
CEE	-0.045***	0.012	< 0.001	-0.046***	0.012	< 0.001	1.087
HCE	-0.006	0.006	0.28	-0.005	0.006	0.362	1.042
SCE	-0.011	0.011	0.969	-0.001	0.011	0.954	1.014
SIZE	-0.039***	0.01	< 0.001	-0.038***	0.01	< 0.001	1.37
Liquidity	-0.01*	0.005	0.06	-0.01*	0.005	0.067	1.09
AE	-0.017**	0.008	0.046	-0.016**	0.008	0.047	1.171
ROE	0.869***	0.014	< 0.001	0.867***	0.014	< 0.001	1.042
GDP	0.002	0.01	0.822	0.004	0.01	0.68	1.039
Country - EG	-0.022***	0.007	0.003	-0.022***	0.007	0.002	
Country - PS	-0.026**	0.011	0.015	-0.026**	0.011	0.016	
	R – square = 0.85			R – square = 0.85			
Hausman test p value = 0.721							

Note: Mode: 3 – >> formula = SGR ~ CEE + HCE + SCE + SIZE + Liquidity + AE + ROE All country at once.

3.4.1 Intellectual capital and sustainable growth in Palestine

According to Hofstede's theory of cultural dimensions, differences in culture can be understood cross-country, and these differences influence several aspects of business and management (Hofstede, 1980). In this context, to obtain more in-depth results by studying the effect of each market's nature on the study variables, statistical tests were conducted for each model for each country within the sample separately to understand how each variable was affected by the nature of the country.

The results of Table (6) in the Palestine Exchange indicate that IC has a positive but statistically insignificant impact on sustainable growth. This suggests that an increase in IC does not lead to a significant change in ROE that would contribute to the company's sustainable growth. This finding corroborates the research of (Lehenchuk, Zeytinoglu, Hrabchuk, & Zhalinska, 2023), which suggests that Palestinian IC management may not prioritize leveraging IC to enhance shareholder equity returns in a manner that supports

sustainable growth. However, this result contradicts the majority of studies, including those by, (Akmalia & Muharam, 2024; Baraka, Zayed, Wahba, & Ragheb, 2024; Handayani & Arsjah, 2024; Kawilarang, Daromes, & Tangke, 2023; Rana & Hossain, 2023; Xu, Li, Wu, & Zhang, 2021). These differing findings highlight potential contextual factors in the Palestine Exchange that may influence the effectiveness of IC management in driving sustainable growth, such as varying economic, institutional, or market conditions.

For the control variables, the results in Table (6) show that both size and ROE had a statistically significant positive impact on SGR, with a significance level of p-value < 0.01, consistent with the findings of (Guliyev & Muzaffarov, 2024; Al-Slehat & Altameemi, 2021), confirming a statistically significant positive relationship between profitability and growth. Additionally, these results align with the study by Rahim (2017), which also found a statistically significant positive relationship between size and growth rate, as larger companies generally have better access to capital markets and benefit more from economies of scale, thus creating more favorable conditions for growth. Meanwhile, liquidity had a statistically significant negative impact on sustainable growth, with a p-value < 0.01. Excess liquidity in Palestinian industrial companies may reflect idle cash that is not being utilized in profitable investment opportunities, which can hinder growth. This observation aligns with the findings of Vuković, Tica, & Jakšić (2022), suggesting that uninvested liquidity may limit the company's ability to generate higher returns and achieve sustainable growth. Furthermore, AE had a negative but statistically insignificant effect on SGR, which aligns with the findings of (Wassef, Zamel, El Dardery, Moubarak, & Badawy, 2024; Vuković, Tica, & Jakšić, 2022). This contrasts with the results of Mamilla (2019), who identified a significant negative effect of AE, and Rahim (2017), who reported a significant positive effect of AE on the growth rate. This implies that firms may not consider asset management efficiency a crucial strategy for achieving sustainable growth.

Table (6)

Regression results for the impact of IC on SGR of the PEX

Panel estimation of the impact of Intellectual capital on sustainable growth							
	Fixed random effect			Random effect model			
Variable	Estimate	SD	P	Estimate	SD	P	VIF
(Intercept)	0.01	0.016	0.563	0.006	0.016	0.725	
VAIC	0.007	0.01	0.443	0.008	0.009	0.406	1.955
SIZE	0.034***	0.011	0.003	0.031***	0.011	0.004	1.234
Liquidity	-0.017***	0.006	0.009	-0.019***	0.006	0.002	1.573
AE	-0.02	0.014	0.149	-0.02	0.013	0.136	1.115
ROE	0.748***	0.057	0	0.771***	0.054	0	3.066
Hausman test p value = 0.6985							

3.5.2 Intellectual capital components and sustainable growth in Palestine

The results in Table (7) indicate that for industrial companies listed on the Palestine Exchange, HC, as the most significant component of IC with a correlation of 0.98, has a positive but statistically insignificant effect on sustainable growth. This finding aligns with the research of (Akmalia & Muharam, 2024; Lehenchuk, Zeytinoglu, Hrabchuk, & Zhalinska, 2023; Balaji & Mamilla, 2024). However, it contradicts studies that have reported a significant relationship between HCE and sustainable growth, such as those conducted by (Sayed & Nefzi, 2024; Balaji & Mamilla, 2024; Dwikat, Arshad, & Shariff, 2023).

Moreover, the results indicate that the CEE variable, another dimension of IC, has a negative but statistically insignificant effect on SGR. This aligns with the research of Balaji and Mamilla (2024), but contradicts the findings of (Akmalia & Muharam, 2024; Lehenchuk, Zeytinoglu, Hrabchuk, & Zhalinska, 2023; Balaji & Mamilla, 2024; Xu, Li, Wu, & Zhang, 2021).

Additionally, the results indicate that the SCE variable has a negative but statistically insignificant impact on SGR, suggesting that companies may lack the expertise or resources to manage SC effectively, thereby failing to fully leverage it for sustainable growth. This finding aligns with the studies of (Lehenchuk, Zeytinoglu, Hrabchuk, & Zhalinska, 2023; Balaji & Mamilla, 2022), but contradicts the research by (Akmalia &

Muharam, 2024; Xu, Li, Wu, & Zhang, 2021). Consequently, alternative hypotheses H1a, H1b, and H1c are rejected.

Regarding the control variables, the results in Table (7) show that both size and ROE have a statistically significant positive impact on sustainable growth, with p-values < 0.05 and p-values < 0.01, respectively. This finding is consistent with the studies of (Wassef, Zamel, El Dardery, Moubarak, & Badawy, 2024; Guliyev & Muzaffarov, 2024; Al-Slehat & Altameemi, 2021), which confirm a statistically significant positive relationship between profitability and growth. Furthermore, the results align with the study by Rahim (2017), which establishes a statistically significant positive relationship between size and growth rate. Larger companies generally benefit from better access to capital markets and economies of scale, creating more favorable conditions for growth, such as increased investments in machinery and equipment that enhance productivity and drive high sales.

Additionally, liquidity demonstrates a negative statistically significant impact on sustainable growth, with a p-value < 0.01. This suggests that excess liquidity in Palestinian industrial companies may indicate unused cash not invested in profitable ventures, thereby slowing growth. This result aligns with the findings of (Vuković, Tica, & Jakšić, 2022).

On the other hand, AE shows a negative but statistically insignificant impact on sustainable growth, consistent with the findings of (Wassef, Zamel, El Dardery, Moubarak, & Badawy, 2024; Vuković, Tica, & Jakšić, 2022). However, these results contrast with those of Mamilla (2019), who reported a significant negative impact of AE, and Rahim (2017), who identified a significant positive influence of AE on SGR. It appears that firms do not prioritize asset management efficiency as a key strategy for achieving sustainable growth. This finding suggests that decreased AE could result from substantial investments in assets that require time to generate returns, such as developing a new production line. Such initiatives may initially require employee training and the establishment of efficient production processes, which could temporarily reduce AE.

Table (7)

Regression results for the impact of IC components on SGR of the PEX

Panel estimation of the Intellectual capital components and sustainable growth in Palestine							
	Fixed random effect			Random effect model			
Variable	Estimate	SD	P	Estimate	SD	P	VIF
(Intercept)	0.021	0.022	0.355	0.017	0.022	0.444	
CEE	-0.018	0.031	0.56	-0.024	0.031	0.434	1.659
HCE	0.012	0.011	0.264	0.013	0.01	0.218	2.224
SCE	-0.015	0.016	0.357	-0.013	0.016	0.425	1.123
SIZE	0.031***	0.011	0.009	0.029**	0.011	0.01	1.33
Liquidity	-0.017***	0.006	0.008	-0.019***	0.006	0.001	1.624
AE	-0.02	0.014	0.171	-0.019	0.014	0.176	1.191
ROE	0.753***	0.062	0	0.778***	0.059	0	3.652
Hausman test p value = 0.8365							

3.5.3 Intellectual capital and sustainable growth in Egypt

The results from the random effects results, previously identified as the best fit for analysis, presented in Table (8), indicate that IC has a statistically significant negative impact on sustainable growth for industrial companies listed on the Egyptian Stock Exchange, with a significance level of 1%. This suggests that managers may prioritize short-term profit strategies aimed at boosting share prices rather than focusing on sustainable growth. As a result, the alternative hypothesis H1 is partially confirmed. This finding aligns with the study by Kawilarang, Daromes, & Tangke (2023) but contradicts the majority of research, including studies by (Akmalia & Muharam, 2024; Baraka, Zayed, Wahba, & Ragheb, 2024; Handayani & Arsjah, 2024; Rana & Hossain, 2023; Xu, Li, Wu, & Zhang, 2021), which identified a positive relationship between IC and sustainable growth. Additionally, some studies, such as the research by (Lehenchuk, Zeytinoglu, Hrabchuk, & Zhalinska, 2023), have reported no significant relationship between IC and sustainable growth.

Furthermore, the findings reveal that while ROE positively influences sustainable growth in these companies at a significance level of 0.01, this is not reflected in long-term strategies aimed at promoting sustainable growth. This further supports the argument that

managerial focus on short-term profitability to elevate share prices may overshadow the importance of sustainable growth, underscoring a potential disconnect between managerial decisions and shareholder priorities. In the context of Egypt, this disconnect can be linked to agency problems, where managerial decisions are misaligned with the long-term interests of shareholders, potentially due to weak corporate governance practices and a lack of emphasis on sustainable development strategies (Elhabashy & El-Kelety, 2023).

The results related to the other control variables on the Egyptian Stock Exchange, presented in Table (8), indicate that both Size and AE had a significant negative impact on sustainable growth, with significance levels of 0.01 and 0.05, respectively. In contrast, liquidity had a negative but not statistically significant impact on sustainable growth. Given that Egyptian industrial companies operate in a relatively stable environment compared to their counterparts on the Palestinian Stock Exchange, and considering Egypt's high power distance according to Hofstede's (1980) theory, the increased risks associated with management, such as earnings management, may negatively impact performance and sustainable growth. The study by Hofstede (1980) suggests that decision-making processes in high power distance cultures tend to exclude input from lower levels, potentially leading to decisions that do not align with long-term growth objectives.

Moreover, larger companies often face high levels of bureaucracy, delayed decision-making, communication difficulties, reduced flexibility, increased administrative costs, and high cash requirements for active payments, such as salaries and operational expenses, all of which can negatively affect performance and sustainable growth. This is consistent with the findings of (Mumu, Susanto, & Gainau, 2019; Yoo & Kim, 2015), who note that large companies may experience cost increases at a faster rate than revenue growth as they expand. Additionally, companies focused on sustainable growth typically invest heavily in human capital (e.g., training and development), technological innovation (e.g., R&D), and brand building, which do not generate immediate positive returns. These investments can lead to lower AE in the short term by increasing expenses and reducing revenue, thus resulting in lower AE for companies that are achieving higher sustainable growth in the long term, consistent with the findings of (Mamilla, 2019).

Table (8)

Regression results for the impact of IC on SGR of the EGX

Panel estimation of the impact of Intellectual capital on sustainable growth							
	Fixed random effect			Random effect model			
Variable	Estimate	SD	P	Estimate	SD	P	VIF
(Intercept)	0.365***	0.028	0	0.365***	0.028	0	
VAIC	-0.028***	0.008	0	-0.028***	0.008	0	1.028
SIZE	-0.05***	0.013	0	-0.049***	0.013	0	1.07
Liquidity	-0.007	0.007	0.353	-0.006	0.007	0.379	1.093
AE	-0.021**	0.009	0.029	-0.02**	0.009	0.029	1.052
ROE	0.9***	0.017	0	0.898***	0.017	0	1.023
Hausman test p value = 0.5167							

3.5.4 Intellectual capital components and sustainable growth in Egypt

The results from Table (9) for the Egyptian Stock Exchange indicate that the CEE variable has a significant negative impact on sustainable growth, with a significance level of 0.01. This finding confirms alternative hypothesis H1a. The research highlights that an increase in CEE tends to correlate with a decrease in sustainable growth. This result is consistent with the study by (Lehenchuk, Zeytinoglu, Hrabchuk, & Zhalinska, 2023; Balaji & Mamilla, 2022), but contradicts the findings of (Xu, Li, Wu, & Zhang, 2021). While CEE is crucial for supporting a company's performance, agency problems may lead managers to make unwise investment decisions that yield strong short-term returns but weaken over time, adversely affecting the company's sustainable growth. Investing without a strategy that maintains the company's financial capacity and long-term profit growth can burden the company with financial crises or declining profits, reducing sustainable growth.

The other component of IC, HC, showed a negative but not statistically significant impact on sustainable growth in Table (9), which could be attributed to suboptimal management focusing solely on ROE. This finding aligns with the study by (Akmalia & Muharam, 2024; Balaji & Mamilla, 2022). Regarding the final dimension of IC, SCE exhibited a negative but not statistically significant impact on sustainable growth, suggesting that companies may lack the expertise or resources to manage SC effectively, thereby failing to fully leverage it for sustainable growth. This result is consistent with the studies of (Lehenchuk, Zeytinoglu, Hrabchuk, & Zhalinska, 2023; Balaji & Mamilla, 2022), but

contradicts the findings of (Akmalia & Muharam, 2024; Xu, Li, Wu, & Zhang, 2021). These results suggest that alternative hypotheses H1b and H1c are rejected.

Interestingly, the results from Table (9) are consistent with those from Table (8) concerning the Size, liquidity, and ROE variables. However, the difference lies in the AE variable, which had a statistically significant negative effect (p-value < 0.05) in Table (8), addressing the impact of IC as a whole on sustainable growth. In contrast, the negative effect of AE was not statistically significant in Table (9), which addresses the impact of the components of IC on sustainable growth. This indicates that AE has a significantly negative impact when the components of IC are combined.

Table (9)

Regression results for the impact of IC components on SGR of the EGX

Panel estimation of the Intellectual capital components and sustainable growth in Egypt							
	Fixed random effect			**Random effect model**			
Variable	Estimate	SD	P	Estimate	SD	P	VIF
(Intercept)	0.389***	0.036	0	0.391***	0.036	0	
CEE	-0.065***	0.015	0	-0.065***	0.015	0	1.105
HCE	-0.002	0.008	0.795	-0.001	0.008	0.861	1.058
SCE	-0.003	0.014	0.833	-0.004	0.014	0.761	1.027
SIZE	-0.053***	0.013	0	-0.053***	0.013	0	1.075
Liquidity	-0.008	0.007	0.269	-0.008	0.007	0.291	1.099
AE	-0.011	0.01	0.251	-0.011	0.01	0.257	1.161
ROE	0.904***	0.017	0	0.902***	0.017	0	1.038
Hausman test p value = 0.4958							

3.5.5 Intellectual capital and sustainable growth in Abu Dhabi

The results from Table (10) for the Abu Dhabi Stock Exchange indicate that the IC variable has a negative but not statistically significant impact on sustainable growth. Hence, alternative H1a is rejected. This finding aligns with the study by (Lehenchuk, Zeytinoglu, Hrabchuk, & Zhalinska, 2023). However, it contradicts the majority of research, including studies by (Akmalia & Muharam, 2024; Baraka, Zayed, Wahba, & Ragheb, 2024; Handayani & Arsjah, 2024; Rana & Hossain, 2023; Kawilarang, Daromes, & Tangke, 2023; Xu, Li, Wu, & Zhang, 2021), which reported a statistically significant

effect between IC and sustainable growth. This suggests that IC in industrial companies listed on the Abu Dhabi Stock Exchange does not exert significant effort in formulating strategies to support sustainable growth by increasing ROE.

Regarding the control variables in the Abu Dhabi Stock Exchange, the ROE variable exhibits a statistically significant positive impact on sustainable growth at a 0.01 significance level. This finding is consistent with the studies by (Wassef, Zamel, El Dardery, Moubarak, & Badawy, 2024; Guliyev & Muzaffarov, 2024; Al-Slehat & Altameemi, 2021). Conversely, the liquidity variable has a statistically significant negative effect on sustainable growth at a 0.1 significance level, indicating that high liquidity can negatively impact shareholder returns when liquid assets are not effectively invested. This aligns with the findings of (Vuković, Tica, & Jakšić, 2022).

The Size and AE variables show negative but not statistically significant effects on sustainable growth. This result aligns with studies by (Wassef, Zamel, El Dardery, Moubarak, & Badawy, 2024; Vuković, Tica, & Jakšić, 2022). However, these findings contrast with the study by Mamilla (2019), which identified a significant negative effect of the AE variable, and with the research by Rahim (2017), which reported a significant positive impact of AE on SGR. Additionally, the findings are consistent with the study by Lehenchuk, Zeytinoglu, Hrabchuk, & Zhalinska (2023), which found no significant effect of the Size variable on sustainable growth. This lack of significance may be attributed to the high confidentiality of information in Abu Dhabi, which limits the transparency and availability of financial data, making it challenging to statistically determine the impact of most variables on sustainable growth, except for the significant effects of ROE and liquidity

Table (10)

Regression results for the impact of IC on SGR of the ADX

Panel estimation of the impact of Intellectual capital on sustainable growth							
	Fixed random effect			Random effect model			
Variable	Estimate	SD	P	Estimate	SD	P	VIF
(Intercept)	0.137***	0.039	0.001	0.122***	0.037	0.001	
VAIC	-0.019	0.014	0.169	-0.014	0.013	0.274	1.56
SIZE	-0.015	0.019	0.431	-0.01	0.019	0.6	1.329
Liquidity	-0.04**	0.019	0.036	-0.033*	0.018	0.071	1.433
AE	-0.054	0.039	0.177	-0.056	0.038	0.144	1.429
ROE	1.079***	0.081	0	1.059***	0.076	0	1.429
Hausman test p value = 0.7232.							

3.5.6 Intellectual capital components and sustainable growth in Abu Dhabi

The results from Table (11) in appendix (A) for the Abu Dhabi Stock Exchange show that CEE has a positive but not statistically significant effect on sustainable growth. This finding aligns with the research of Balaji & Mamilla (2024) but contradicts the findings of (Akmalia & Muharam, 2024; Lehenchuk, Zeytinoglu, Hrabchuk, & Zhalinska, 2023; Balaji & Mamilla, 2022; Xu, Li, Wu, & Zhang, 2021). Additionally, the results indicate that SCE has a positive but not statistically significant effect on sustainable growth, consistent with the findings of (Lehenchuk, Zeytinoglu, Hrabchuk, & Zhalinska, 2023; Balaji & Mamilla, 2022), but contradicting the research of (Akmalia & Muharam, 2024; Xu, Li, Wu, & Zhang, 2021). In contrast, HCE exhibits a negative but not statistically significant effect on sustainable growth, which aligns with the findings of (Akmalia & Muharam, 2024; Lehenchuk, Zeytinoglu, Hrabchuk, & Zhalinska, 2023; Balaji & Mamilla, 2022), but contradicts studies such as those by (Balaji & Mamilla, 2024; Sayed & Nefzi, 2024; Dwikat, Arshad, & Shariff, 2023), which reported a significant relationship between HCE and sustainable growth. Overall, these results suggest that increasing IC, whether in aggregate or through its components, does not lead to a positive change in ROE that contributes to sustainable growth for companies listed on the Abu Dhabi Stock Exchange. Consequently, alternative hypotheses H1, H1a, H1b, and H1c are rejected.

Furthermore, regarding control variables the results of Table (11) in appendix (A) are consistent with those of Table (10) concerning Size, AE, and ROE variables. However, the difference lies in the Liquidity variable, which had a statistically significant negative effect (p_value<0.1) in Table (10) (addressing the impact of IC as a whole on sustainable growth). However, the negative effect of Liquidity was not statistically significant in table (11) in appendix (A) (addressing the impact of the components of IC on sustainable growth). This indicates that Liquidity has a significantly negative impact when the components of IC are combined in Abu Dhabi Stock Exchange.

3.6 Post hoc test

Post hoc results were analyzed following an ANOVA to assess differences in SGR among countries. The ANOVA results indicated no statistically significant difference in SGR, with a p-value of 0.946. Subsequent Tukey's HSD results for pairwise comparisons (EG-Abu Dhabi, PS- Abu Dhabi, PS-EG) revealed adjusted p-values significantly exceeding 0.05, confirming the absence of meaningful differences between any country pairs, see table (12) in appendix (A).

3.7 Researcher's Opinion

The researcher finds the overall results both intriguing and insightful, as they challenge the conventional assumption that IC universally enhances sustainable growth. The negative impact of CEE component on sustainable growth underscores the complexity of resource allocation, indicating that an excessive focus on CEE can hinder long-term objectives (Sayed & Nefzi, 2024; Balaji & Mamilla, 2024; Lehenchuk, Zeytinoglu, Hrabchuk, & Zhalinska, 2023; Rana & Hossain, 2023; Ashraf, Sadiq, Ferreira, & Almeida, 2023; Alvino, Vaio, Hassan, & Palladino, 2021; Xu, Li, Wu, & Zhang, 2021). This interplay between IC components highlights the necessity of a comprehensive and strategic approach in corporate decision-making (Kweh, Ting, Asif, & Lu, 2024).

The comparative analysis of IC across Palestinian, Egyptian, and Abu Dhabi manufacturing companies reveals the context-specific nature of sustainable growth strategies. In Palestinian firms, IC shows a potential positive but not significant impact on sustainable growth, while Egyptian companies experience a negative correlation, particularly due to an overemphasis on CEE component. In Abu Dhabi companies, IC has no overall impact on sustainable growth (Akmalia & Muharam, 2024; Baraka, Zayed,

Wahba, & Ragheb, 2024; Lehenchuk, Zeytinoglu, Hrabchuk, & Zhalinska, 2023; Xu, Li, Wu, & Zhang, 2021). These findings suggest that successful IC implementation is not a universal concept but requires nuanced, adaptive strategies that align technological, human, and financial resources with specific market conditions and strategic objectives. This emphasizes the need for flexible, context-aware approaches to achieving sustainable growth and maintaining competitive advantage (Işık, Ongan, Islam, Jabeen, & Pinzon, 2024; Kouskoura, Kalliontzi, Skalkos, & Bakouros, 2024; Sutulova, 2024; Bari, Chimhundu, & Chan, 2022).

Chapter Four
Conclusion and Recommendations

4.1 Overview

In this chapter, the conclusions and recommendations of the study are presented. It also elaborates on study limitations alongside some recommendations for future research.

4.2 Conclusion

In today's knowledge-driven economy, a company's IC – its collective knowledge, skills, and innovation – is considered a critical driver of PERF and sustainable growth. The relationship between IC and sustainable growth has garnered significant attention. In the era of knowledge and information, amidst economic and political challenges and fierce competition among companies, the focus has shifted from merely achieving high profits to understanding the drivers of year-over-year growth. According to theories such as Kaizen, a company that does not advance or grow does not remain stagnant but rather falls behind as competitors move forward. In other words, a company will exit the market if it cannot achieve a competitive advantage that is difficult to replicate, such as IC, which is essential for sustainable growth.

This research aimed to examine the relationship between IC and sustainable growth for corporations listed on the MENA Stock Exchange Markets from 2014 to 2021. By analyzing the impact of IC and its components, this study provides valuable insights for companies in the MENA region, helping them optimize their IC strategies to enhance long-term growth and sustainability.

This study examined the impact of IC on SGR in a sample comprising 13 Palestinian companies, 68 Egyptian companies, and 18 Abu Dhabi industrial companies over the period from 2014 to 2021. Control variables in this study included Size, liquidity, AE, profitability and GDP.

First, the overall results demonstrated that an increase in IC tends to decrease sustainable growth. Although superior human resources, based on the results of the correlation matrix, are considered the most crucial component of IC in supporting company performance, the independent variable CEE, as a component of VAIC, is the only one

with a statistically significant effect on sustainable growth, and this effect is negative. This indicates that the more a company focuses on increasing the value of CEE as a growth strategy, the more it negatively impacts sustainable growth (Lehenchuk, Zeytinoglu, Hrabchuk, & Zhalinska, 2023).

The results for Palestinian manufacturing companies revealed a positive but statistically insignificant correlation between IC and SGR. This suggests that IC management in Palestine does not effectively prioritize enhancing ROE in a manner that contributes to sustainable growth. Additionally, the results indicated that HC is the most crucial component of IC, with a correlation of 0.98 with IC, demonstrating a positive but statistically insignificant impact on sustainable growth. Furthermore, the CEE and SCE variables exhibited a negative but statistically insignificant impact on sustainable growth. Companies operating in such a volatile environment tend to adopt more conservative strategies, avoiding investments in intangible assets or increasing their investments due to the heightened risks these may pose.

The results for Egyptian manufacturing companies indicated a significant negative correlation between IC and SGR. Additionally, the findings from the Egyptian Stock Exchange confirmed that the independent variable CEE, as a component of VAIC, is the only variable with a statistically significant impact on sustainable growth, and this impact is negative. Although superior human resources, based on correlation matrix results, are considered the most important element of IC in supporting company performance by increasing ROE, the focus on increasing CEE value as a growth strategy appears to have a detrimental effect on sustainable growth.

The results for manufacturing companies in Abu Dhabi indicated that there is no significant impact (negative and insignificant correlation between IC and SGR. Additionally, the components of IC (CEE, SCE, HCE) also do not show any significant effect on sustainable growth. This suggests that increasing IC, whether in total or by its components, does not lead to any positive change in ROE that would contribute to sustainable growth for companies listed on the Abu Dhabi Stock Exchange. The absence of a relationship between IC and sustainable growth indicates that companies in Abu Dhabi tend to adopt a conservative or secretive growth policy influenced by their bureaucratic nature.

However, this study has some limitations. First, the study lacks temporal feedback for ROE, considering that sustainable growth is achieved over a period following profit generation. Second, the Egyptian Stock Exchange website did not explicitly list the industrial companies (Mour, 2024), including 244 companies distributed across 17 sectors. To address this, the researcher classified the Egyptian companies as industrial and determined whether they were part of the sample based on criteria consistent with the concept of industrial companies and the targeted sample period. Third, the research period includes an exceptional economic situation due to the COVID-19 pandemic, which had a direct impact on decision-making processes and company valuations. Fourth, the Egyptian market sample is much larger than the Palestinian and Abu Dhabi samples used in this study, likely leading to variations in the accuracy of the results. Moreover, the results cannot be generalized to other sectors beyond manufacturing. Finally, the unavailability of financial reports for many companies on the Egyptian Stock Exchange website compelled the researcher to resort to paid sources and purchase several financial reports.

4.3 Recommendations

1. The board of directors and executive management should recognize that IC is a double-edged sword. If managed well, with a focus on the most important component—HC—without neglecting physical and SC, it will positively impact sustainable growth, as shown by the results from the Palestine Exchange. Conversely, focusing on physical capital as a strategy will negatively affect sustainable growth, as evidenced by the Egyptian Stock Exchange.
2. Management must recognize the risks of IC, particularly regarding intelligent HC, that can be manipulated for personal gain, potentially harming the company while skillfully concealing its actions. Therefore, the company should implement strong internal controls and an ideal organizational structure, adhere to corporate governance standards, involve all levels in decision-making, and increase information transparency to ensure all components of IC align with the company's vision and strategic goals. This approach mitigates risks and promotes sustainable growth, as highlighted by the Abu Dhabi Stock Exchange results.
3. For more accurate results, it is crucial to develop a method for measuring IC that combines quantitative metrics from financial reports and qualitative primary sources

through interviews with key personnel. Given that IC includes a human element, relying solely on quantitative measurement methods is not precise.

4. Developing an index to measure the likelihood or potential of a company achieving sustainable growth is necessary. If a company's low potential indicates a lack of growth sustainability, it should change its strategy and operational methods to improve long-term growth and development prospects.
5. The varying results across different stock exchanges highlight the importance of considering economic, political, and cultural factors. Companies should take these into account when building business models and formulating policies and strategies to achieve sustainable growth.
6. Developing a free website containing financial reports, especially for years before 2015, for all companies listed on Arab stock exchanges is essential to facilitate researchers' work. It would be ideal if the site included Comparative Reports and ratios to help shareholders make informed investment decisions.
7. Supporting the development of an AI-powered accounting program that handles 80% of routine accounting tasks would save time and effort. Given the rise of machine learning and AI performing tasks traditionally done by humans, an AI-driven accounting program should handle daily accounting tasks, such as invoice entry, journal posting, ledger updates, trial balance preparation, adjusting entries, and entry verification. This would allow humans to focus on oversight, administrative tasks, report generation, and decision-making. Combining human intelligence with AI would be a powerful force for the company's growth and sustainability.
8. Capital market regulators, particularly in the Palestinian and Jordanian stock exchanges, should mandate that companies issue annual board reports detailing their intangible expenditures and the outcomes of these investments. This would provide greater transparency and enable stakeholders to assess the impact of such investments on company performance and sustainable growth.
9. Policymakers, regulators, and board members should encourage the development of improved IC strategies to help companies adapt to globalization. This support would have a positive impact not only on individual companies but also on the broader economy.

4.4 Future Research

1. As discussed in Hofstede's theory, the variation in results across different stock exchanges underscores the importance of incorporating cultural dimensions and their impact on accounting policies. Future research should include a broader range of stock exchanges and sectors to assess how results vary accordingly. Additionally, economic and political factors play a significant role. Considering the impact of major political and global events, such as COVID-19, the Russia-Ukraine war, and the Israeli-Palestinian conflict, using binary variables to measure pre- and post-event effects on corporate policies would be valuable.
2. Future research should incorporate more contemporary variables, such as the extent of a company's incorporation of technology, especially artificial intelligence, as well as variables representing the company's financial risk related to high costs associated with IC, such as leverage.

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Appendices

Appendix (A)

Tables

Table (11)

Regression results for the impact of IC components on SGR of the ADX

Panel estimation of the Intellectual capital components and sustainable growth in Abu Dhabi							
	Fixed random effect			**Random effect model**			
Variable	Estimate	SD	P	Estimate	SD	P	VIF
(Intercept)	0.108**	0.052	0.04	0.093*	0.05	0.064	
CEE	0.027	0.049	0.588	0.03	0.047	0.524	2.97
HCE	-0.019	0.014	0.186	-0.013	0.013	0.309	1.568
SCE	0.034	0.036	0.341	0.035	0.035	0.318	1.505
SIZE	-0.013	0.019	0.507	-0.008	0.019	0.674	1.385
Liquidity	-0.038*	0.019	0.053	-0.03	0.019	0.11	1.479
AE	-0.053	0.05	0.289	-0.056	0.048	0.244	2.237
ROE	1.036***	0.093	0	1.011***	0.09	0	2.883
Hausman test p value = 0.8688							

Table (12)

Post hoc test

	diff	lwr	upr	p adj
EG- Abu Dhabi	0.005052	-0.03446	0.04457	0.9515
PS- Abu Dhabi	0.001678	-0.05029	0.05364	0.9968
PS-EG	-0.003374	-0.04478	0.03803	0.98

Table (13)

Distribution of the research sample

Distribution of the Research sample		
The market	**Type**	**No. of the firms**
Palestinian firms listed in PEX	Manufacturing (industrial)	13
Abu Dhabi firms listed in ADX	Manufacturing (industrial)	18
Egyptian firms listed in EGX	Manufacturing (industrial)	66

Table (14)

Classification of Egyptian industrial companies based on sector

Company Name	Symbol	Sector	Industrial/Non-industrial Company
GB Corp	GBCO	Industrial Goods, Services and Automobiles	non-industrial company
Elsewedy Electric Co SAE	SWDY	Industrial Goods, Services and Automobiles	Industrial Company
Electro Cable Co SAE	ELEC	Industrial Goods, Services and Automobiles	Industrial Company
Arab Engineering Industries	EEII	Industrial Goods, Services and Automobiles	Industrial Company
Delta for Printing and Packaging	DTPP	Industrial Goods, Services and Automobiles	Industrial Company
International Company for Medical Industries	ICMI	Health Care & Pharmaceuticals	Industrial Company
Macro Group Pharmaceuticals	MCRO	Health Care & Pharmaceuticals	Industrial Company
Advanced Pharmaceutical Packaging	APPC	Health Care & Pharmaceuticals	Industrial Company
Egyptian International Pharmaceutical Industries	PHAR	Health Care & Pharmaceuticals	Industrial Company
Ibnsina Pharma	ISPH	Health Care & Pharmaceuticals	Industrial Company
Alexandria Pharmaceuticals and Chemical Industries	AXPH	Health Care & Pharmaceuticals	Industrial Company
Speed Medical Co	BIOC	Health Care & Pharmaceuticals	Industrial Company
Nozha International Hospital SAE	NINH	Health Care & Pharmaceuticals	non-industrial company
Alexandria Pharmaceuticals and Chemical Industries	NIPH	Health Care & Pharmaceuticals	Industrial Company
Speed Medical Co	SPMD	Health Care & Pharmaceuticals	non-industrial company
Alexandria New Medical Center SAE	AMES	Health Care & Pharmaceuticals	non-industrial company
October Pharma	OCPH	Health Care & Pharmaceuticals	Industrial Company
Integrated Diagnostics Holdings PLC	IDHC	Health Care & Pharmaceuticals	non-industrial company
Medical Packaging Co SAE	MEPA	Health Care & Pharmaceuticals	Industrial Company
Arab Drug Co	ADCI	Health Care & Pharmaceuticals	Industrial Company

Tenth Of Ramadan Pharmaceutical Industries & Diagnostic	RMDA	Health Care & Pharmaceuticals	Industrial Company
Cleopatra Hospital Co	CLHO	Health Care & Pharmaceuticals	non-industrial company
Minapharm Pharmaceuticals	MIPH	Health Care & Pharmaceuticals	Industrial Company
Memphis Pharmaceutical and Chemical Industries	MPCI	Health Care & Pharmaceuticals	Industrial Company
Sabaa International Company for Pharmaceutical and Chemical Industry	SIPC	Health Care & Pharmaceuticals	Industrial Company
Kahira Pharmaceuticals	CPCI	Health Care & Pharmaceuticals	Industrial Company
Cairo Poultry	POUL	Food, Beverages and Tobacco	Industrial Company
Ajwa Group for Food Industries	AJWA	Food, Beverages and Tobacco	Industrial Company
Northern Upper Egypt Development and Agricultural Production	NEDA	Food, Beverages and Tobacco	Industrial Company
Alexandria Flour Mills	AFMC	Food, Beverages and Tobacco	Industrial Company
General Company for Silos and Storage	GSSC	Food, Beverages and Tobacco	Industrial Company
Delta Sugar	SUGR	Food, Beverages and Tobacco	Industrial Company
Al Khair River For Development Agricultural Investment&Envir	KRDI	Food, Beverages and Tobacco	non-industrial company
Ismailia National Food Industries	INFI	Food, Beverages and Tobacco	Industrial Company
Ismailia Misr Poultry	ISMA	Food, Beverages and Tobacco	Industrial Company
El Nasr for Manufacturing Agricultural Crops SAE	ELNA	Food, Beverages and Tobacco	Industrial Company
South Cairo and Giza Flour Mills and Bakeries	SCFM	Food, Beverages and Tobacco	Industrial Company
Egypt for Poultry	EPCO	Food, Beverages and Tobacco	Industrial Company
Sharkia National Food	SNFC	Food, Beverages and Tobacco	Industrial Company
Egyptian Starch and Glucose	ESGI	Food, Beverages and Tobacco	Industrial Company
Lotus For Agricultural Investments And Development	LUTS	Food, Beverages and Tobacco	non-industrial company
The Arab Dairy Products Co. Arab Dairy - Panda	ADPC	Food, Beverages and Tobacco	Industrial Company
Juhayna Food Industries SAE	JUFO	Food, Beverages and Tobacco	Industrial Company
Obour Land for Food Industries	OLFI	Food, Beverages and Tobacco	Industrial Company
Arabian Food Industries Co	DOMT	Food, Beverages and Tobacco	Industrial Company
Misr Oils and Soap	MOSC	Food, Beverages and Tobacco	Industrial Company
Eastern Co SAE	EAST	Food, Beverages and Tobacco	Industrial Company
Edita Food Industries SAE	EFID	Food, Beverages and Tobacco	Industrial Company
North Cairo Mills	MILS	Food, Beverages and Tobacco	Industrial Company
East Delta Flour Mills	EDFM	Food, Beverages and Tobacco	Industrial Company
Mansoura Poultry	MPCO	Food, Beverages and Tobacco	Industrial Company
Cairo Oils and Soap	COSG	Food, Beverages and Tobacco	Industrial Company
Middle Egypt Flour Mills	CEFM	Food, Beverages and Tobacco	Industrial Company
Upper Egypt Flour Mills	UEFM	Food, Beverages and Tobacco	Industrial Company

Extracted Oils	ZEOT	Food, Beverages and Tobacco	Industrial Company
Middle and West Delta Flour Mills	WCDF	Food, Beverages and Tobacco	Industrial Company
Arab Polvara Spinning and Weaving	APSW	Textile & Durables	Industrial Company
Concrete Fashion Group for Commercial and Industrial Investments	AIVC/ CFGH	Textile & Durables	Industrial Company
Oriental Weavers Carpet	ORWE	Textile & Durables	Industrial Company
Golden Textiles and Clothes Wool	GTWL	Textile & Durables	Industrial Company
Alexandria Spinning and Weaving	SPIN	Textile & Durables	Industrial Company
Arab Cotton Ginning	ACGC	Textile & Durables	Industrial Company
El Nasr Clothing and Textiles	KABO	Textile & Durables	Industrial Company
Nile Cotton Ginning	NCGC	Textile & Durables	Industrial Company
Dice Sport and Casual Wear	DSCW	Textile & Durables	Industrial Company
Rakta Paper Manufacturing	RAKT	Paper & Packaging	Industrial Company
El Ahram for Printing and Packing	EPPK	Paper & Packaging	Industrial Company
Paper Middle East	SIMO	Paper & Packaging	Industrial Company
Universal for Paper and Packaging Materials	UNIP	Paper & Packaging	Industrial Company
Middle East Glass Manufacturing Co SAE	MEGM	Paper & Packaging	Industrial Company
Arabian Rocks Plastic Industries	ARPI	Building Materials	Industrial Company
General Company for Ceramic and Porcelain Products	PRCL	Building Materials	Industrial Company
Arab Valves Co SAE	ARVA	Building Materials	Industrial Company
Rubex International for Plastic and Acrylic Manufacturing	RUBX	Building Materials	Industrial Company
Arabian Cement Co SAE	ARCC	Building Materials	Industrial Company
TITAN Cement Egypt	ALEX	Building Materials	Industrial Company
Tourah Portland Cement	TORA	Building Materials	Industrial Company
South Valley Cement Co SAE	SVCE	Building Materials	Industrial Company
Suez Cement	SUCE	Building Materials	Industrial Company
Sinai Cement	SCEM	Building Materials	Industrial Company
Misr Cement - Qena	MCQE	Building Materials	Industrial Company
Lecico - Egypt	LCSW	Building Materials	Industrial Company
Misr Beni Suef Cement	MBSC	Building Materials	Industrial Company
Al Ezz for Ceramics and Porcelain	ECAP	Building Materials	Industrial Company
The Arab Ceramic Co.- Ceramica Remas	CERA	Building Materials	Industrial Company
International Dry Ice	DIFC	Basic Resources	Industrial Company
El Badr Investment and Development-BID	BIDI	Basic Resources	Industrial Company
Ferchem Misr for Fertilizers and Chemicals	FERC	Basic Resources	Industrial Company
Asec Company for Mining	ASCM	Basic Resources	Industrial Company
Egyptian Chemical Industries	EGCH	Basic Resources	Industrial Company
Misr National Steel SAE	ATQA	Basic Resources	Industrial Company
Egypt Aluminum	EGAL	Basic Resources	Industrial Company

Paint and Chemicals Industries	PACH	Basic Resources	Industrial Company
Arab Aluminum	ALUM	Basic Resources	Industrial Company
Al Ezz Dekheila Steel - Alexandria	IRAX	Basic Resources	Industrial Company
Egyptian Iron and Steel	IRON	Basic Resources	Industrial Company
Abu Qir Fertilizers	ABUK	Basic Resources	Industrial Company
Ezz Steel SAE	ESRS	Basic Resources	Industrial Company
Sidi Kerir Petrochemicals - SIDPEC	SKPC	Basic Resources	Industrial Company
Misr Fertilizers Production Co SAE	MFPC	Basic Resources	Industrial Company
Iron And Steel for Mines and Quarries	ISMQ	Basic Resources	Industrial Company
Kafr El Zayat Pesticides	KZPC	Basic Resources	Industrial Company
Misr Chemical Industries	MICH	Basic Resources	Industrial Company
Egyptian Financial and Industrial SAE	EFIC	Basic Resources	Industrial Company

Table (15)

Overall sample results summary

	Significant		**Insignificant**	
	Positive	**Negative**	**Positive**	**Negative**
IC affect the SGR		X		
CEE affect the SGR		**X**		
HCE affect the SGR				**X**
SCE affect the SGR				**X**
SIZE affect the SGR		**X**		
Liquidity affect the SGR		**X**		
AE affect the SGR		**X**		
ROE affect the SGR	**X**			
GDP affect the SGR			**X**	

Table (16)

Word abbreviations

Word	Symbol
Intellectual Capital	IC
Value Added Intellectual Coefficient	VAIC
Capital Employed Efficiency	CEE
Capital Employed	CE
Human Capital Efficiency	HCE
Human Capital	HC
Structural Capital Efficiency	SCE
Structural Capital	SC
Sustainable Growth Rate	SGR
Technological Capability	TC
Financial Leverage	LEV
Company Size	Size
Liquidity	Liquidity
Asset Efficiency	AE
Financial Performance	PERF
Return on Equity	ROE
Return on Assets	ROA
Resource-Based View	RBV
Relational Capital	RC

Table (17)

The results of the country effect variable analysis

Variable	Estimate	SD	T Value	p
(Intercept)	0.399	0.159	2.499	0.013
VAIC	-0.005	0.001	-2.808	0.005
SIZE	-0.042	0.017	-2.447	0.015
Liquidity	-0.000	0.002	-0.236	0.813
AE	-0.024	0.014	-1.674	0.095
ROE	0.962	0.006	142.7	0
factor(country)EG	-0.065	0.035	-1.836	0.067
factor(country)PS	-0.095	0.054	-1.758	0.079

Note: SGR ~ VAIC + SIZE + Liquidity + AE + ROE + factor (country).

Appendix (B)

Certificate of English Proofreading and Editing

Certificate of English Proofreading and Editing

This certificate confirms that the thesis mentioned below was proofread by an expert in academic English and edited by a native speaker.

The following issues were corrected: grammar, punctuation, sentence structure, and phrasing.

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قدمت هذه الرسالة استكمالاً لمتطلبات الحصول على درجة الماجستير في المحاسبة بكلية الدراسات العليا في جامعة النجاح الوطنية في نابلس، فلسطين.

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الملخص

تبحث هذه الدراسة في تأثير رأس المال الفكري على النمو المستدام، وتسلط الضوء على الأدوار الوسيطة للرافعة المالية والقدرات التكنولوجية. باستخدام التقارير السنوية من 99 شركة تصنيع خلال الفترة 2014-2021، يتم قياس رأس المال الفكري باستخدام نموذج معامل القيمة المضافة المعدلة (MVAIC)، ويتم قياس النمو المستدام باستخدام معدل النمو المستدام (SGR). في التحليل، قامت الباحثة بإدراج كل من الانحدارات ذات التأثير الثابت والعشوائي لضمان فهم شامل للعلاقات بين المتغيرات.

أظهرت النتائج الإجمالية أن رأس المال الفكري (IC) ادى الى تراجع النمو المستدام. حيث كان فقط لمكون رأس المال الوظيفي (CEE) تأثير سلبي ومهم على النمو المستدام.

في الختام، تقدم هذه الدراسة رؤى جديدة لصناع القرار حول التأثير الحاسم لرأس المال الفكري على النمو المستدام. كما تؤكد على أهمية الإدارة الاستراتيجية لمكونات رأس المال الفكري لتحقيق الأداء الأمثل ودعم مسار النمو. وفي حال إهمال هذه الإدارة، فقد يؤدي ذلك إلى تأثيرات سلبية على استدامة النمو. ومع ذلك، تواجه الدراسة بعض القيود، أبرزها غياب تصنيف واضح للشركات الصناعية المدرجة في البورصة المصرية، والتي تضم 244 شركة موزعة على 17 قطاعاً مختلفاً.

الكلمات المفتاحية: رأس المال الفكري؛ كفاءة رأس المال المستخدم؛ كفاءة رأس المال البشري؛ كفاءة رأس المال الهيكلي؛ النمو المستدام؛ بورصة فلسطين؛ البورصة المصرية؛ بورصة أبو ظبي.