



Investigating the relationship between sustainable growth and intellectual capital efficiency

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Abstract

Sustainable growth of the corporate is defined as the sustainable sales and profits growth under the external environment and economic policy. The enterprises ability to grow sustainably is not only an assurance of achieving their long-term goals, but also a temporal need for sustainable development of the national economy. Some companies consider sales growth rate or rapid expansion scale as their development goals. This growth is fast, short-term and unstable. The purpose of this research is to investigate the impact of the intellectual capital efficiency on the sustainable growth of companies listed in the Tehran Stock Exchange. In this regard, research hypotheses were tested based on a statistical sample of 102 companies during the years 2017 to 2021 by using multivariable regression models. Research results show that the efficiency of intellectual capital, human capital and structural capital have a positive and significant effect on the sustainability growth of listed companies, while efficiency of the used capital has a negative and significant effect on the sustainable growth. The results of this research can be useful for policy makers and business enterprise managers, so that they can create sustainable growth in the business enterprise. The components of intellectual capital can create long-term sustainable growth in the business enterprise and increase the value of the business enterprise.

Highlights

- This paper shows that the previous findings of intellectual capital definition contains aggregated knowledge, keeping high relationships, intangible assets, acquired experience, innovation and knowledge.
- Results show that the efficiency of intellectual capital have a significant effect on the sustainability growth.
- We conclude that focusing intensely on intellectual capital for achieving to sustainable growth.

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1. Introduction

Since the end of the 20th century, intellectual capital (IC) has been the focus of many academics and researchers, because it is a hidden factor of a significant gap between the market value of a company and the book value. Even though the intellectual capital subject was for the years before, there is still no clear definition for it. Intellectual capital is a knowledge and knowing the ability of a social group such as a business enterprise, Intellectual society or occupational performance. Despite the lack of a global concept of intellectual capital, its definition contains usual key factors (for example: aggregated knowledge, keeping high relationships, intangible assets, acquired experience, innovation and knowledge, which help companies obtain increase their fair value and more sustainable artfulness). There are three important goals in published works. Several researches have tried to illustrate intellectual capital from a conceptual view, while the rest have expanded constructive means of intellectual capital-based work or examined the relationship between intellectual capital performance and some important features of firms. The last joint field focuses on the relationship of financial performance sustainable growth and intellectual capital efficiency. Some researches verify that companies should handle their intellectual capital as dexterously as possible due to its important effects. Nevertheless, few studies have attempted to investigate the relationship between sustainable growth and intellectual capital (Nguyen et al., 2021). In the knowledge economy, instead of tangible assets, intellectual capital act an important part in improving the company's competitiveness and producing value. Intellectual capital, a relatively new designation as a strategic resource, is associated with creating competitive advantage and superior performance through value creation. Therefore, it is necessary for business enterprises to understand, identify, develop and effectively use intellectual capital, all of which can help companies gain a competitive advantage. Intellectual capital is generally recognized as a significant driver for improving the company's competitiveness and producing value in the knowledge economy (Xu and Liu, 2020: 161-162).

The concept of sustainable corporate growth was popularized by Higgins in 1977, when he first attempted, by using a sustainable growth rate model, to explain the practical limits of the optimal development of the growing company. The sustainable growth rate (SGR) model explains whether the business enterprise expected growth plan can be subsidized under current financial variables. Distinctly, the goal of the SGR is to describe the extensive annual expansion in the sales percentage that the business enterprise can achieve without freeing up capital or changing its financial strategies. Therefore, in accordance with this model, value is maximized around the organization's sustainable growth rate and declines sharply as actual growth exceeds the growth rate. SGR also authorizes the company to grow without new share offering or changing amount of debt financing. It is rational to accept that the company does not have enough cash in the necessary time, cannot establish sustainable development goals and achieve the improvement of financial situations, and this demand causes changes

in operating and/or financial strategies. Nevertheless, in universal competitive environment, simply maximizing growth may help a business enterprise achieve its short-term aim of creating value, but not in the long-run. (Oprean-Stan, et al., 2020).

In the new economic growth conditions, how to attain the sustainable growth of companies is a main subject for the investors and managers' attention. Almost all of the current published works assess financial performance in a straight line with indicators such as ROA and return on net assets without distinguishing among short-term and long-run performance (Si et al., 2020). Liu & Xu (2020) concluded that physical and human capital are the most prominent components of intellectual capital for sustainable economic achievement at different stages of the life cycle. Based on the main value added model of intellectual capital (VAIC), suggested that profitability is determined by physical capital and human capital, and the productivity of companies has a positive relationship with physical capital and a negative relationship with human resources (Xu & Liu, 2020: 164). Various researches have conducted an investigation into the relationship between firm performance and intellectual capital, but there are still mixed results. An early study by Chen et al (2020) depicted that physical capital affects the market value of companies and return on assets. This research can provide insights about the impact of intellectual capital on the sustainable growth of companies in emerging economies. Policymakers and company managers can use these findings as a starting point to better understand the importance of intellectual capital components and their effects on the sustainable growth of the company, and as a result, develop more effective strategies for the efficient management of intellectual capital resources to gain competitive advantage. It is expected that the results of this research helps investors, shareholders and managers to make decisions about sustainable growth forecasts. In this sense, this is the first study in Iran that investigates whether there is a relationship between the growth of the company's sustainability and efficiency of intellectual capital. The organization of the article is such that in the second part of the article, the theoretical literature (relationship between variables) and the background of the research are discussed. In the third part, the research method will be explained. In the fourth part, firstly, the hypothesis test model is discussed and then the research variables are introduced and measured. In the fifth part, the research findings are expressed in the form of descriptive statistics and inferential statistics. The last part is related to the analysis of the results, conclusions, practical and future suggestions of the research.

Intellectual capital, as an asset that is not tangible and on account of the achievability of learning as well, can be a trigger for business enterprises in creating a competitive privilege, and therefore stable certainty and foresight in the search for profits and attention to it can lead to a reduction in the corporate value and the soundness of financial statements. Corporate sustainability is a master plan that integrates economic, social, and environmental rules into a corporate model (Bonabi ghadim, et al., 2022). Since the sustainable development is

considered and depends on a business continuity activity, it is also very important to pay attention to it (Oprean-Stan, et al., 2020). Sustainable companies arrange environmental rules and social responsibility actions, apply them to all business decisions and integrate them into their business master plans. Sustainability in the business world is not only a desirable situation in terms of business ethics, but also a planned and historically necessary situation. In the age of internationalization and rising rivalry, business enterprises cannot ignore the significance and weight of social and environmental factors as well as finance. Attaining to environmental, social and economic aims can lead to greater profits and increase competitiveness. Believing that the creation of intellectual capital and innovation is therefore considered a cause of creating sustainable competitive privilege, (sustainable development), the sustainable nature of business enterprises necessitates the creation of intellectual capital that will add sustainable value. Today, the stability of businesses can be determined by the use of the information economy. The key to the effective use of the information economy is the efficient apply of intellectual capital, and as a whole, a working principle must be established for sustainable competition. According to previous studies, energy and sustainable development can be achieved with the added value of smart investments. When you talk about the role of information in strategy, you are talking about the knowledge of the organization's managers and employees. Employee information can be an obstacle to the implementation of management master plans because some employees do not apprehend them. It is one of the greatest troubles faced by managers and the danger that employees do not apprehend management strategies to achieve sustainable development. Strategic planning is an activity born from the inventiveness of the human brain and has no written formula giving the accurate response. Conversely, as a knowledge-based approach, intellectual capital emphasizes the interaction of persons and groups in making creative knowledge and sustainable growth. Considering the role of intellectual capital in the pursuit of profit and the level of competitiveness associated with competitive forces and the use-based approach paradigm regarding the role of intellectual property as an important resource, it is considered to be one of the driving forces behind intellectual capital, Sustainable development and added value.

2. A Review of the Related Literature

The term IC (Intellectual Capital) was first coined in 1969 by Kenneth Galbraith (Bontis, 1998). He believes that the definition of business acumen included more than dry skills, it also required intellectual activity. Intellectual Capital, as introduced by him, is the transition from 'having' information and abilities to 'using' information and abilities, which is often documented cyclically in the before letters. The most common use of information is to transform the information of individual into valuable products or services for the company and its partners. Intellectual capital is briefly defined as "the effective functioning of a company's human resources, capital and information management" (Rastogi,

2003). Edvinsson (2000) sees IC as the tomorrow of generating revenue from the combination of human capital and employees' talents in an organization. The View of Resource-Based (hereafter RBV) connects companies' internal capabilities (what they are good at) and the external environment (what the market demands and what contestants offer, e.g. intangible assets or tangible assets) (Hall, 1992). Core adequacies refer to an organization's ability to use resources, often combined using human or team skills and organizational processes and interactions, to influence ultimate requirements. wealth theory was taken into account only after the contributions of important authors such as Barney (1986), Wernerfelt (1984) & Cool (1989); Dierick & Cool's (1989) article and it is an important piece of literature in the definition of the resource-based perspective because of defining the types of capabilities and talents clearly that are central to it. Information-based value is not based on "numbers" but on the customers' perceptions. What does the most important work in the new economy is not 'price production' but 'value creation'. "Number" has now been replaced with "value". "While in classical economics, wealth is equal to the increase in the amount of goods produced, and the model is based on the quantity measurement of income ratio. In economics, ideas are converted from quantity to value, and therefore the subject needs to be discussed in detail work (Murals et al., 2010). Stakeholder theory suggests that a better measure of financial performance rather than accounting profit is total assets created or value added (Riahi-Belkaoui, 2003). Stakeholder perceptions of the impacts are related with the different aspects of intellectual capital (IC) on sustainable development (SD). In this concept, intellectual capital (IC) analysis is defined in the stakeholder paradigm. In this paradigm, business information is seen as essential to accountability to stakeholder groups and to management's fulfillment of its responsibilities. A good connections with various stakeholders can gain support and acceptance from them; this is beneficial for the organization to sustainably survive and thrive in society. IC information can be entered into accounting units, including this overview of all financial accounts. According to Teece et al. (1994) dynamic capabilities may better explain how and why particular firms have competitive advantages over time.

Higgins (1981) thinks that the company's equity, liabilities and assets in financial statements raise in accordance with growing the sale of product. When the debt ratio rising trade-off with the percentage of equity rising, the business enterprise is not in bankruptcy. Therefore, companies must confirm that their financial policies and capital structure remain stable to attain sustainable development. A few researchers describe sustainable company develop as the sustainable profits and sales develop on the basis of external environment and an economic procedure. The ability of companies to grow sustainably is not only an assurance for attaining their long-run corporate aims, but also a physical necessity for the national economy sustainable growth. Some companies consider rate of sales growth or rapid expansion of company degree as their development aims. This development is fast, unstable and short-term. Rapid development beyond the

carrying capacity of the firm's resources may create a credit and financial crisis, but, slow development reduces operational efficiency. A firm with a development rate that varies with sustainable development will end up in the "unsustainable development" dilemma. Sustainable corporate development involves the power to scale the company from little range to large and broad competition from weak range to strong. It requires not only the ability to grow, but also the power to be sustainable. Shareholders and investors demand the company to operate for a long time. This position requires the company to think not only the short-term profit rise, but also the long-term development and growth rate of the company. There are three categories of indexes calculating the sustainable development of the company in the existing researches. The first part is created under the measure of financial accounting, which is shown by Higgins' model of fixed sustainable growth (1981) and Van Horne's dynamic sustainable growth model (1988). The second part is implemented via cash flow, which is stated by the Rapoport model of sustainable development (1978) and the model of sustainable development of [Kali et al. \(2002\)](#). The third part is done by factor and principal component analysis, this part of financial indexes (such as company profitability, debt payment ability, operating ability, and development ability) are used for taking to account a broad indicator of the model of sustainable development ([Xu et al., 2021](#)). The challenges of sustainable development of companies have constantly been the subject of research by researchers. According to some of them, the development of large foreign companies is explained in terms of the growth of corporate value, and in most cases it is the absolute growth of sales. Most of the time, the development of its absolute indexes (cash flows, sales and assets) and their increase is not gone with by a sufficient raise in the efficiency of their economic and financial activities, which shows great growth ([Badu Kina et al., 2021](#)). Intellectual capital (IC), explained as the sum of intangible information assets in a corporate, is treated as a critical resource for supply chain rivalry and organisational performance. Intellectual capital includes codified technological knowledge entrenched in staffs, organization procedures and relations with investors. There is a great agreement in the researches that intellectual capital includes three different structures: relational capital, structural capital and human capital. In short, intellectual capital shows information, procedures and relations that can be converted into organisational performance. Researchers with different backgrounds explain the meaning of intellectual capital differently. However, in almost every definition, three aspects of intellectual capital can be found, including human capital, relational capital and structural capital ([Mubarik et al., 2021](#)). Human capital is a reservoir of information, expertise, proficiency and capabilities of staffs, which has an essential function in economic value and production. Therefore, human capital can be the title of information and expertise defined by the staff through proficiency and learning that is obtained. By expanding this definition, [Diaz-Fernandez et al \(2017\)](#) show that in addition to knowledge, skills and abilities, human capital includes personal characteristics such as understandings, skills and inventiveness. Based on the studies of [Serenko](#)

& Bontis (2016) , Mubarik (2021), they defined human capital as information, expertise, Multifunctional ability, engagement, participation, understanding, proficiency, skills and inventiveness of the staffs. Structural capital relates to non-human knowledge fixed in organisational processes, practices, and databases. This shows the institutional recall and the classified knowledge foundation of the company; even when staffs enter and exit. From the view of the company includes the structural capital of all non-human information sources. Structural capital shows the procedures and foundations of an organization by which it carries out its corporate dealings. Relational capital is determined by the corporate's relations with its stockholders and is treated as a bond that forms between the corporate and its investors. Relational capital is described as extrinsic relations, acquaintance and communications of a corporate with providers, customers and mutual relations between employees. Many researches have been done on the effect of intellectual capital and its elements on the sustainable development of companies. From the view point of the theory of resource-based, researchers accept that capital employed is a necessary tool in the production and exploitation process yet, and little by little intellectual capital has become an element of capital and stimulating force necessary for the sustainable development of companies. From the view of active capability, the market rivalry in the active situation is very intense. Only by continuously growing new expertise and promotions that opponents cannot emulate companies build their active ability to attain sustainable benefits. This active ability that can accelerate companies to attain sustainable rivalry is the company's sustainable development capability. This capability will be affected by factors such as internal and external resources, entrepreneurs' expertise, organisational power and learning capability. These four factors are related to the intellectual capital of a company and finally determine the sustainable development of the company (Xu et al., 2021).

Sustainable entrepreneurship can be found as an economic entity that manages all parts of its activities, including environmental, social and financial, in such a route that is profitable and manageable in the long run (Gross-Golacka et al., 2020). Attaining and maintaining competitive privilege in the market by creating intellectual capital and innovation is a constant issue for many corporates in the path of sustainable development (Jermisittiparset, 2021). Any company that lacks intellectual capital rarely retains the information, expertise, and operational capabilities that are valued in integrating innovation-based capabilities with business activities to attain corporate aim (Vale et al., 2022). So, while adapting their activities to the sustainability of business operations, efforts should be made to strengthen intellectual capital and have interactive resources that will enable them to retain valuable information, especially about customers and competitors (Ogochukwu Sheila & Chukwuma 2020). Intangible assets such as knowledge and intellectual capital play an important role in a business sustainability and these assets are more valuable than physical assets and equipment in many cases, and this is because increasing business capabilities require a greater need for product innovation. Thus, intellectual capital is a field of research related to the transition

called the knowledge economy (Isabel & Bailoa, 2017). With increasing technological development in the knowledge economy, corporates have sought to modernize their operational efficiency and production capacity for competitive privilege by emphasizing intellectual capital (Mukherjee & Sankar Sen, 2019). These concerns have so far developed different ways of using creative skills, adapting existing knowledge, operational capabilities and sustainable knowledge, allowing the organization to use the right resources to cope with the challenges of the changing environment (Weather & George, 2020). However, the basic principle of intellectual capital seeks to combine knowledge such as ideas, talents, and abilities of the company and can be used to generate profits, find new customers and create new products or services for the businesses sustainability. Therefore, intellectual capital is all the knowledge capacity that an organization has and enables it to manage creative thinking strategies and innovative behaviors that provide self-esteem and competitive advantage (Ogochukwu Sheila & Chukwuma, 2020). Today, intellectual capital continues to attract the attention of scientists and experts worldwide due to its clear benefits for sustainable performance (Ekanem, 2017).

Researchers have conducted experimental studies in many industries and think that used capital has a positive effect on the sustainable development of companies. Some studies results that human capital has the most positive effect on the sustainable development of companies among the parts of intellectual capital, and has turned into one of the major stimulus elements in the sustainable development of companies. On the other hand, other researchers conclude that the impacts of relational capital and structural capital on the sustainable development of the company are not important. Whether it is human capital, structural capital, or relationship capital, it should contribute to the sustainable growth of the company. Human capital, like the senior management team, is an essential strategic resource of a company. It has a positive and significant correlation with the company's development ability. Meanwhile, various types of top management partners' social capital can advance companies to maintain sales growth. Companies can make rational investments in R&D to attain great efficiency, increase the company's rivalry and the power of sustainable growth. According to the issues raised, this research seeks to answer the question that does the efficiency of intellectual capital effects on the sustainable growth of corporates?

2.1 Background Researches

Hina et al. (2024) showed that intellectual capital has a positive impact on the sustainable performance of small businesses in Malaysia. The results also showed that three categories such as green project, green technology capital and green spiritual capital were supported, while green social capital, green human capital and green capital were not supported.

Alsaleh, et al. (2024) examine the influence of intellectual property (IP) rights and economic growth on the geothermal energy output among the 27 European countries within the time frame 1990 to 2021. The findings show that a

significant increase in the geothermal energy industry sustainability can occur in EU14 emerged economies using IP rights than in EU13 emerging economies.

Suki et al. (2023) showed that innovation has a positive and strong relationship with smart green investments (GSCMP) and sustainable business practices. In addition, intellectual capital and GSCMP are also effective and highly visible in corporate sustainability.

Ali Yari et al. (2022) believe that economic steadiness and *safety* are considered the foundation of a country's economy and the basis of economic sustainability development. They tried to explain the role of economy and security in the economic system of Iran. The current research method is qualitative in terms of purpose, descriptive analysis and conceptual framework. The results of the study show that practical policies that ensure economic stability and security in the form of economic measures can be divided into practical policies to improve and enhance capacity-based performance and measures based on the timing of their effects. It has three measures to strengthen the national currency, reduce unemployment, and promote *job* and economic *safety*.

Moslemi et al. (2022) investigated the corporate information management, which emphasizes effective and transparent relationships with measuring and reporting of intellectual property based on direct and qualitative relationships. The measurement and disclosure of intellectual capital leads companies to achieve sustainable accounting structures with higher quality.

Bonabi ghadim et al. (2022) investigate the effect of intellectual capital on sustainability performance reporting and business strategy. For this reason, data of companies traded on the TSE were collected and analyzed using multiple regression methods. The results showed that investment coefficient and factors had a positive impact on the sustainability performance of reporting companies, and the intellectual capital coefficient and capital and structure performance had a positive impact on future strategies, while human performance had a positive impact on future strategies. In order to make the information more transparent, the information in the financial report should be increased and the financial report of the intelligence should be determined.

Xu et al (2021) in a research, studied the impact of intellectual capital on the sustainable growth of corporates in the Chinese stock exchange in agriculture, tourism and renewable energy industries. The results show that the performance of invested capital, intellectual capital and its components have a positive impact on the sustainable development of the company. In the industrial sample, the effect of investment efficiency on the sustainable growth of agricultural enterprises is not significant, and the effect of capital efficiency on the sustainable growth of tourism enterprises is also not significant. While they have positive impacts, intellectual property practices are integral to the sustainable growth of renewable energy companies.

Xu & Liu (2020) studied the effect of intellectual capital on financial performance: a developed intellectual capital value added model. The results show that physical capital is the effective element on the company's performance.

The results also show that the adjusted and developed intellectual added value coefficient model works better than the main intellectual added value coefficient model.

[Alvino and Di Vaio \(2019\)](#) investigated the relationship between intellectual property and sustainable development. Bibliographic analysis showed that published studies on smart sustainability investments mostly focused on measuring outcomes to improve business performance. The results show that intellectual capital is associated with long-term thinking. Therefore, the development potential of smart investments is related to the 2030 Sustainable Development Agenda. [Yusliza et al. \(2019\)](#) studied the structural model of green intellectual capital on sustainable development in a research. The results showed that intellectual capital has a positive impact on economic, environmental and social performance. The findings of this research have several usage for green companies. The novel point of this study is to highlight the role of intellectual capital as a unique resource of organizations in achieving sustainable performance and competitive privilege for future studies. Industries can increase their clean production capacity by using this method as a goal.

[Naghizadeh et al. \(2018\)](#) in a research investigated the pattern of factors affecting the sustainable growth of new technology companies in Iran. First, according to the background and opinions of experts in this field, an initial model with four dimensions and 14 factors for the design study and then the theoretical model proposed above for four knowledge-based companies belonging to the fields of information technology, biotechnology, medical equipment and measuring equipment were investigated. For the study of companies, the triple approach of information and information obtained from documents, evidence and statistics as well as interviews was used and the data collected through questionnaires also strengthened the results, in the following, intra-case and inter-case analysis was performed on the companies and the factors in the theoretical model that have real repetition and theoretical repetition were identified. At the end, seven factors with theoretical repetition and seven factors with actual repetition were identified, and the seven factors with actual repetition were able to be generalized to other companies with more confidence, and among them, the characteristics of the founders of the company have the most impact.

[Khajavi & Salehinia \(2015\)](#) in a research investigated the relationship between financing restrictions and company growth. This study is a model of quantitative study that uses the scientific method of construction and experimental proof. The results shows that there is a negative relation between financial constraints and asset growth and sales development as indicators of the company's growth. In other words, companies that have less cash balance, dividend and Tobin's Q ratio on the one hand, and have a larger leverage ratio on the other hand, have less growth.

[Afshar & Zamani Amouqin \(2014\)](#) investigated the relation between performance assessment indicators and performance rating with the growth of companies. The results show that there is a relation between financial ratios

including ROA, ROE, net profit to sales ratio, ratio of asset turnover, ratio of cash turnover, ratio of debt to asset, ratio of long term debt to equity with company growth. The results of the second hypothesis show a significant connection between the ranking of financial performance evaluation indicators and the growth of the company. [Khodadadi & Tucker \(2014\)](#), investigated the impact of corporate governance characteristics on the financial performance and value. The results of the study showed that the concentration of ownership and state ownership have a positive relationship with the performance and value of companies. Major institutional investors have a negative relationship with the value of the company and it does not have a relation with the performance of the companies. Also, the corporate governance structure and its performance have a positive relationship.

In the direction of the objectives of the study and answering the questions raised, the hypotheses of the research are as follows:

1. The efficiency of intellectual capital has a positive impact on the sustainable growth of the company.
2. The efficiency of structural capital has a positive impact on the sustainable growth of the company.
3. The efficiency of human capital has a positive impact on the sustainable growth of the company.
4. The efficiency of the used capital has a positive impact on the sustainable growth of the company.

3. The Study methodology

In terms of purpose and study methods, the library field was used in the current research as follows, using historical data. Moreover, in terms of descriptive research, it is a semi-exploratory type of research. According to the research method, relationship is the analysis of the relationship between variables in this type of research in accordance with the purpose of the research. It was used to collect the necessary data in this research and in the in-depth examination of the research articles and studies conducted in this section. Other company reports and stock exchange organizations are used to collect information, annual accounts and documents attached to annual accounts. For statistical analysis purposes, exploratory tests were used in statistical analysis to determine the type of data collected. Then, by determining the type of data (panel data or ordinary least squares), the validity of the underlying hypotheses of the multiple regression models of the research, including the lack of autocorrelation and normality, was investigated. After confirming the underlying hypotheses, predicted multiple regression models were presented. All data classification operations were done by Excel software and hypothesis testing was done by Stata software.

3.1 The Study population and statistical sample

Sample in the current research is the classified and audited financial data of active corporates admitted to the Tehran Stock Exchange. In this research, the corporates that met the conditions were selected as the final sample:

- 1- They were present in the TSE from 2017 to 2021.
- 2- Companies should not change financial year between 2017 and 2021.
- 3- The companies in the sample should not include investment, financial and bank companies.
- 4- The information needed by the companies is available.
- 5- The sample should be a part of active companies.
- 6- Their financial year is 29 December.

Finally, according to the mentioned characteristics, 102 companies during the years 2017 to 2021 (number of 510 companies-year) have been selected as the statistical population, and according to the availability of their information, all the companies are considered as a statistical sample. The process of selecting the statistical sample is as described in Table (1):

Table 1. process of selecting the statistical sample

Total corporates accepted in the TSE until the end of the fiscal year 2021.	623
Delisted Companies from the TSE during the period of research (2017 to 2021).	(35)
Companies that have changed their financial period in the period under review.	(35)
Companies that are part of financial companies, investment and banks.	(75)
Companies whose desired data is not available.	(85)
Inactive companies	(246)
Their financial year does not end on December 29.	(45)
Sample available	102

Source: Researcher's analysis

3.2 Research hypotheses testing model

Based on the research results of Xu et al (2021), the test model of the study hypotheses is as follows:

The test model of the second hypothesis:

$$SGR_{it} = \beta_0 + \beta_1 VAIC_{it} + \beta_2 Size_{it} + \beta_3 Lev_{it} + \varepsilon_{it} \quad (1)$$

Where:

$SGR_{i,t}$: Sustainable growth of corporate i in year t

$VAIC_{i,t}$: Intellectual capital efficiency of corporate i in year t

$Size_{i,t}$: size of corporate i in year t

$Lev_{i,t}$: Financial leverage of corporate i in year t

$\varepsilon_{i,t}$: error

The test model of the second hypothesis:

$$SGR_{it} = \beta_0 + \beta_1 SCE_{it} + \beta_2 Size_{it} + \beta_3 Lev_{it} + \varepsilon_{it} \quad (2)$$

Where:

$SCE_{i,t}$: Structural capital efficiency of corporate i in year t

The model for testing the third hypothesis:

$$SGR_{it} = \beta_0 + \beta_1 HCE_{it} + \beta_2 Size_{it} + \beta_3 Lev_{it} + \varepsilon_{it} \quad (3)$$

Where:

HCE_{it} : Human capital efficiency of corporate i in year t

The model for testing the fourth hypothesis:

$$SGR_{it} = \beta_0 + \beta_1 CEE_{it} + \beta_2 Size_{it} + \beta_3 Lev_{it} + \varepsilon_{it} \quad (4)$$

Where:

HCE_{it} : Used capital efficiency of company i in year t

3.3 The research variables

The research variables are as follows:

Dependent variable: In this research, the dependent variable is the company's sustainable growth (SGR). To measure this variable, the model proposed by [Van Horne \(1988\)](#) was used as follows:

$$SGR \text{ (the company's sustainable growth)} = \frac{(P \times A \times T \times R)_{it}}{1 - (P \times A \times T \times R)_{it}} \quad (5)$$

In the above equation, i, t, P, A, T and R stand for the company, year, profit margin (operating ratio divided by sales revenue), asset turnover ratio (sum of sales revenue divided by total assets), equity ratio (net profit divided by equity) and inventory holding rate (total inventory divided by total assets).

Independent variables:

The independent variable of the research is the intellectual capital of companies. In this research, in accordance with the study (Xu et al, 2021), to measure the components of the intellectual capital of corporates, the adjusted intellectual added value coefficient (MVAIC) model is applied. The adjusted intellectual added value coefficient is calculated as follows:

$$VAIC_{it} = SCE_{it} + HCE_{it} + CEE_{it} \quad (6)$$

Where:

$VAIC_{it}$: intellectual capital coefficient of corporate i in year t

SCE_{it} : Structural capital efficiency of corporate i in year t

HCE_{it} : Human capital efficiency of corporate i in year t

CEE_{it} : Used capital efficiency of corporate i in year t

The first step to calculate the components of intellectual capital includes the calculation of value added (VA), which is explained as follows:

$$VA_{it} = OP_{it} + PC_{it} + A_{it} \quad (7)$$

VA_{it} : added value of corporate i in year t

OP_{it} : operating profit of corporate i in year t

PC_{it} : cost of personnel, taxes and dividends of corporate i in year t

A_{it} : depreciation cost of tangible and intangible assets of corporate i in year t .

According to [Edvinson \(2000\)](#) and [Pulic \(1998\)](#), one of the indicators of the company's human capital is the total of salary costs. Therefore, the efficacy coefficient of human capital is defined as the following relationship:

$$HCE_{it} = \frac{VA_{it}}{HC_{it}} \tag{8}$$

HC_{it} : The total amount invested for salary and wage of corporate i in year t

The efficacy of used capital is calculated according to the following relationship:

$$CEE_{it} = \frac{VA_{it}}{CE_{it}} \tag{9}$$

CE_{it} : Total book value of net assets (except intangible assets) of corporate i in year t

The efficacy of structural capital is calculated according to the following relationship:

$$SCE_{it} = \frac{SC_{it}}{VA_{it}} \tag{10}$$

SC_{it} : structural capital of corporate i in year t

Structural capital is calculated as follows ([Kafili et al., 2022](#)):

$$SC_{it} = VA_{it} - HC_{it} \tag{11}$$

Control variables:

Corporate size: logarithm of book value of total assets

Financial leverage: total debt ratio to total assets.

4. Empirical Results

4.1 Descriptive statistics

Table (2) depicted descriptive statistics of the tested variables, which includes some central and dispersion indicators, for a sample consisting of 510 observations (company-year) for the time of 2017 to 2021.

Table 2. Descriptive statistics of the research variables

Variable name	Sustainable growth	Intellectual capital efficiency	Structural capital	Human capital
Average	0.039226	12.47864	0.358153	11.82099
mean	0.032654	14.05077	0.324798	13.49763
Maximum	0.098718	30.45596	0.985625	29.48619
Minimum	0.000508	1.535090	0.100314	1.021300
Standard deviation	0.024927	5.115458	0.189794	5.145763
Skewness	0.628098	-0.631823	0.899199	-0.644095
Kurtosis	2.493106	3.179738	3.447010	3.087512
CV	0.6352	0.4099	0.5299	0.4353
variable name	used capital	company size	Financial leverage	

Average	0.300177	14.75859	0.518747
mean	0.253699	14.64155	0.536500
Maximum	0.861541	21.40690	0.979600
Minimum	0.002300	10.16650	0.003300
Standard deviation	0.192528	1.610463	0.226622
Skewness	0.802365	0.479792	-0.239596
Kurtosis	2.877681	4.177660	2.294478
CV	0.6414	0.1082	0.4369

Source: Researcher's analysis

In the above table, some parts of variables' descriptive statistics are presented, including average, median, minimum, and maximum as central indicators and standard deviation as dispersion index and Kurtosis coefficient, skewness coefficient as distribution indices. For example, the average value for the sustainable growth variable is equal to 0.039226, which shows that most of the data are concentrated around this point. The median is another central indicator. As the results show, the median of the sustainable growth variable is equal to 0.032654, which shows that half of the data are less than that and the other half are more than that. Standard deviation is a dispersion parameters and is a measure of the dispersion of observations from the average. The value of this parameter for sustainable growth variable is equal to 0.024927. The amount of skewness and kurtosis for the sustainable growth variable is 0.628098 and 2.493106 respectively. The maximum value of this variable was 0.098718 and the minimum value was 0.000508.

Table 3. Results of Jarque–Bera test for data normality

	Sustainable growth	Intellectual capital efficiency	structural capital	Human capital	used capital	company size	Financial leverage
Jarque–Bera test	7.797	6.928	14.589	7.083	10.998	10.114	3.097
probability	0.089	0.112	0.092	0.124	0.223	0.095	0.213

Source: Researcher's analysis

Considering that the probability of the above test is more than 0.05, the data distribution is normal.

4.2 Inferential statistics

4.2.1 Diagnostic tests in research models

The combination of data and data series based on observations is made by a large number of cross-sectional variables (N), often randomly selected and evaluated at a specific point in time (T). In this case, $N \times T$ numbers are called junction numbers or section numbers. Because pooled data includes both time-series data and cross-sectional data, using appropriate statistical methods to describe the properties of these variables is more complex than the models used

for cross-sectional and time-series data. Cross-sectional and cross-sectional data matching methods have been used in many studies over the years.

4.2.2 F- limer's test

In this test, the hypothesis H_0 , which means that the width of the origins is the same, is set against the hypothesis H_1 which means that the width of the origins is unequal. If the H_0 hypothesis is accepted, it means that the width of the origin is the same for different sections, and the ability to combine the data and use the combined (aggregate) regression model will be statistically verified, and the research hypotheses will be verified using the Pooled data method. However, if the H_0 hypothesis is rejected, the data model is accepted and the research hypotheses are tested using the data model. The results of this test, which basically checks the uniformity of the width from the origin in the model, after running it in Eviews software, the output is as follows:

Table 4. F-limer's test

	Test type	The value of the statistic t	The probability	Output
First model	the F-Limer test	9/474079	0.0000	It is a panel model
Second model	the F-Limer test	9/352321	0.0000	It is a panel model
Third model	the F-Limer test	9/547356	0.0000	It is a panel model
Fourth model	the F-Limer test	9/386420	0.0000	It is a panel model

Source: Researcher's analysis

Since the probability value of the F-Limer test is less than 5%, therefore, the null hypothesis of pooled or cumulative regression (regression without fixed effects or random) is rejected and therefore the appropriate model for estimating the investigated model has fixed effects or random effects and is not aggregated or pooled.

4.2.3 Hausman test

The Hausman test is based on whether a regression error exists between the predicted and independent variables. If there is such a connection, random examples are used; if there is no connection, concrete examples are used. This test statistic has a chi-square distribution with $K-1$ degrees of freedom ($K-1$ equals the coefficient X). If the value of the chi-square statistic is greater than the critical value of the chi-square table, that is, if the significance level of this test does not exceed the determined alpha, the H_0 hypothesis is rejected. So the real effects model is better than the random effects model. The results of the Hausman test are shown in table (5).

Table 5. The result of the Hausman test

Test type	The value of the statistic	The probability	Output
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First model	Hausman test	1/5874	0.0000	The model has fixed effects
Second model	Hausman test	2/5622	0.0000	The model has fixed effects
Third model	Hausman test	2/5254	0.0000	The model has fixed effects
Fourth model	Hausman test	1/5734	0.0000	The model has fixed effects

Source: Researcher's analysis

According to the probability value of the Hausman test is less than 5%, as a result, the statistical assumption that the model has random effects is rejected. Therefore, the result is finally obtained that the model has fixed effects on the sections (here are the sections of the corporates) and with these settings, the regression model is estimated. Considering that the study models should be *predicted* using the fixed effects method, modified Wald and Wooldridge tests are used to investigate variance heterogeneity and autocorrelation respectively.

The results of modified Wald for the first regression test in table (6) showed that the statistical probability of this test for research model was more than 5% and as a result, there is no heterogeneity of variance. Also, the probability of Wooldridge's statistic is more than 5%, which shows that there is no autocorrelation problem. For the rest of the research hypotheses, calculations have been obtained in a similar way. Factor analysis of variance (VIF) was used to determine the absence of collinearity. These test results showed that the VIF value for all variables was less than 2, meaning that there was no collinearity between the explanatory variables. It was refused to insert the table due to the length of the content.

Table 6. The results of necessary diagnostic tests

Test type	Test statistics	Statistical probability	Results
modified Wald	157/43	0/087	no heterogeneity
Wooldridge	1/528	0.276	no autocorrelation

Source: Researcher's analysis

One of the conditions for comparing the right model is constant; therefore, a static test or root test is performed on the replaced element. The results obtained using Eviews software and root testing are as follows:

Table 7. The unit root test Results

Variable	Statistical value	Probability value	Result
Sustainable growth	13.4073	0.0000	Confirmation of stationary
Used capital	13.4353	0.0000	Confirmation of stationary
Intellectual capital	13.0870	0.0000	Confirmation of stationary
Human capital	12.9563	0.0000	Confirmation of stationary
Structural capital	17.5967	0.0000	Confirmation of stationary
Relational capital	13.2328	0.0000	Confirmation of stationary
Company size	12.6741	0.0000	Confirmation of stationary
Financial leverage	14.3492	0.0000	Confirmation of stationary

Source: Researcher's analysis

Considering that the probability value of the root test in all of the above units is less than 5%, it is concluded that the statistical hypothesis that there are unit roots in all of the above variables is rejected. Therefore, these changes are permanent. This way the model can be compared without worrying about the presence of regression.

4.3 Testing the research hypotheses

According to the previous explanations, the estimated model and its coefficients are as follows:

Table 8. The first regression model

Variable name	Regression coefficient	Standard error	T statistic	Probability value
Fixed coefficient	0.0376	0.0142	2.6523	0.0083
Intellectual capital efficiency	0.0149	0.0053	2.8002	0.0054
Company size	0.0007	0.0008	0.8675	0.3862
Financial leverage	-0.0001	0.0004	-0.3616	0.7178
The coefficient of determination		0.448391		
Adjusted coefficient of determination		0.299827		
Durbin-watson statistic		2.196764		
F- statistic		3.018182		
Significance of the whole model		0.000000		

Source: Researcher's analysis

The value of the Fisher statistic and the probability value for the overall model are 3.018182 and 0.000, respectively; this indicates the significance of the model as a whole (since the probability value of this statistic is less than 0.05). A well-known absolute statistic is the coefficient of determination, whose value lies between zero and one. If the coefficient of determination is large and close to one, the model fits the data well, whereas if R^2 is low, meaning close to zero, the model does not provide good information. The adjusted coefficient of determination in the above table is equal to 0.299827, indicating that this model explains more than 30% of the changes caused by the dependent variables, namely sustainable development. The Durbin-Watson statistic, which shows the autocorrelation between the residuals of the model, is in the allowed range of 1.5 to 2.5 and its number is 2.196764. The coefficient of the independent capital variable used in the above table shows a significant relationship between this variable and sustainable growth at the 5% error level; because the P-value calculated for the coefficient of this independent variable is less than 5%. Therefore, we can say

that there is a significant relationship between intellectual capital efficiency and sustainable growth at the 95% confidence level. Because the coefficient is a positive value (0.014957), there is a positive relationship between them.

Table 9. The second regression model

Variable name	Regression coefficient	Standard error	T statistic	Probability value
Fixed coefficient	0.028316	0.014034	2.017746	0.0443
Structural capital efficiency	0.024287	0.010581	2.295340	0.0044
Company size	0.000793	0.000877	0.904504	0.3663
Financial leverage	-7.11E-05	0.000403	-0.176494	0.8600
The coefficient of determination		0.437606		
Adjusted coefficient of determination		0.286139		
Durbin-watson statistic		2.177343		
F- statistic		2.889107		
Significance of the whole model		0.000000		

Source: Researcher's analysis

The value of F-statistics and the probability value for the overall model are 2.889107 and 0.000, which indicates the importance of the model in the general case (because the probability value of these statistics is less than 0.05). A well-known absolute statistic is the coefficient of determination, whose value lies between zero and one. A large coefficient of determination and close to one indicates that the model fits the data well, while a low "R²" value, meaning close to zero, and indicates that the model does not fit the data well. The coefficient of determination in the table above is 0.437606, which shows that the model has a good fit. Moreover, since the value of the modified coefficient of determination is equal to 0.286139, we can say that this model contains more than 29% of the variables related to the variables explaining sustainable development. Durbin Watson's statistic, which shows the autocorrelation between the residuals of the model, is in the allowed range of 1.5 to 2.5 and its number is 2.177343. The calculated coefficient of the independent variables of human, structural and structural capital efficiency in the table above shows an important relationship between these variables and sustainable growth at the 5% error level; because the P-value calculated for the coefficient of these variables is less than 5%. Therefore, we can say that there is a strong relationship between financial performance and sustainable development at the 95% level. Since the coefficients of these variables are positive, there is a positive and strong relationship between them. This number shows that with a one percent change in the structural capital efficiency variable, the sustainable growth variable increases by 0.024287.

Table 10. The third regression model

Variable name	Regression coefficient	Standard error	T statistic	Probability value
Fixed coefficient	0.028837	0.014288	2.018238	0.0442
Human capital efficiency	0.032830	0.014808	2.217044	0.0042
Company size	0.000864	0.000876	0.985791	0.3248
Financial leverage	-0.003296	0.005479	-0.601592	0.5478
The coefficient of determination		0.440229		
Adjusted coefficient of determination		0.289091		
Durbin-watson statistic		2.188189		
F- statistic		2.912756		
Significance of the whole model		0.000000		

Source: Researcher's analysis

In the above table, the coefficient of determination is 0.440229, indicating that the model fits well. In addition, the value of the corrected dependence coefficient is 0.289091, accordingly, it can be said that this model includes more than 29% of the variables related to the variables explaining sustainable development. Durbin Watson's statistic, which shows the autocorrelation between the residuals of the model, is in the allowed range of 1.5 to 2.5 and its number is 2. 188189. The coefficients calculated for the independent variables of human performance, structure and human capabilities in the table above show the relationship between these variables and sustainable development at the 5% level; because the calculated P-value for the coefficient of variation is less than 5%. Therefore, we can say that there is a strong relationship between personal performance and sustainable growth at the 95% level. Since the coefficients of these variables are positive, there is a positive and strong relationship between them.

Table 11. The fourth regression model

Variable name	Regression coefficient	Standard error	T statistic	Probability value
Fixed coefficient	0.030815	0.014237	2.164500	0.0310
Used capital efficiency	-0.032152	0.015710	-2.046594	0.0039
Company size	0.000787	0.000876	0.898828	0.3693
Financial leverage	-8.35E-05	0.000402	-0.207979	0.8354
The coefficient of determination		0.438574		
Adjusted coefficient of determination		0.287367		

Durbin-watson statistic	2.176488
F- statistic	2.900487
Significance of the whole model	0.000000

Source: Researcher's analysis

In the above table, the coefficient of determination is 0.438574, indicating that the model fits well. Moreover, since the value of the modified coefficient of determination is equal to 0.2873, it can be said that this model contains more than 29% of the variables related to the variables explaining sustainable development. The Durbin Watson statistic, which shows the autocorrelation between the residuals of the sample, is in an acceptable range between 1.5 and 2.5, and the number is 2. 176488. The coefficients calculated for the independent variables of person, condition and method used in the table above show the relationship between these variables and sustainable development at the 5% level; because the calculated P value for the coefficient of variation is less than 5%. Therefore, it can be said that there is a significant relationship between capital expenditures and sustainable development at the 95% level. Since the coefficient of these variables is negative, there is a negative and strong relationship between them. The fourth research hypothesis is therefore rejected.

5. Concluding Remarks

Intellectual capital is one of the main incentives for creating the organization's value and is one of the important and effective factors in obtaining competitive advantage and superior financial performance of companies. It is one of the most important assets of a company, and its role in the production of the organization's wealth cannot be ignored. The rapid development and progress of technology in recent years has brought about major changes in people's lives and activities in all areas, but also led to the transition to the knowledge economy and the change of the best paradigm in the industrial economy. In this way, we can expect an economy based on knowledge and information, physical assets and intellectual capital. In such cases, organizations' intellectual capital is considered a competitive advantage. Comparison of the first three hypotheses based on the relationship between intellectual capital and its components and the sustainable development of the company shows that there is a positive relationship between authorized companies in Tehran. In other words, the coefficient on the change of intellectual capital and its components shows a positive number, which shows that the growth of the company increases as these variables increase with positive coefficients. There is a strong relationship between intellectual capital and its components and the sustainable development of the company, and the first research hypothesis H1 can be confirmed. The results of this study are consistent with the results of [Naghizadeh et al. \(2018\)](#), [Xu et al. \(2021\)](#), [Xu et al. \(2020\)](#), [Alvino & Di Viao \(2019\)](#). The results of the study show that financial

performance, financial performance and its components have a positive impact on the sustainable development of the company. According to the second hypothesis, working capital has a positive and significant effect on the sustainable development of the company. Innovation, effective knowledge management and environmental compliance significantly increase business performance and sustainable development. The findings of this study are consistent with [Alvino & Di Vaio \(2019\)](#), [Bonabi ghadim et al. \(2022\)](#), [Suki et al. \(2023\)](#), and [Hina, et al. \(2024\)](#)'s study, based on a significance level of, is not consistent with the findings of Xu et al. and the Xu and Liu study. In a study by [Xu et al. \(2021\)](#), the impact of investment strategy on the sustainable growth of tourism companies is not significant. According to the third hypothesis, human resources performance has a positive and significant impact on the sustainable growth of the company. Intellectual capital as an intangible asset of organizations in achieving sustainable performance and competitive advantage for future researchers. Most developing countries have failed to achieve sustainable development and ultimately economic growth despite massive investments in expanding education systems and strengthening human capital. According to Solow's (1956) development model, technological development helps countries achieve long-term economic development goals. However, in recent years it has also been considered necessary to develop human capital or invest in workers to improve the economy at a higher level; because the power of skilled workers allows industries to use modern industries, develop new ways of working and reduce industrial production. Conversely, in a prosperous economy, unskilled workers will promote negative factors such as reduced labor productivity, increased waste in factories and unhealthy work. Therefore, it cannot be wrong to say that industries collaborating with developed industries and skilled workers can strengthen the regional economy and the created environment. Moreover, it is impossible to use modern technology to the maximum extent without improving the technical and professional level. Therefore, complementarity between physical resources and human resources can help the industry increase productivity with less effort. From now on, the power of skilled workers can improve people's lives and improve their quality of life. In other words, actions aimed at achieving Sustainable Development Goals (SDG) 4 (quality education) and SDG9 (innovation and industrial infrastructure) can help countries achieve their long-term economic and sustainable development goals. Studies suggested that human capital should be increased because companies with large amounts of human capital are more likely to follow environmental standards more closely. Similarly, consumers with formal education in the region also prefer recyclable and environmentally friendly products. The results of this study are similar to [Yusliza et al. \(2019\)](#), [Moslemi et al. \(2022\)](#) and [Moftakhari et al.\(2021\)](#). However, study is not consistent with [Bonabi Ghadim et al.'s \(2022\)](#) study. The results of the research are not totally consistent with the economic facts of Iran because it has been concluded that the intellectual capital and its structural and human components {i.e. the company's intellectual assets} have a positive relationship with the sustainable growth of

Iranian companies, and on the contrary the relationship between the physical capital used and The sustainable growth of the company has a negative relationship. Some of the reasons may be attributed to 1. Requiring and involving stock exchange Iranian companies in applying International Financial Reporting Standards (IFRS) or 2. Considering the culture of implementing the 34000 model of human resources at the level of Iranian companies, special attention has been paid to human capital and we have taken steps in line with advanced countries in paying attention to human capital (based on the native model of the standard 34000 which with the consensus of many experts The field of human resources and other organizational fields has been established in the country by modeling the best global experiences in this field, it is possible to examine the current state of human resource management and the maturity level of human resource processes in the organization and provide projects and measures for their improvement and development. and created a culture of excellence in the organization. This human resources model has five levels of maturity, which are successive and continuous stages for the improvement of talents, effective human resources development, and the successful management of human resources; Transparency of the role of employees is also provided). (Gholipour et al., 2022).

For the fourth hypothesis, considering that the sign of the coefficient is negative, this hypothesis was not accepted. The results of the research are not in line with the results of Naghizadeh et al. (2018), Xu et al. (2021), Xu et al. (2020). This article provides guidance to companies focusing their investments on the value chain of smart investments for sustainable development. Finally, this article also highlights the relationship between traditional financing as leverage capital and the sustainable development of companies. This will lead to projects that not only emphasize smart financial management but also improve capital efficiency. Based on resource-based theory, scholars believe that although capital is still an important resource in the production process, intellectual capital is increasingly becoming a necessary and motivating factor to promote sustainable industrial development. Considering the power potential, market competition in the region is fierce. Only by constantly developing new skills and techniques that competitors cannot imitate can companies improve their ability to achieve sustainable profitability. These strong capabilities can help companies achieve sustainable competitiveness and sustainable business development potential.

The suggestions based on these results are as follows:

1. Based on the results of the first hypothesis, it is recommended that analysts pay more attention to the intellectual investment performance of companies and their components to encourage investors to buy, sell and hold shares. Because the existence and effective use of intellectual capital in companies is one of the indicators that improve financial performance and sustainable development. In the new era of economic development, also, how to ensure the sustainable development of businesses has become an important issue for managers and investors. It is also suggested to the Stock Exchange and Securities Organization to develop

indicators that are suitable for the conditions and capacities of the national economy in order to rank the companies accepted to the stock exchange from the perspective of intellectual capital.

2. According to the second and third hypothesis results, the results of this study may be useful to decision makers and business managers to promote sustainable development in the company. The components of intellectual capital, especially capital and human capital, can support the long-term sustainable development of the company and increase the value of the company. In order to survive in the global competitive market, it is necessary to pay attention to intellectual capital and managers must manage intellectual capital effectively. Accountants should measure and report smart investments, investors should choose companies with good and sustainable value, governments should identify and evaluate companies, different industries and the value of smart investments. The findings of this research will help investors, shareholders and managers make decisions about the sustainable development of companies.

According to the results of the fourth hypothesis, the used capital has a negative effect on the growth of sustainable companies. This issue can indicate the non-optimal use of resources used in listed companies; therefore, company managers are suggested to make more efforts in order to use these resources optimally. Therefore, it seems necessary for managers to change their attitude in this field.

Suggestions for future research are as follows:

1. In order to conduct future researches, it is suggested to investigate other influential variables such as financial helplessness, type of audit report, etc. on the sustainable growth of the company, so that the results can be compared with the results of the current research and it can be concluded that which of these variables has a greater impact on the company has sustainable growth.
2. It is also suggested that the effect of the characteristics of the audit committee members, such as the tenure, the number of committee meetings, the proportion of non-employee members, etc., on the sustainable growth of the company should also be investigated for a better analysis.
3. It is suggested to use other control variables such as continuity of activity, number of paragraphs in the audit report, impartiality and age of the internal audit unit in future researches.
4. It is suggested to promote a model of intellectual capital efficiency that is useful in the opinion of the National Standards Board to help improve the sustainable growth of companies.

All research has limitations. In this study, it is assumed that the appropriate period for measuring sustainable development is at least 7-10 years, and the

research period is 5 years. Therefore, the results need to be generalized with caution.

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