Original Article

The Effects of Intellectual Capital on Firms’ Sustainable Growth: A Systematic Review and Future Research Agenda

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Abstract: This study aims to review the effects of intellectual capital on enterprises’ sustainable growth and proposes a research agenda to the literature. Seven relevant studies published in journals indexed in the Web of Science and Scopus were selected and reviewed by systematically searching the relevant database. The study applied the co-occurrence technique by the VOSviewer application to detect the limitations of prior studies. Review results reveal that intellectual capital is measured by many different methods and comprises many components. Most empirical studies concluded the positive effect of enterprises’ intellectual capital on sustainable growth. However, others only find out the general effect of intellectual capital on sustainable growth or the effect of some components of intellectual capital on sustainable growth. Building upon such research gaps, the study proposes a model for such a relationship and the moderating role of the management experience of the top management team on the association to improve the robustness of future studies in the field.

Keywords: Intellectual capital, sustainable growth, top management team.

1. Introduction

The main goal of enterprises is to create value for growth. Pursuing the goals of enterprise growth is exceptionally legitimate. However, fast or slow growth can make some risks for enterprises. Rapid growth will lead to a burden on funding, and slow growth reflects the inefficiency of enterprises. Therefore, business aims are to get the most optimal growth possible and maintain efficient enterprise operations without increasing financial leverage. This optimal growth means the optimal growth rate or the sustainable growth rate. Garnsey (1998) argues that operating enterprises always have two opposing factors in parallel. One promotes enterprise development, and the other hinders them. Fast-growing enterprises can amplify growth-restricting factors leading to reverse growth. Therefore, speedy growth can cause a

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resource imbalance. A shortage of resources and unexpected problems lead to enterprises facing crises. Today, the competitive environment has become very powerful. Enterprises need to maintain sustainable growth (Mamilla, 2019) as a competitive advantage (Huang & Liu, 2009). For the above reasons, sustainable growth is the top concern of enterprises. However, achieving this goal is not easy.

An enterprise is a collection of physical and human resources (Penrose, 1959). Indeed, sustainably developing and operating enterprises need the contribution of many resources such as financial capital, human resources, technology, and other resources. Human resources that affect an organization's success or failure are considered the most important among these resources. Human resources are the people who have been working for enterprises and participating in business processes. Another theoretical concept also mentions an equally important role and something that is considered the root of value creation. That is, the intellectual capital of the enterprises. Edvinsson (1997) believes that providing an effective tool for the enterprise development or management is intellectual capital.

Moreover, the transition from the traditional industrial economy to the knowledge economy has shown the critical role of human intellectual capital. Intellectual capital is a precious asset. It creates wealth and plays a core role in all fields. In business, intellectual capital makes unique features for enterprises and allows them to form competitive advantages (Drucker, 1993; Bontis et al., 1999) and sustainable growth (Lu et al., 2021). Therefore, over 30 years, intellectual capital has become an important topic that has received special attention from scholars worldwide. Advanced search results on Google Scholar with the phrase “intellectual capital” in the title listed 263,000 results (search date: May 28, 2022). The results show that several studies investigated intellectual capital.

This study aims to review relevant articles to detect research gaps. We use the co-word or co-occurrence analysis technique to identify how the most relevant articles are related. By doing so, we detected relevant theories and empirical findings to be confirmed so far. Then, we identified research gaps that few studies have investigated. Based on the research gaps, we propose a model for the relationship between intellectual capital and enterprises’ sustainable growth. The study also offers a model for the moderating role of the management experience of the top management team in an association to improve the robustness of future studies in the field.

2. Intellectual capital and sustainable growth

2.1. Definition of intellectual capital

Several scholars offer different views on intellectual capital, but there is no standard definition yet. Edvinsson (1997) and Brooking (1997) share the same opinion on intellectual capital and examine it as the difference between market value and book value. Stewart (1997) defines intellectual capital as the combination of proper knowledge, including processes, technologies, patents, worker skills, customers, suppliers, and shareholder information. The Organization for Economic Cooperation and Development (OECD, 1999) defines intellectual capital as an economic value consisting of two components: organizational capital (structural capital) and human capital (Petty & Cuganesan, 2005). The World Business Reporting Network (WICI) considers intellectual capital as groups with internal components (skills, capabilities, etc.) and external features (brand, reputation, etc.) that are interconnected automatically and that enable businesses to transform visible assets, financial and human resources into value-creating systems (Ovechkin et al., 2021). In addition, recent studies have suggested that intellectual capital is an intangible asset that creates future value for enterprises (Al-Twaijry, 2009). Although there are many different concepts of intellectual capital, in the end, intellectual capital is still considered the intangible capital that helps enterprises create...
value and competitive advantage, and sustainable growth based on available resources.

2.2. Definition of Sustainable growth

“Sustainable growth” is defined in different ways. According to the Vietnam Encyclopedic Dictionary, growth means more vigorous development, and sustainability is solidity and sustainability. From a financial point of view, some related studies suggest that sustainable growth is the increase in which enterprises maintain a revenue rise rate to be consistent with the financial policy of enterprises if they want to stabilize their payout ratio and target capital structure (Higgins, 1977; McFaddin & Clouse, 1993; Huang & Liu, 2009; Fonseka et al., 2012). Enterprise sustainable growth is the sustainable growth rate. Sustainable growth is understood as an optimal level at which an enterprise can achieve maximum growth rate but not deplete their cash flow, and this level can also be referred to as the break-even point of growth.

3. Review methodology

The research figured out three stages to systematically find studies on the effect of intellectual capital on sustainable growth over the years. Firstly, we searched for relevant publications in databases. Secondly, we used the co-occurrence analysis technique to find relevant studies on the effect of intellectual capital on the sustainable growth of enterprises. Finally, we analyzed the content of the studies to identify the research gaps for future research.

Stage 1. Searching relevant articles

Relevant publications are derived from two databases, including Web of Science (WoS) and Scopus. The reason is that these databases cover most journals with high quality. Some researchers argue that quality journals possess quality publications (Wallace & Wray, 2016; Xia et al., 2018; Luc et al., 2020). Besides, relevant articles were also taken through searching more extensively on the Google Scholar database. We used the “sustainable growth” term to search for advances in subject and keyword fields. The limitation of this research considers articles published before May 28, 2022, in the three databases. The results show that there are 1,391 related publications on the Scopus database, 2,605 publications on the WoS database, and 23 articles on the Google Scholar database.

Stage 2. Analysis by co-occurrence techniques

The co-word or co-occurrence analysis technique was applied in this stage. The Co-word analysis technique is performed based on content analysis. It counts selected words and phrases in keywords to form a matrix of relationships between words and phrases between articles. Words and terms (items) related to each other make groups. By this technique, when two or more keywords appear in the same topic, they are related (An & Wu, 2011). The more item pair occurrences, the stronger the relationship between them is (Chen et al., 2016). In addition, this technique can also uncover new areas that have not been explored further by researchers. The VOSviewer application analyzes the co-occurrence of found articles in stage 1 (Van Eck & Waltman, 2010). We select the occurrence of the keywords at least twice.

Figure 1: Analytical results of 1,391 publications were extracted from Scopus database by VOSviewer

Source: Authors’ analysis from review results.
Figure 1 shows the result of 1,391 analyzed publications derived from the Scopus database with 1,097 analyzed items related to each other and divided into 27 groups (clusters). The phrase “sustainable growth” is linked to 588 additional items, including other research concepts (Figure 2). The relationships of the items are ranked from high to low. The results show that there have been many publications related to sustainable growth in the past decades.

Similarly, the Web of Science data shows 2,605 publications related to sustainable growth. The analysis results (Figure 3) contain 2,419 items related to each other, classified into 24 groups. The phrase “sustainable growth” is linked to 676 different items, and the total link strength is 1,380 (Figure 4). A value representing the strength of the association between items indicates that these item pairs appear together in publications.

Analytical results from VOSviewer show thousands of items related to sustainable growth in extracted publications on Scopus and WoS databases. Figures 5 and 6 show the intellectual capital and sustainable growth link. The link totals of intellectual capital are 11 and 41, and the number of occurrences with the phrase “intellectual capital” are 5 and 7. We found 9 articles from 1,391 publications on the Scopus database and 11 papers from 2,605 on the WoS database related to the research topic. However, we detected 6 identical publications and removed 14 irrelevant publications from 20 found articles in two databases. Finally, we get just 5 papers about the relationship between intellectual capital and enterprises’ sustainable growth (one duplicate article in two databases).
We searched on the Google Scholar database with an advanced search function in the relationship between sustainable growth and intellectual capital. We found 23 publications, filtered relevant ones, and published them in prestigious journals. The results provide seven publications, which are in line with this topic. However, we recognize five articles that coincide with the found ones on Scopus and WoS databases. This result shows that there have been many studies on intellectual capital over the years. However, the number of studies about the effects of intellectual capital on enterprises' sustainable growth is still minimal. In the end, seven publications were found on the effect of intellectual capital on enterprise sustainable growth.

**Stage 3. Content analysis of the relevant articles**

Content analysis of the publications answered the questions: In which countries were the studies conducted; which territory? What years was the research period? What computational models were used in the research models? What theoretical foundation have the studies been based on to explain the relationships? What methods were used in the research? What are the research results? Answering the questions to understand the content of the research, the authors found the important points as follows:

There were three studies investigated in China; the rest were conducted in Romania, Pakistan, India, Korea, and Indonesia. The works increased from 2018 and appeared the most in 2021 (4 studies). The research period was carried out between 2009 and 2019. The research period was performed for at least four years and at the most ten years. The models have been used to calculate sustainable growth rate in the studies, including the sustainable growth models of Higgins (1977) (2 studies); Van Horne (1988) (3 studies); Van Horne & Wachowicz (2015) (1 study); Rappaport (1978) (1 study); Colley et al. (2002) (1 study). These studies use two different models (X. L. Xu et al., 2020; Ionita & Dinu, 2021).

To measure the intellectual capital, the researchers used the following methods: (1) the Value-Added Intelligence Coefficient method (VAIC) (J. Xu & Wang, 2019; X. L. Xu et al., 2020) and the expanded value-added intelligence coefficient method (MVAIC) (Mukherjee & Sen, 2019; X. L. Xu et al., 2021; Efni et al., 2021). Accordingly, the intellectual capital is measured by aggregating components from the effective use of capital sources (human capital, employed capital, structural capital, and relational capital); (2) Intellectual capital is measured by intangible assets (Ionita & Dinu, 2021); (3) Intellectual capital is also measured...
by human capital, structural capital and relational capital (Lu et al., 2021).

In the literature review, some of these studies are based on Human Resource Theory to explain the effect of intellectual capital on the sustainable growth of enterprises (Lu et al., 2021; X. L. Xu et al., 2021; Efni et al., 2021), but the remaining studies have not mentioned the background theory (J. Xu & Wang, 2018; Mukherjee & Sen, 2019; X. L. Xu et al., 2020; Ionita & Dinu, 2021). The studies have applied several methods such as the least-squares method (LS), fixed-effects model method (FEM), and the random effects model (REM) in the analysis process.

Analytical results from reviewed publications show that intellectual capital that has a positive effect on sustainable growth is measured by intangible assets (Ionita & Dinu, 2021). However, many factors such as R&D activities, patents, and Information Technology applications have not affected sustainable growth. The measuring method of intellectual capital by the value-added intellectual coefficient and the extended value-added intellectual coefficient shows that intellectual capital positively influences sustainable growth.

In these studies, some of them only considered the effect of the components of intellectual capital but did not consider the overall effect of intellectual capital (X. L. Xu et al., 2020; X. L. Xu et al., 2021) or the reverse (Efni et al., 2021). Some studies have considered the overall effect of the VAIC or MVAIC coefficients and their components on sustainable growth (J. Xu & Wang, 2018; Mukherjee & Sen, 2019; Efni et al., 2021; J. Xu & Wang, 2018). A few studies that observe intellectual capital have not found an effect on sustainable growth (Ionita & Dinu, 2021). The research of Mukherjee & Sen (2019) has not found an effect of using the efficiency of human capital on sustainable growth. Furthermore, Xu et al. (2020) have not found the effect of structural capital efficiency on sustainable growth.

Table 1: Summary of empirical studies about the effect of intellectual capital on sustainable growth

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Background theory</th>
<th>Research scope</th>
<th>Number of enterprises/sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Ionita C., Dinu E. (2021)</td>
<td>-</td>
<td>Romani</td>
<td>42/ manufacturing, pharmaceuticals, gas, oil, electricity, heavy industries, tourism</td>
</tr>
<tr>
<td>6 Mukherjee T., Sen S.S. (2019)</td>
<td>-</td>
<td>India</td>
<td>2011-2016 139/-</td>
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Source: Review results.
4. Research gaps

From the literature review results from the co-occurrence analysis method and content analysis of the found articles, we have detected some research gaps in intellectual capital's effect on the enterprises' sustainable growth and need to be considered more broadly.

Firstly, we have noticed that most prior studies primarily focused on the effects of intellectual capital on the sustainable growth of enterprises in some developed and developing countries (China, India, Indonesia, Romania, Korea). Very few studies have investigated the issue in a transitional economy like that in Vietnam. Studying in the context of a transitional economy is vital for several reasons: Vietnam is one of the fastest-growing countries in recent years in the Southeast Asia area and has received foreign investors' attention. Moreover, the institutional characteristics and investment policies for the enterprises in a transition economy are very different from other countries (Dut et al., 2018; Dut, Akbar, et al., 2021; Dut, Chris, et al., 2021). These different characteristics significantly affect the intellectual capital and sustainable growth of enterprises. Thus, the study may provide new insights into the effects of intellectual capital on an enterprise’s sustainable growth. Furthermore, the research areas in some studies are limited. Many studies that used the same estimation model in different countries and examined different regions provided inconsistent findings. Therefore, it is necessary to expand the research area and research scope in other countries to re-confirm the effect of intellectual capital on an enterprise's sustainable growth.

Secondly, in examining the effect of intellectual capital on sustainable growth, most of the research used the sustainable growth model of Higgins (2 studies) and Van Horne (5 studies). Expanding the application of different models in research will help researchers have a more multi-dimensional view in considering the effect of intellectual capital on enterprises’ sustainable growth. For example, Huang & Liu (2009) developed the sustainable growth model in different research fields. However, the sustainable growth model has not been applied to estimate intellectual capital's effect on enterprises’ sustainable growth in a transition economy. This sustainable growth model is based on the effect of both financial and operating leverage. Adopting the model is essential because the empirical findings in the transition economy can enrich empirical evidence in the literature. Applying this model also allows managers to decide on appropriate intellectual capital investment strategies to survive in a competitive environment and contribute to an enterprise’s sustainable growth.

Finally, the literature review shows that considering intellectual capital in the studies is based on the overall assessment of the intellectual capital of the whole enterprise. We have not found an evaluation of intellectual capital of the top management team. According to Upper Echelons Theory, Hambrick & Mason (1984) argue that organizational performance is partly predicted by the management background characteristics of the top management team. On the other hand, Resource-Based Theory (Barney, 1991) in prior researches confirmed that intellectual capital influences the sustainable growth of enterprises in developed economies. Thus, it can be argued that the top management team plays a very important role in an enterprise's intellectual capital. Therefore, the top management team can play a moderating role in the relationship between intellectual capital and the sustainable growth of enterprises. The literature review results show that previous research only applied a single background theory, the Resource-Based Theory, to research the direct influence of intellectual capital on the sustainable growth of enterprises, but very little research has been done. The research applies two background theories simultaneously to examine the moderating role of management experiences of the top management team in the relationship between intellectual capital and sustainable growth of enterprises in a transition economy. Simultaneously applying two theories can help explain this phenomenon more comprehensively.
5. Theoretical perspectives and proposed research model

5.1. Theoretical perspectives

Studies on the effect of intellectual capital on the sustainable growth of enterprises have recently attracted researchers. In this study, to explain the effect of intellectual capital on enterprises' sustainable growth, the authors rely on the following theoretical perspectives:

Firstly, the Resource-Based Theory perspective holds that effectively using and managing strategic resources can help enterprises gain a sustainable competitive advantage. This is shown in the view of Barney (1991). The resource perspectives of Barney (1991) are all resources that can form strategies to improve the performance of enterprises. They include all assets, capabilities, organizational processes, attributes, information, and knowledge of enterprises and are controlled by the enterprises. Enterprise resources not only create competitive advantages but also impact on enterprise growth. They support value creation and operate the enterprises effectively.

Enterprises that exist and develop entirely depend on their resources. These resources can be human resources and other resources such as physical capital, financial capital, etc. Intellectual capital is considered an intangible and valuable resource of enterprises, and the intellectual capital reflects the differences between enterprises. According to the Resource-Based Theory view, they create their own characteristics and advantages for enterprises. These advantages help the enterprises develop (Penrose, 1959). Therefore, the advantages can influence the sustainable growth of enterprises.

Secondly, the Human Capital Theory perspectives (Becker, 1962) emphasize that investment in human capital creates value. This view demonstrates the importance of human capital. Human capital differs from physical or tangible capital such as money, machines, factories, etc. Human capital is a collection of abilities, skills, knowledge, etc., owned by individuals. They go through the operation processes to create value for the organizations. Human capital is a valuable resource not only for organizations but also for countries. Experts have verified it in many research fields, not only in the economic field. This invisible contribution creates tangible values that foster the growth and development of organizations.

Finally, the Upper Echelons Theory view proposed by Hambrick & Mason (1984) shows that managers' management background characteristics partially predict organizational outcomes. The view of Hambrick & Mason (1984) also indicates that managers' demographic characteristics influence their decisions. So, they affect organizational performance. The research has provided a useful model for strategic leadership, management, and decision-making in enterprise operations.

5.2. Proposed research model

From the research gaps and based on Resource-Based Theory, Human Capital Theory and Upper Echelons Theory views, we propose a research model on the effect of intellectual capital on the sustainable growth of listed enterprises on the Vietnamese stock market. Considering the context of enterprises in a transition economy like Vietnam is necessary because it is an opportunity for Vietnamese enterprises to acknowledge and attend more to sustainable growth issues instead of looking for ways to grow fast.

Vietnamese enterprises are not different from enterprises in other countries. To operate the enterprises, they need many resources such as financial resources, human resources etc. Beside these resources, the enterprises still have the intangible resource that has attracted the attention of many researchers over the years and is considered the root of value creation. This is the intellectual capital of the enterprises. Because intellectual capital is considered a resource of the enterprises, based on Resource-Based Theory (Barney, 1991), we can argue that the effective management and use of strategic resources can support enterprises in achieving sustainable competitive advantage. These
advantages help the enterprises to grow (Penrose, 1959). Therefore, intellectual capital can influence the sustainable growth of enterprises. By applying this rationale, the following hypothesis is proposed:

Hypothesis 1: Intellectual capital positively affects the sustainable growth of listed enterprises on the Vietnamese stock market.

There are many conceptions of intellectual capital from the researchers. They almost always relate to human factors. Indeed, organizational activities require many skills, abilities and knowledge of organizational participants. Organizations will gain advantages if they have talented people and excellent management teams. The Upper Echelons Theory view really resembles the intellectual capital view. They relate to the human capital in the organizations. In reality, it shows that the more the organization’s total power is extremely important, the more the role of the top managers cannot be ignored because the managers play the role of leading and promoting the strength of the organization. By their experience and talent, they can turn threats into opportunities in business to achieve enterprise development.

Díaz-Fernández et al. (2015) have demonstrated the effectiveness of the intellectual capital of the top management team on business performance. Moreover, the sustainable growth of enterprises is closely related to business performance (Ocak & Findik, 2019). Therefore, the top management team's intellectual capital can positively affect the enterprises’ sustainable growth. Hence, the second hypothesis is proposed as follows:

Hypothesis 2: The top management team's intellectual capital positively affects the sustainable growth of listed enterprises on the Vietnamese stock market.

Organizations reflect the top managers’ level. Hambrick & Mason (1984) stated that the top managers’ experiences influence their knowledge and ability to process information. Moreover, all decisions of the top managers impact the activities of enterprises. Especially, their strategic decisions that are made through their characteristics and experience are influenced by their perceived value (Díaz-Fernández et al., 2015). In addition, their experience can bring knowledge to help their enterprises overcome threats (Singh et al., 2010). In Kor’s (2003) research, he demonstrated the management experience role in the enterprises’ growth. He also mentioned the specific experiences in the industry of the founders who participate in the top management team of the enterprises. The interaction of specific management experiences changes the enterprise’s growth rates. Thus, the third hypothesis is proposed as follows: Hypothesis 3: The more experienced managers are, the more they influence intellectual capital’s effect on the enterprises’ sustainable growth.

The theoretical model is illustrated in Figure 7.

![Figure 7: The theoretical model of the effect of the intellectual capital on enterprises’ sustainable growth](Source: Authors’ proposal)

### 6. Conclusion

Intellectual capital and sustainable growth are two concepts that are not new in research. However, considering the influence of intellectual capital on the sustainable growth of enterprises is a new topic that researchers have been interested in in recent years.

Intellectual capital is a valuable and important capital resource in a business. It’s not only the appreciation of the assets but also acknowledgment as ideas, knowledge or relationships (Edvinsson, 1997). It is considered an intangible capital that is difficult to quantify, but it brings tangible value to the enterprises. It
makes advantages for the enterprises that other competitors cannot possess. Therefore, it is really necessary to identify this capital resource to effectively manage and use it and drive the enterprises towards sustainable growth.

So, the main contribution of this paper is to systematically synthesize and analyze relevant research on the effect of intellectual capital on enterprises’ sustainable growth. To determine publications in this topic, the study used the co-occurrence analysis technique by the VOSview application from 1,391 publications in the Scopus database and 2,605 publications in the WoS database and extended search on the Google Scholar database. The results found seven publications on this theme. By content analysis, the research also identifies the research gaps. We especially detected the research gaps in the moderating role of the management experience of the top management team and the effect of the top management team’s intellectual capital on sustainable growth of listed enterprises on the Vietnamese stock market. This is an opportunity for future research.

The authors collect articles from Scopus, WoS and Google Scholar databases published before May 28, 2022. Future research may expand more on this.

References


