

# Literature review of intellectual capital information disclosure

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**Abstract:** *In today's era of knowledge economy, more and more scholars pay attention to the research related to intellectual capital. This paper combed the domestic and foreign research results on an important branch of intellectual capital - intellectual capital information disclosure. From intellectual capital composition, the theoretical foundation of the intellectual capital information disclosure and its related influence factors to comb research venation, and put forward the future research direction of intellectual capital information disclosure.*

**Keywords:** *Intellectual capital, Information disclosure, Enterprise value, Information asymmetry*

## 1. Introduction

In today's knowledge economy based on intangible assets, intellectual capital has become more and more important for enterprises and other organizations. Among them, intellectual capital information disclosure, as an important area of intellectual capital research, has received attention from many scholars at home and abroad over the years and has accumulated a large number of literature results. This paper will sort out the research lineage in this field and present some prospects for future research.

## 2. Intellectual capital and its composition

### 2.1. Intellectual capital

Intellectual capital first originated from human capital. As early as 1836, the scholar Senior used intellectual capital as a synonym for human capital, and its view that intellectual capital is the knowledge and skills possessed by human beings. It is widely believed at home and abroad that the concept of intellectual capital was first proposed by the American economist Calbraith in 1969, who believed that intellectual capital is essentially not only a static intangible asset, but also a dynamic process in the form of an idea, a means and a method to reach a goal. However, the first person to define intellectual capital was Stewart, an American scholar, who defined intellectual capital as "the sum of what all members of a company know that can give the company a competitive advantage in the marketplace" in his article published in Fortune magazine, and suggested that the value of intellectual capital is reflected in the company's human capital, structural capital and relational capital.

Since then, in the study of intellectual capital at home and abroad, scholars have different understandings and definitions on the definition of intellectual capital from different perspectives. Currently, there are three main views on the definition of intellectual capital, which are intangible assets view, knowledge and ability view and value view.

The intangible asset view, represented by Chaminade et al., considers intellectual capital as intangible assets consisting of knowledge, information, property rights, and experience that can be normalized and that create value for the firm.

The knowledge and capability view represented by Stewart et al. considers intellectual capital as the sum of the knowledge and capabilities of all members of the organization that can create wealth.

The value represented by Brennan et al. considers intellectual capital as the difference between the market value and the book value of the company, and as the net value of assets that can bring greater value to the company than the general monetary investment.

These three views are not contradictory. In short, intellectual capital is the collection of various

intangible assets owned or controlled by the firm that can add value to the firm.

## 2.2. *The composition of intellectual capital*

Different scholars also have different understandings of what constitutes intellectual capital. There are currently dualistic (Edvinsson, 1997; Petty and Guthrie, 2000), triadic (Sveiby, 1997; Stewart, 1998), and pluralistic (Andreessen and Thyssen, 2000; Brooking, 1997) theories about the composition of intellectual capital, among which triadic theory is widely accepted.

The dualistic theory argues intellectual capital is mainly composed of human capital and structural capital. Human capital includes employee experience or skills, employee education, employee satisfaction, human capital and expert team, while structural capital includes enterprise culture, intellectual property rights, management level, organizational structure and development strategy. The triadic theory adds relational capital to the dualistic theory. Relational capital includes capital for building relationships with the external environment such as major suppliers and customers, market share, sales channels, business cooperation and social responsibility. The pluralistic theory, on the other hand, divides intellectual capital in more detail.

*Table 1: Three views on the composition of intellectual capital.*

The composition of intellectual capital	Specific views
The dualistic theory	Human capital, Structural capital
The triadic theory	Human capital, Structural capital, Relational capital
The pluralistic theory	Human capital, Structural capital, Relational capital, Process capital, Social capital, Innovation capital, etc

## 3. Intellectual capital information disclosure and its measurement

### 3.1. *Intellectual capital information disclosure*

In today's knowledge-based economy based on intangible resources, intellectual capital information disclosure is essential to enhance corporate value, corporate performance, and competitiveness. In 1995, Skandia, Sweden's number one insurance and financial services company, publicly released the world's first annual report on intellectual capital, which kicked off the research on intellectual capital information disclosure.

#### 3.1.1. *Theoretical foundation*

(1) Signaling theory. This theory believes that a high-quality positive signal from an entity to the market will make market participants re-evaluate the value of the entity and thus make reasonable investment decisions. Intellectual capital information disclosure is an effective means for enterprises to send positive signals to the market and show their "value". Enterprises with a certain intellectual capital base can show their ability to create wealth by disclosing intellectual capital information to the public, thus attracting investment from potential investors and reducing the cost of equity financing.

(2) Information asymmetry theory. This theory believes that in market economic activities, when there is a difference in the information held by managers and investors, it will lead to the undervaluation of the enterprise, and the enterprise should convey as much information as possible to the outside world to alleviate this information asymmetry. When investors lack trust in the financial information disclosed by enterprises, external disclosure of intellectual capital can make up for the lack of financial information, reduce information asymmetry, and thus attract potential investors. In addition, external disclosure of intellectual capital information can reduce the possibility of managers taking advantage of their superior information position for their own benefit, allowing investors to correctly assess the value of the enterprise and reducing transaction costs.

(3) Principal-agent theory. This theory suggests that corporate owners, as principals, defer to management's decision whether or not to make corporate disclosure out of trust in their expertise. Corporate disclosure of intellectual capital information can reduce the level of information asymmetry between corporate owners and management, thereby reducing principal-agent costs. It can also effectively prevent insider trading, provide strong monitoring of management, and give investors confidence in the company, thereby increasing corporate value.

(4) Stakeholder theory. This theory believes that a company's business decisions must consider the interests of its stakeholders or accept their constraints, i.e., it needs to be accountable to them. Stakeholders include partners such as corporate shareholders, creditors, employees, consumers, and suppliers, as well as monitoring groups such as government agencies, media, and the public. By disclosing intellectual capital information, enterprises can reduce the information asymmetry between enterprises and stakeholders, thus gaining their trust and promoting the survival and development of enterprises. And it enables investors to have a deeper understanding of the company and thus evaluate it reasonably.

### 3.1.2. Disclosure practices

The nature of intellectual capital is non-financial and to make external disclosures it must be reflected in a standardized way, which requires a new form of reporting. In 1985, Sveiby published the results of his working group in his book "The Intangible Balance Sheet" - the new reporting format of the "intangible balance sheet", which uses 35 non-financial indicators to complement financial reporting, has had a profound impact on the future practice of intellectual capital disclosure in companies.

For the application of traditional financial reporting on intellectual capital disclosures, "IAS 38 - Intangible Assets" and "IFRS 3 - Business Combinations" allow for the recognition of intangible assets and goodwill. These two standards apply the recognition of intangible assets to financial reporting. In addition, the EU, Japan, and Denmark have also started to focus on intellectual capital reporting.

CSR and sustainability reporting was an early voluntary disclosure practice related to intellectual capital, based on the reporting framework issued by the Global Reporting Initiative (GRI), which issued its first guidance, Sustainability Reporting Guidelines, in 2000 to provide a generally accepted system for organizations such as businesses to report on their economic, environmental and social performance.

After the financial crisis in 2008, a reassessment of existing reporting models began, and the International Integrated Reporting Council IIRC issued the Integrated Reporting IR Framework, which incorporates corporate financial and non-financial information into one concise report, with a reporting framework that includes corporate strategy as well as business model and links to financial and non-financial capital, a further practice of intellectual capital disclosure.

### 3.2. Measurement

The main measures involving intellectual capital disclosure in current research are reputation scoring, coding index, and content analysis, of which content analysis is the most common.

Table 2: Three measurement methods of intellectual capital information disclosure.

Measurement methods	Specific operations
Reputation scoring	The level of intellectual capital disclosure is measured by discussing with experts and using questionnaires.
Coding index	Combining qualitative and quantitative elements, a coding index was developed to analyze the extent and quality of intellectual capital information disclosure in annual reports of listed companies.
Content analysis	Convert qualitative text and images in the text into a systematic and quantitative form to assess the level of intellectual capital disclosure.

## 4. Research status

### 4.1. Influence factors

#### 4.1.1. Antecedent variables

Antecedent variables are the relevant factors that can influence intellectual capital disclosure. These include corporate characteristics, board characteristics, ownership structure, and audit committee characteristics.

(1) Business characteristics. It mainly refers to industry type, firm size, firm age, profitability, and financial leverage. Knowledge-intensive industries rely on their intellectual capital and therefore are willing to disclose more intellectual capital information. Most studies show that the larger the firm, the more it tends to disclose intellectual capital information outwardly, and mature firms take less risk in

disclosing intellectual capital information and have higher levels of disclosure than new firms. In terms of profitability and financial leverage, different scholars' studies have come to different conclusions, with some arguing that there is no relationship between the two and corporate intellectual capital disclosure, but others arguing that there is a positive relationship between them and corporate intellectual capital disclosure, which may be due to differences in the relevant political, economic, and cultural environments of the countries in which the study sample is located.

(2) Board characteristics. It mainly refers to the board size, independence, diversity and the number of board meetings. Some studies have shown that board size has a positive relationship with intellectual capital disclosure. Yan demonstrated that the higher the independence of the board, i.e., the higher the number of independent directors, the higher the level of intellectual capital disclosure, Rasmini et al. showed that the gender and diversity of board members have a positive effect on intellectual capital disclosure. And the more active the board is, i.e., the more board meetings, the more information about intellectual capital the firm will disclose.

(3) Ownership structure. Khlif et al. found a positive relationship between institutional ownership and intellectual capital information disclosure. However, some scholars argue that when institutional ownership is high, it provides direct access to information about the firm's internal resources, and as a result, the firm's willingness to disclose intellectual capital information decreases, and the study by Rahman et al. shows a negative relationship between institutional ownership and intellectual capital information disclosure. Baldini et al., Yan, and Tejedo-Romero et al. have shown that equity concentration has a negative relationship with intellectual capital disclosure.

(4) Audit committee characteristics. Ahmed Haji showed that the larger the size of audit committee, the more intellectual capital information is disclosed by the firm. There are different views on the impact of audit committee independence on intellectual capital information disclosure, with some scholars suggesting a positive relationship between the two and others suggesting no significant impact relationship between the two. For the number of audit committee meetings, a study by Uzliawati et al. proved that there is a positive relationship between it and intellectual capital disclosure.

#### **4.1.2. Outcome variables**

What aspects of the firm are most concerned about the disclosure of intellectual capital information and the extent to which it has an impact on the firm. These aspects that intellectual capital disclosure can affect are its outcome variables, including corporate performance, corporate value, market value, and cost of equity capital.

(1) Corporate performance. Regarding the impact of intellectual capital disclosure on corporate financial performance, numerous studies have shown a positive relationship between intellectual capital disclosure and corporate performance, with higher levels of intellectual capital disclosure leading to better financial performance.

(2) Corporate value. Intellectual capital information disclosure helps stakeholders to reasonably estimate the future value of the firm. A study by foreign scholars Hashim et al. found a significant positive relationship between the level of intellectual capital information disclosure and enterprise value. The study of domestic scholars Linchun Li et al. similarly confirmed the positive relationship between the two.

(3) Market value. The market value of a firm is reflected in its stock price in the market. Some studies have shown that intellectual capital disclosure has a positive relationship with the market value of listed companies.

(4) Cost of equity capital. There are different views on the influence of intellectual capital disclosure on the cost of equity capital at home and abroad. Ulum et al. showed no significant influence between the two, but an empirical study by Chuanrui Fu et al. found a negative relationship between intellectual capital disclosure and the cost of equity capital.

#### **4.1.3. Mediating variables**

Factors affecting intellectual capital disclosure may indirectly affect intellectual capital disclosure through certain mediating variables, and intellectual capital disclosure may also indirectly affect outcome variables such as corporate value through mediating variables. The mediating variables include corporate reputation, analyst tracking, and investor confidence.

(1) Corporate reputation. A study by Hasan et al. found that smaller and more independent corporate boards can improve corporate reputation and thus promote better intellectual capital disclosure.

Corporate reputation plays a mediating effect in this.

(2) Analyst tracking. A study by Linchun Li et al. showed that analysts tend to track firms with more intellectual capital information disclosure, and analyst tracking helps stakeholders to predict the future value of the firm. Analyst tracking plays a mediating role between intellectual capital information disclosure and corporate value.

(3) Investor confidence. A study by Wang et al. found that investor confidence plays a mediating effect between intellectual capital information disclosure and corporate value.

#### 4.1.4. Moderating variables

The variables that play a moderating role in the influence path of the above variables are the moderating variables, mainly including product market competition, board diversity, and corporate life cycle.

(1) Product market competition. The results of the study by Chuanrui Fu et al. show that product market competition plays a moderating role in the influence of board characteristics and ownership structure on intellectual capital disclosure.

(2) Corporate life cycle. The role of information disclosed by firms varies across their life cycle stages. A study by Chuanrui Fu et al. found that the impact of intellectual capital information disclosure on corporate value varies across the different life cycle stages of a firm.

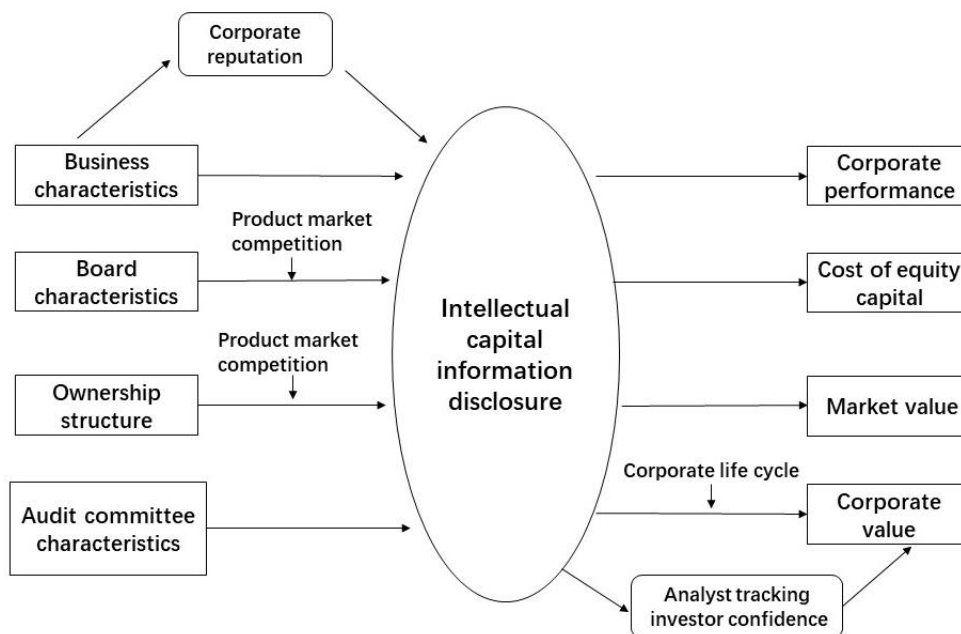


Figure 1: Research framework of intellectual capital information disclosure.

#### 4.2. Research status and future prospects

Due to the increasing importance of intellectual capital information disclosure to enterprises and other organizations, there is a large amount of literature focusing on intellectual capital information disclosure at home and abroad, but there are still shortcomings in some aspects and there is still more room for research. The following are the current status of research on intellectual capital information disclosure and some prospects for future research.

(1) The vast majority of current research is based on the subject of enterprises, while intellectual capital-related organizations include subjects such as social organizations and governments in addition to economic organizations. The research results of different subjects may vary, and future research should expand the scope of the subject, and enterprises are only a part of the organization.

(2) Regarding the construction of an index system for intellectual capital information disclosure, a unified disclosure framework has still not been formed in academia. There are many index systems on intellectual capital information disclosure, and it is difficult to determine the framework of the system

used in the study, which is a problem that needs to be solved in future research.

(3) Most of the current studies use companies' annual reports as the data source, and only examine the intellectual capital information disclosure of companies in written form, ignoring the intellectual capital information reported by companies in oral form (e.g., conferences and other presentations). Future research should examine the intellectual capital information disclosed by firms in various forms based on the study of written reports and using media networks.

(4) Most of the studies on intellectual capital disclosure today use the quantity of disclosure to measure the level of disclosure, which has certain limitations. Because the quantity of disclosure does not mean the quality is high, more attention should be paid to the quality of intellectual capital disclosure in future studies.

(5) There are still some controversies about the relationship between some antecedent and outcome variables of intellectual capital information disclosure and them. Different scholars' studies have different views on the effects of profitability, financial leverage, structural shareholding ratio, and audit committee independence on the disclosure of intellectual capital information of enterprises, and the views on the effects of intellectual capital information disclosure on the cost of equity capital are not uniform. This may be due to the influence of different development periods and different development strategies of firms on the research results, and future studies can pay more attention to these factors and implement more research based on consideration of these factors.

(6) Most of the current studies on intellectual capital information disclosure are on antecedent variables, fewer studies on outcome variables, and relatively single models, while fewer studies introduce mediating and moderating variables. In the future, we can strengthen the research on the outcome variables of intellectual capital information disclosure and explore the mediating variables and moderating variables in it to enrich the path of the role of intellectual capital information disclosure.

(7) Few studies have been conducted on the influence of intangible assets on intellectual capital disclosure, and only a few studies have shown that intangible assets have an impact on intellectual capital disclosure. As to what kind of relationship exists between the two, and whether the closer intangible assets disclosure and intellectual capital disclosure are, the higher the level of intellectual capital disclosure is, a lot of research is needed to confirm this.

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