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The Impact of Intellectual Capital, Green Innovation with Sustainability as a Mediation On Financial Performance with Reference to I.T Companies in India

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Abstract

On a rapidly warming planet, companies across sectors are transforming their business models to make a sustainable future which can protect people, planet, and profits. The company's intangible assets can optimize the company's efficiency in the VUCA (Volatility, Uncertainty, Complexity, and Ambiguity) environment. To achieve the desired state of corporate performance and to meet the expectations of kinds of stakeholders, most of the companies pays attention to green innovation in their business process. Furthermore to gain and maintain investor confidence, some companies have disclosed in their annual reports about its intellectual capital (IC) as one of their business strategy to enhance their company's reputation. The main components of intellectual capital can be classified into three components such as human capital, structural capital, and relationship capital. Intellectual Capital plays a pivotal role particularly in case of a knowledge intensive industries like I.T, Finance and Banking. Intellectual capital (IC) is an intangible resource along with tangible resources, help companies to gain a sustained competitive advantage in the market.

Keywords: Human capital, structural capital, relational capital, intellectual capital, sustainability .

Introduction

On a rapidly warming planet, companies across sectors are transforming their business models to make a sustainable future which can protect people, planet, and profits. The company's intangible assets can optimize the company's efficiency in the VUCA (Volatility, Uncertainty, Complexity, and Ambiguity) environment. To achieve the desired state of corporate performance and to meet the expectations of kinds of stakeholders, most of the companies pays attention to green innovation in their business process. Furthermore

to gain and maintain investor confidence, some companies have disclosed in their annual reports about its intellectual capital (IC) as one of their business strategy to enhance their company’s reputation. The main components of intellectual capital can be classified into three components such as human capital, structural capital, and relationship capital.

2. Need for the Study

Intellectual Capital plays a pivotal role particularly in case of a knowledge intensive industries like I.T, Finance and Banking. Intellectual capital (IC) is an intangible resource along with tangible resources, help companies to gain a sustained competitive advantage in the market.

Honeywell Environmental Sustainability Index: The Results

In March 2023, the Futurum Group in partnership with Honeywell (a global leader in energy and climate transition solutions) released its 1Q 2023 Environmental Sustainability Index regardless of the public perception that many corporations are “green washing” their environmental efforts, a majority of organizations are extremely successful in achieving their goals over the past 12 months. The global study surveyed more than 750 business leaders involved in the sustainability process, in which sustainability corporate initiative ranks first with 65% than financial performance, digital transformation and market growth as mentioned in table 1.

Table 1: Honeywell Environmental Sustainability Index

CORP INITIATIVE	Overall	Region >	AP	EMEA	LA	NA
Sustainability Goals	65%		64%	65%	73%	61%
Financial Performance	62%		70%	69%	49%	60%
Digital Transformation	55%		54%	60%	62%	51%
Market Growth	49%		42%	48%	57%	48%
Workforce/Talent Dev	46%		41%	49%	52%	44%
Customer Experience	38%		40%	38%	31%	40%
Business Continuity	32%		37%	32%	25%	33%
Security & Trust	29%		28%	27%	31%	30%

Sustainability sits at the top of corporate priorities over the next six months. Futurum Research

According to IBM Sustainability Consumer Research in 2022, survey of 16,000 global consumers in 10 major economies ((Brazil, Canada, China, France, Germany, India, Mexico, Spain, United Kingdom, United States) found that more than half (51%) of respondents say environmental sustainability is more important to them today than it was 12 months ago. It was also found that, on average, 3 in 5 (64%) consumers say products branded environmentally sustainable or socially responsible made up at least half of their last purchase. Also this results is even higher in India with 75% and China 76%.Building a sustainable future requires huge investments which presents a big opportunity for business growth. As sustainable companies performs more and more financially appealing, the portion of people investing in these organizations continues to rise.

However only a paucity of research studies is being available in measuring the effects of intellectual capital on the sustainability success of firms. Therefore, this study aims to determine the effect of sustainability as a mediator on intellectual capital, green innovation, and the financial performance of the I.T Companies.

Review of Related Literature

The literature review analyses and summarizes relevant academic sources, including books, journals, company reports, and scholarly papers. The literature review studies suggests that measuring Intellectual Capital can boost and improve their business performance, resulting in sustainability in the market.

Definition and Classification of Intellectual Capital

In empirical studies, the term intangible or intellectual capital refers to knowledge of a business organization. The field of study into intellectual capital (IC), also known as intangible assets (IAs), has been ongoing since the early 1960's.

- John Kenneth Galbraith (1969) an economist, introduced the concept of intellectual capital. Galbraith believed that intellectual capital is not only an intangible asset but also an ideological process.
- Sveiby (1997) provided one of the most succinct definition of intellectual capital as “useful package of knowledge.” He is the first from the non-accounting perspective to propose the classification of IC, and concluded that intangibles can be categorized into three sub-categories as:
 1. employee (individual) competence
 2. internal structure and
 3. external structure.
- Stewart (2000) defined Intellectual Capital (IC) as new wealth of organizations. Even though Stewart accepted the classification of Sveiby, he renamed them as:
 1. human capital
 2. structural capital and
 3. customer capital respectively.
- International Accounting Standards (38 revised) defines an identifiable Intangible Assets (IA) as a “non-monetary asset without physical substance held for use in the production or supply of goods or services, for rental to others, or for administrative purposes.”

Definition of Green Innovation

- A number of definitions exist for the topic green innovation, and the first one is given by Fussler and James (1996) who defined Eco-Innovations as “New products and processes which provide value to business and customers but significantly reduce environmental impacts”.

Definition of Sustainability

- In 1987, the United Nations Brundtland Commission defined sustainability as “meeting the needs of the present without compromising the ability of future generations to meet their own needs.”

Effect of Intellectual Capital on Company's Financial Performance

- Xu and Li (2022) explained that IC could improve company performance in the Chinese manufacturing sector. They explained that profit is influenced by physical capital, human capital, and structural capital.

Effect of Green Innovation on Company's Financial Performance

- Wang, Li, Li, & Wang, (2021); Zheng et al., (2022) revealed Innovation is regarded as one of the factors affecting competitiveness and profitability of the companies.

Effect of Sustainability on Company's Financial Performance

- Das and Rangarajan (2020) researched 200 Indian SMEs to look at collaborative synergies and government policy initiatives that impact the sustainability performance of small and medium enterprises. The research found that improving sustainability performance can encourage sustainable business growth. These results indicate that the sustainability performance of SMEs has a positive effect on company growth.

Effect of Intellectual Capital on Sustainability of Companies

- Yong et al (2022) revealed that relational capital, part of IC, can improve sustainability (economic, environmental, and social performance).
- Vale et al (2022) observed IC, combined with other elements of innovation, can improve the process of delivering information, which will positively affect environmental and social performance.

Effect of Green innovation on Sustainability of Companies

- Ullah, Ahmad, Rehman, and Fawad (2021) researched green innovation and sustainability in the SME sector in Pakistan. Their research revealed that green innovation positively affects Sustainable Development Goals (SDGs), community development, and environmental activities.

Effect of Intellectual Capital, Green Innovation, Sustainability on Company's Financial Performance

- Kengatharan (2019), Wang et al (2021) discovered an indirect association between intellectual capital and financial performance where this research proposed sustainability as a mediator.
- Shahla Asadi et al (2020) Elzek et al(2021) and Li et al (2020) explored a well-implemented green innovation is a strategic step that has been proven to increase sustainability which can then improve financial performance (Das & Rangarajan, 2020; Yun et al., 2020). Thus this study proposes sustainability as a variable that mediates the relationship between green innovation and financial performance.

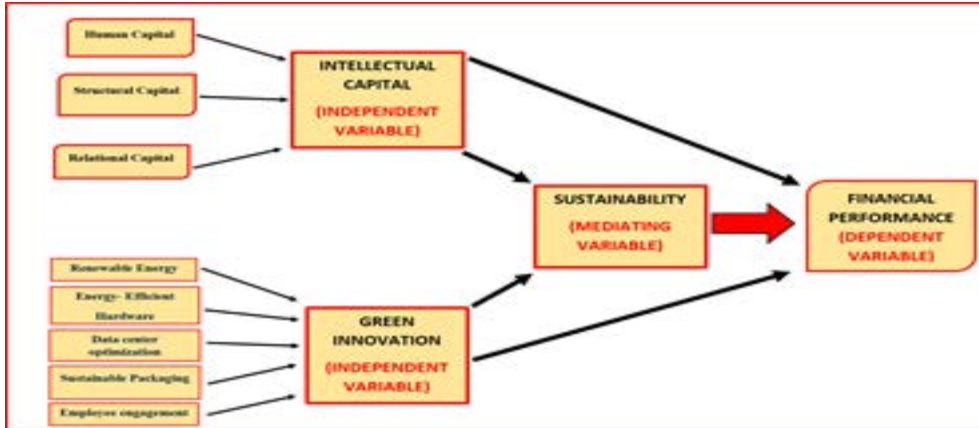
4. Research Gap

Investment in the practices of environmental management is a new direction to gain competitiveness and sustainable development is a key to future competitiveness for the companies.

The concept of intellectual capital has not yet been widely popular in India. There exists a gap on the influence of intellectual capital and sustainability on the financial performance with reference to Indian companies. Even though the results of various research studies conducted in foreign countries are not equivocal, the majority of the studies have confirmed the positive relationship between IC and company financial performance considering sustainability as a mediating factor.

Against this background, this study aims to test and show empirical evidence regarding the effect of intellectual capital and green innovation on company performance mediated by sustainability using primary data.

Proposed Research Model



Research Objective

1. To examine the effect of intellectual capital on the financial performance of companies.
2. To identify the factors contributing to intellectual capital in the I.T sector.
3. To identify the elements contributing to green innovation in the I.T sector.
4. To study the effect of green innovation on the financial performance of companies.
5. To analyze the effect of sustainability on the financial performance of companies.
6. To explore the effect of intellectual capital mediated by sustainability on the financial performance of companies.
7. To examine the effect of green innovation mediated by sustainability on the financial performance of companies.
8. To explore the mediating role of sustainability in the relationship between intellectual capital and green innovation on the financial performance of companies.
9. To decipher the relationship between intellectual capital, green innovation, sustainability and financial performance of companies.

Hypothesis of the Study

- H1: Intellectual capital has a positive effect on the financial performance of I.T companies in India.
- H2: Green Innovation has a positive effect on the financial performance of I.T companies in India.
- H3: Sustainability has a positive effect on the financial performance of I.T companies in India.
- H4: Intellectual capital has a positive effect on the sustainability of I.T companies in India.
- H5: Green innovation has a positive effect on the sustainability of I.T companies in India.
- H6: Sustainability mediates the relationship between intellectual capital and financial performance.
- H7: Sustainability mediates the relationship between green innovation and financial performance.

Research Methodology

The study is descriptive in nature and depends on both primary and secondary data.

Study Area for Primary Data Collection

The present research is carried out in Chennai which is the largest Metropolitan city in Tamil Nadu. As there is a large number of Information Technology Companies in Chennai, the researcher has chosen this place as ideal for conducting the current study.

Variable selection

The key variables used in the study are intellectual capital (human capital, structural capital, and relational capital), green innovation, sustainability and financial performance is taken as dependent variable.

Scaling Technique in the Questionnaire

- The questionnaire used comprises both optional types and Statements on Likert’s 5-point scale.
- The responses of these sections are obtained from the employees of I.T Sector on the 5 point scale, which ranges as follows: 5 – Strongly agree 4 – Agree 3 – Neutral 2 – Disagree 1 – Strongly Disagree

Questionnaire Design

- The primary data is collected using a well-structured questionnaire that has been designed based on the validated scale for the Independent variable, Dependent variable, and Mediating variable.

Data Analysis Method Ans Results

This study uses structural equation modeling (SEM) to test the research hypothesis. Before testing the hypothesis, validity and reliability tests have been conducted to see whether the research instrument data met the model testing requirements. Hypothesis testing is conducted using SEM analysis.

Measurement Model Assessment: Confirmatory factor analysis (CFA) is important to ensure the validity and reliability of data using convergent validity, discriminant validity, and internal consistency. The average variance extracted (AVE) and standardized factor loadings (SFL) for each item were used to check for convergent validity. Based on the CFA results in Table 1, it can be seen that the AVE value is above 0.5 and the construct reliability (CR) value is above 0.7 for each variable.

Table 1

Table 1. Reliability and validity analysis

Construct	Items	SFL	Cronbach’s alpha	CR	AVE
Intellectual capital	IC1	0.737	0.900	0.887	0.612
	IC2	0.748			
	IC3	0.765			
	IC4	0.823			
	IC5	0.835			
Green innovation	GI1	0.932	0.909	0.940	0.757
	GI2	0.893			
	GI3	0.778			
	GI4	0.782			
	GI5	0.859			
Sustainability	SS1	0.846	0.920	0.918	0.691
	SS2	0.777			
	SS3	0.871			
	SS4	0.822			
	SS5	0.918			
Financial performance	FP1	0.918	0.909	0.899	0.693
	FP2	0.918			
	FP3	0.754			
	FP4	0.720			

Structural Model Assessment: Furthermore, the research hypothesis was calculated using SEM with 5,000 bootstrapped samples and a 95% confidence interval (CI). The hypothesis testing results are presented in Table 2.

Table 2

Table 4. Hypotheses testing.

Hypotheses	Path	Coefficient	p-value	Result
H1	IC → FP	0.335	***	Supported
H2	GI → FP	0.151	***	Supported
H3	SS → FP	0.408	***	Supported
H4	IC → SS	0.729	***	Supported
H5	GI → SS	0.130	***	Supported

Note: *** Significance at the level 0.001 ($p < 0.001$); IC, intellectual capital; GI, green innovation; SS, sustainability; FP, financial performance.

Table 4 shows the results of testing the direct influence of intellectual capital, green innovation, and sustainability on financial performance. Intellectual capital has a positive and significant effect on financial performance ($\beta = 0.335$, $p < 0.001$), so the first hypothesis of this study is accepted. Green innovation is known to have a positive and significant effect on financial performance ($\beta = 0.151$, $p < 0.001$), indicating that H2 is also accepted. Sustainability has a positive and significant effect on financial performance ($\beta = 0.408$, $p < 0.001$), which indicates that H3 is accepted. The test result shows that intellectual capital has a positive and significant effect on sustainability ($\beta = 0.729$, $p < 0.001$), indicating that H4 is accepted. Meanwhile, green innovation is known to have a positive and significant effect on sustainability ($\beta = 0.130$, $p < 0.001$), which indicates that H5 is accepted. Table 3 presents the results of testing the indirect influence of intellectual capital and green innovation on financial performance. Furthermore, the results show that the relationship between financial literacy and financial performance is mediated by innovative behaviour ($\beta = 0.297$, $p < 0.001$), thus indicating that H6 is accepted. It can be seen that the relationship between green innovation and financial performance is mediated by sustainability ($\beta = 0.053$, $p < 0.05$), thus indicating that H7 is accepted.

Table 3

Table 5. Hypotheses testing of mediator.

Hypothesis	Path	Coefficient	p value	Result
H6	IC → SS → FP	0.297	***	Supported
H7	GI → SS → FP	0.053	0.018	Supported

Note: *** Significance at the level 0.001 ($p < 0.001$); significance at the level 0.05 ($p < 0.05$); IC, intellectual capital; GI, green innovation; SS, sustainability; FP, financial performance.

Conclusion

The results of this study have provided evidence that intellectual capital and green innovation are positively related to financial performance. This research also supports sustainability as a mediator of the relationship between intellectual capital, green innovation, and financial performance.

Limitation

- The present study is restricted to only I.T Sector in India.
- This study is constrained with a sample size of Employees belong to I.T Sector.