Sustainable Intellectual Capital and Sustainable Performance

Subjects: Business

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Intellectual capital (IC) has become one of the most valuable resources of an organisation. Along with the increasing concerns for sustainable practices, a new concept has emerged: Sustainable IC (SIC). The stakeholders were not familiar with the SIC concept and overemphasised the environmental dimension when referring to both sustainability and sustainable performance concepts. Furthermore, it was found that the organisation's sustainable performance was affected by all its SIC components (human, structural, and relational).

intellectual capital sustainability sustainable intellectual capital sustainable performance

1. Intellectual Capital

In recent decades, there has been an evolutive process at different levels, such as in technologies, information systems, or production processes, which has led to the so-called "knowledge economy." However, the perception that people are a major resource for organisations was crucial for such a change [1].

Nowadays, intangible resources are seen as a better "weapon" for organisations to achieve better performance when compared to tangible ones, allowing them to enhance their competitive advantage [2][3]. Edvinsson and Malone [4] consider these intangible resources to be assets that are not visible in the traditional accounting balance sheet but add value to the organisation. Among these intangible resources, intellectual capital (IC) stands out.

Although the term IC was coined in 1969 by John Kenneth Galbraith, only in the 1980s did it become an important topic in strategic management and accounting, prompting discussion among academics and practitioners. Since then, IC research has evolved, and nowadays, it is possible to distinguish four distinct phases [5]. The first phase of research on IC has been aimed at achieving a shared terminology around the concept of IC, leading to a common awareness of its potential [6]. The second phase of research on IC emerged in the new millennium, focusing on measuring and reporting IC [7]. While these two phases allowed the understanding of the IC concept and its impact on organisations' development, a third phase focused on the practical application of IC and its implications for management [7]. Finally, the fourth phase of IC research aimed to broaden the concept to new contexts and, more recently, address the ecological, social, and demographic problems that society has been facing [8].

Despite this evolution, IC remains a complex concept for which still there is no standardised definition. For example, Stewart [9] conceptualised IC as intellectual material, such as knowledge, information, intellectual property, and experiences that can be used to generate wealth. More recently, Sardo et al. [10] defined IC as

encompassing knowledge-based activities and processes, which contribute to innovation, value creation, competitive advantages and far-reaching benefits for firms, ultimately adding value for stakeholders. Additionally, a meaningful definition comes from [11], which addresses an organisation's IC as "the immaterial sources of value related to employees' capabilities, the organisation's resources and processes, and the relationships with its stakeholders" (p. 26).

Currently, there is no agreement on the definition of IC or the classification of its dimensions. The literature often points to a classification into three dimensions: human capital (HC), structural capital (SC), and relational capital (RC) [9][12]. Despite this fact, in their study, Ferenhof et al. [13] suggest that the main IC dimensions not only encompass the human, structural, and relational capitals but also the social capital, which is more oriented towards society. However, this entry adopts the traditional taxonomy composed of three dimensions (HC, SC, RC). In addition, it adopts [11]'s IC definition, which encompasses these dimensions. Finally, it should be stressed that such dimensions should be seen interrelatedly [14].

The issue of IC has attracted the attention of several scholars and researchers around the world, and in 2008, a new concept was introduced by Chen [15]: sustainable intellectual capital (SIC) or "green IC." This concept, which integrates IC with environmental concerns, has been explored very little in IC literature [3]. Chen [15] defined SIC as intangible resources, capabilities, skills, and knowledge related to environmental protection and innovation at both the organisational and individual levels. In broader terms, it encompasses all the knowledge that an organisation reserves to stimulate the environmental management process and thus obtain a competitive advantage [16][17][18]. Therefore, companies create and add value to their products or services by offering environmentally friendly products or services [19].

Chen [15] applied the traditional IC taxonomy to this new concept. Therefore, SIC can encompass three dimensions: sustainable human capital (SHC), sustainable structural capital (SSC), and sustainable relational capital (SRC). SHC can be defined as employees' knowledge, skills, abilities, capabilities, experiences, attitudes, wisdom, and creativity regarding environmental protection or greener innovation [15][17][18]. SHC can be created through the development of more sustainable skills. Most environmental management has focused on developing activities such as training that can help stimulate employees' environmental knowledge, thus enabling organisations to develop greener innovations [17]. Additionally, organisations should promote satisfaction in the workplace to improve employees' performance and create HC [20], namely sustainable HC. HC can help organisations to recognise their intangible resources and use them to implement more sustainable activities. Greater prominence of SHC results in more sustainable organisations, as greater awareness and increased knowledge about environmental and sustainability issues makes these organisations more competitive [18].

According to [21], individuals are not the only ones responsible for environmental issues. SC can assist organisations in driving processes and systems to facilitate the development of the knowledge needed to create organisational capabilities. A well-established culture supported by effective management systems is essential for the strategic decision-making process. Therefore, sustainable human resource management and the development of an environmental culture can be crucial to potentiate an organisation's sustainable performance [17]. Hence,

SSC can be conceptualised as the organisational resources, such as management systems, computer systems, organisational processes, management philosophy, organisational culture, patents, copyrights, brands, information technology, or management mechanisms, related to environmental protection or ecological innovation in the firm [15][17][18] (Chen, 2008; Yong et al., 2019; Yusliza et al., 2020). Green innovation can be a crucial factor in achieving corporate sustainability [15].

Stakeholders' expectations (and especially clients' ones) have been changing. Aside from the concerns regarding products, prices, or services, stakeholders are increasingly focusing on other issues, such as organisations' sustainable environmental behaviours. Since the customer is at the core of the competitive environment that drives organisations, some authors, such as [22], consider the RC the most important IC dimension. An organisation's environmental behaviour can shape its clients' perceptions of it. Therefore, it can be claimed that SRC is based on iterative relationships between the organisation and its customers, suppliers, and other partners, with a focus on environmental aspects, something that may provide such an organisation with an important competitive advantage [15][16][17][18].

2. Sustainability and Corporate Social Responsibility

According to [23], the recognition of the human impact on the environment emerged in the mid-1960s. Since then, the concept of sustainability has evolved. Sustainability represents the evolution of society towards a fairer and richer world in which the natural environment and cultural achievements are preserved for future generations [24].

Currently, there has been a change in social awareness in the sense that companies should not make a profit at any cost and should bear in mind the potential impact of their activities. Therefore, they must consider all the economic, environmental, and social collateral effects that may impact society [25]. Organisations are key in inhibiting global unsustainability [26]. Sustainability is now associated with corporate business strategies, aiming to benefit stakeholders while improving people's lives and protecting the environment [26][27]. In fact, over time, companies have begun to recognise their responsibility in sustainability issues due to their negative impacts on society and the environment [26]. Therefore, the most widely used definition of corporate sustainability is adapted from the sustainable business development definition. Corporate sustainability can be defined as the adoption of business strategies and activities that consider the needs of the company and its stakeholders today while protecting the human and natural resources needed for the future [28]. It can also be conceptualised as a business strategy that drives corporate growth and long-term profitability by mandating the inclusion of environmental and social issues in the business model [29].

Closely related to the concept of sustainability is the one of corporate social responsibility (CSR). Howard R. Bowen developed this concept in 1953 with the publication of the book Social Responsibilities of the Businessman. The authors of [30] defined CSR as the managers' obligations to follow policies, make decisions, and follow practices conducive to society's goals and values. However, this concept has evolved, and a link has been established between CSR and stakeholders' long-term interests. The continuous shift in CSR literature has flowed from an ethical orientation to a performance orientation, where the role of stakeholders is considered crucial to

business performance [31]. CSR aims to promote business practices that should be compatible with sustainable development [25][32]. It can be considered a specific consequence of business activities, where practices are established voluntarily and marked by the economic, legislative, ethical, and discretionary expectations that society has for the company [25].

Corporate social responsibility is largely based on the triple bottom line (TBL) concept. According to this concept, sustainable development seeks to balance three dimensions: economic, environmental, and social [33]. Żak [33] define the TBL as the production of goods and services that make use of non-polluting processes and conserve natural resources; that are safe and healthy for employees, the community, and consumers; and that are both economically viable and socially rewarding. Therefore, CSR can be conceptualised as an effective strategy grounded in the organisation's commitment to maximising long-term economic, social, and environmental well-being through business practices, policies, and resources [34][35]. Accordingly, another aspect worth mentioning relates to organisations' growing need to disclose their activities' social, environmental, and economic impacts. Several factors, such as their reputation, require organisations to adopt ethical conduct and constant dialogue between stakeholders. Some studies have made explicit the importance of investing in CSR to create intangible resources, such as reputation, relations with the external environment, or employee motivation [36].

3. Sustainable Intellectual Capital and Sustainable Performance

CSR is considered an indicator of organisational success and a potential means of achieving sustainable development. However, CSR is grounded in three dimensions—economic, social, and environmental—when referring to sustainable development. In recent years, researchers have begun to relate the concepts of CSR and sustainability to the economic, social, and environmental performances of companies [37]. Global sustainability performance can be reported as a strategic tool for corporate management and communication once assessed and accounted for [38]. Therefore, it is essential to differentiate between economic, environmental, and social development to better understand the overall sustainability performance. The authors of [38] consider "sustainability performance" a new and overlooked term. They define sustainability performance "as the aggregate negative or positive bottom line of economic, environmental and social impacts of an entity against a defined baseline" (p. 253). More specifically, economic performance should illustrate an organisation's economic impact on society. Environmental performance is related to the organisation's impact on natural systems, ecosystems, soil, air, and water. It encompasses the performance related to the consumption of, for example, raw materials, water, or energy. Still, it also addresses other potential problems, such as waste production or waste and gas emissions. Finally, social performance refers to the impacts of the organisational activity on the social systems in which it operates. Social performance encompasses the concern with labour practices and decent work and the consequences of organisations' actions on the community or the product.

Corporate sustainability performance mainly focuses on the environmental, social, and economic performances of sustainable development. However, many researchers have considered financial performance to be the proxy for a company's performance. Therefore, the relationship between corporate sustainability performance and firm

performance is still not well understood [39]. Alvino et al. [40] analysed how IC characteristics can promote entrepreneurship based on sustainable and smart development and remain in line with the Sustainable Development Goals and sustainable performance. They show that IC's potential development is related to the concept of long-term value and thus to the 2030 Agenda for Sustainable Development.

According to [41], intangible resources are less expensive, facilitating sustainable performance, especially in companies with scarce resources [42]. Combined with other elements of innovation, IC can improve processes, convey information, and stimulate relationships, with positive effects on environmental and social performance. IC can foster a cultural change in organisations and civil society towards a commitment to sustainability [40].

That is, CI contributes to achieving sustainable performance for organisations.

According to [18], Sustainable Intellectual Capital (and its dimensions) and sustainable performance (environmental, social and economic) are closely related. In their study, they found that SIC positively influences economic, environmental, and social performance. Organisations cannot ignore their activities' environmental and social impacts in today's world. It is crucial to explore the interrelationship between SHC, SSC, and SRC and corporate sustainability.

3.1. Sustainable Human Capital and Sustainable Performance

Human resources are crucial to developing corporate sustainability since HC helps improve an organisation's performance across its three dimensions (economic, environmental, and social). In addition, a positive relationship between knowledge creation and employees' behaviours can be found [43][44]. However, regarding the specific case of SHC, several studies did not find evidence of a significant relationship between this dimension and the sustainable growth of an organisation. For example, Omar et al. [45] assessed the relationship between SHC and business sustainability in Malaysian manufacturing SMEs. Still, they did not find any evidence of a positive effect of SHC on business sustainability. Similarly, [46], by studying non-financial firms in India, did not notice any evidence of a significant relationship between CHS and sustainable organisational growth.

SHC creates ethical principles and an organisational culture related to the company's sustainable value. Therefore, CSR strategies can positively influence the SHC of companies in different ways. Firstly, by being more sensitive to environmental and social issues, companies can attract employees who have a predisposition to acquire more knowledge. Secondly, CSR strategies can lead to human resource practices, such as developing environment-related activities or the attribution of rewards to achieve objectives related to social and environmental commitment. Finally, CSR tends to improve the employees' morale and working conditions, creating an environment that may foster new sustainability-related ideas [47]. Therefore, effective implementation of CSR practices benefits HC efficiency and can have positive implications for sustainable performance [47].

3.2. Sustainable Structural Capital and Sustainable Performance

An organisation with strongly entrenched SC potentially has a robust collaborative environment that can motivate employees and other stakeholders to transfer and absorb more knowledge. Conversely, an organisation with deficient systems and procedures tends not to be able to achieve its full performance potential [3]. The company's instituted policies and structure are crucial for implementing and achieving corporate sustainability [18]. Organisations need an organisational structure to implement CSR strategies [21]. Some studies show evidence of a positive influence of SSC on firm performance [48][49]. For example, Delgado-Verde et al. [50] found a positive effect of SSC on the development and innovation of environmental products. Additionally, CSR strategies can foster the creation of SC, such as organisational capabilities, processes, organisational culture, or image, and consequently improve their performance [15].

3.3. Performance of Sustainable Relational Capital

Finally, RC enables the exchange of information between the organisation and its stakeholders and thus allows companies to hold relevant information. Thus, the greater the interactions with stakeholders, the better the habits and practices of an organisation [3]. Collaboration is crucial to fostering knowledge sharing and environmental awareness, stimulating the transition to a more sustainable society. Therefore, knowledge sharing and collaboration are essential for adopting sustainable practices [51][52]. Omar et al. [45] concluded that SRC has a positive and significant relationship with corporate sustainability. Similarly, in their research on industrial firms in Korea, Xu and Wang [42] suggest that IC positively affects corporate sustainability, stressing the importance of RC.

From another point of view, RC can be influenced by CSR activities, namely due to stakeholders' expectations regarding social and environmental issues. Thus, RC should be well managed for the organisation to obtain competitive advantages [17][53]. Well-managed environmental and social aspects can develop the organisation's culture and image and foster its commitment towards sustainability [54].

References

1. Brooking, A. Intellectual Capital; International Thomson Business Press: London, UK, 1997.
2. Agostini, L.; Nosella, A.; Filippini, R. Does Intellectual Capital Allow Improving Innovation Performance? A Quantitative Analysis in the SME Context. J. Intellect. Cap. 2017, 18, 400–418.
3. Yusoff, Y.M.; Omar, M.K.; Zaman, K.M.D.; Samad, S. Do All Elements of Green Intellectual Capital Contribute toward Business Sustainability? Evidence from the Malaysian Context Using the Partial Least Squares Method. J. Clean. Prod. 2019, 234, 626–637.
4. Edvinsson, L.; Malone, M.S. Intellectual Capital: Realizing Your Company's True Value by Finding Its Hidden Brainpower; Harper Business: New York, NY, USA, 1997.
5. Secundo, G.; Dumay, J.; Schiuma, G.; Passiante, G. Managing Intellectual Capital through a Collective Intelligence Approach: An Integrated Framework for Universities. J. Intellect. Cap.

2016, 17, 298–319.

6. Guthrie, J.; Ricceri, F.; Dumay, J. Reflections and Projections: A Decade of Intellectual Capital Accounting Research. Br. Account. Rev. 2012, 44, 68–82.
7. Dumay, J.; Garanina, T. Intellectual Capital Research: A Critical Examination of the Third Stage. J. Intellect. Cap. 2013, 14, 10–25.
8. Massaro, M.; Dumay, J.; Garlatti, A.; Dal Mas, F. Practitioners' Views on Intellectual Capital and Sustainability: From a Performance-Based to a Worth-Based Perspective. J. Intellect. Cap. 2018, 19, 367–386.
9. Stewart, T.A. Intellectual Capital: The New Wealth of Organization; Nicholas Brealey Publishing House: London, UK, 1998.
10. Sardo, F.; Serrasqueiro, Z.; Alves, H. On the Relationship between Intellectual Capital and Financial Performance: A Panel Data Analysis on SME Hotels. Int. J. Hosp. Manag. 2018, 75, 67–74.
11. Kujansivu, P. Operationalising Intellectual Capital Management: Choosing a Suitable Approach. Meas. Bus. Excell. 2008, 12, 25–37.
12. Bontis, N. National Intellectual Capital Index: Intellectual Capital Development in the Arab Region; Research, Institute for Intellectual Capital. J. Intellect. Cap. 2004, 5, 13–39.
13. Ferenhof, H.A.; Durst, S.; Bialecki, M.Z.; Selig, P.M. Intellectual Capital Dimensions: State of the Art in 2014. J. Intellect. Cap. 2015, 16, 58–100.
14. Cabrita, M.D.R. Intellectual Capital: A Phenomenon of Interrelationships. Int. J. Bus. Syst. Res. 2009, 3, 229–256.
15. Chen, Y.-S. The Positive Effect of Green Intellectual Capital on Competitive Advantages of Firms. J. Bus. Ethics 2008, 77, 271–286.
16. López-Gamero, M.D.; Molina-Azorín, J.F.; Claver-Cortés, E. The Whole Relationship between Environmental Variables and Firm Performance: Competitive Advantage and Firm Resources as Mediator Variables. J. Environ. Manag. 2009, 90, 3110–3121.
17. Yong, J.Y.; Yusliza, M.Y.; Ramayah, T.; Fawehinmi, O. Nexus between Green Intellectual Capital and Green Human Resource Management. J. Clean. Prod. 2019, 215, 364–374.
18. Yusliza, M.Y.; Yong, J.Y.; Tanveer, M.I.; Ramayah, T.; Noor Faezah, J.; Muhammad, Z. A Structural Model of the Impact of Green Intellectual Capital on Sustainable Performance. J. Clean. Prod. 2020, 249, 119334.
19. Claver-Cortés, E.; Zaragoza-Sáez, P.; Pertusa-Ortega, E. Organizational Structure Features Supporting Knowledge Management Processes. J. Knowl. Manag. 2007, 11, 45–57.

20. Chen, Y.-S.; Chang, C.-H. Enhance Green Purchase Intentions The Roles of Green Perceived Value, Green Perceived Risk, and Green Trust. Manag. Decis. 2012, 50, 502–520.
21. Jardon, C.M.; Dasilva, A. Intellectual Capital and Environmental Concern in Subsistence Small Businesses. Manag. Environ. Qual. Int. J. 2017, 28, 214–230.
22. Tonial, G.; Cassol, A.; Selig, P.M.; Giugliani, E. Intellectual Capital Management and Sustainability Activities in Brazilian Organizations: A Case Study. In Intellectual Capital Management as a Driver of Sustainability: Perspectives for Organizations and Society; Matos, F., Vairinhos, V., Selig, P.M., Edvinsson, L., Eds.; Springer International Publishing: Cham, Germany, 2019; pp. 119–138. ISBN 978-3-319-79051-0.
23. Elkington, J. Governance for Sustainability. Corp. Gov. Int. Rev. 2006, 14, 522–529.
24. Dyllick, T.; Hockerts, K. Beyond the Business Case for Corporate Sustainability. Bus. Strategy Environ. 2002, 11, 130–141.
25. Maldonado-Erazo, C.P.; Álvarez-García, J.; del Río-Rama, M.; Correa-Quezada, R. Corporate Social Responsibility and Performance in SMEs: Scientific Coverage. Sustainability 2020, 12, 2332.
26. Avesani, M. Chapter 2—Sustainability, Sustainable Development, and Business Sustainability. In Life Cycle Sustainability Assessment for Decision-Making; Ren, J., Toniolo, S., Eds.; Elsevier: Amsterdam, The Netherlands, 2020; pp. 21–38. ISBN 978-0-12-818355-7.
27. Savitz, A. The Triple Bottom Line: How Today's Best-Run Companies Are Achieving Economic, Social and Environmental Success-and How You Can Too; John Wiley & Sons: Hoboken, NJ, USA, 2013.
28. Labuschagne, C.; Brent, A.C.; van Erck, R.P.G. Assessing the Sustainability Performances of Industries. J. Clean. Prod. 2005, 13, 373–385.
29. Niţă, C.G.; Ştefea, P. Cost Control for Business Sustainability. Procedia-Soc. Behav. Sci. 2014, 124, 307–311.
30. Bowen, H.R. Social Responsibilities of the Businessman; University of Iowa Press: Iowa City, IA, USA, 2013.
31. Ashrafi, M.; Magnan, G.M.; Adams, M.; Walker, T.R. Understanding the Conceptual Evolutionary Path and Theoretical Underpinnings of Corporate Social Responsibility and Corporate Sustainability. Sustainability 2020, 12, 760.
32. Muñoz, R.M.; Valle Fernández, M.; Salinero, Y. Sustainability, Corporate Social Responsibility, and Performance in the Spanish Wine Sector. Sustainability 2021, 13, 7.
33. Żak, A. Triple Bottom Line Concept in Theory and Practice. Pr. Nauk. Uniw. Ekon. We Wrocławiu 2015, 387, 251–264.

34. Du, S.; Bhattacharya, C.B.; Sen, S. Corporate Social Responsibility and Competitive Advantage: Overcoming the Trust Barrier. Manag. Sci. 2011, 57, 1528–1545.
35. Yu, S.H.; Liang, W.C. Exploring the Determinants of Strategic Corporate Social Responsibility: An Empirical Examination. Sustainability 2020, 12, 2368.
36. Branco, M.C.; Lúcia, B.; Rodrigues, L. Corporate Social Responsibility and Resource-Based Perspectives. J. Bus. Ethics 2006, 69, 111–132.
37. Jabbour, A.B.; Vazquez-Brust, D.; Chiappetta Jabbour, C.J.; Andriani Ribeiro, D. The Interplay between Stakeholders, Resources and Capabilities in Climate Change Strategy: Converting Barriers into Cooperation. Bus. Strategy Environ. 2020, 29, 1362–1386.
38. Büyüközkan, G.; Karabulut, Y. Sustainability Performance Evaluation: Literature Review and Future Directions. J. Environ. Manag. 2018, 217, 253–267.
39. Goyal, P.; Rahman, Z.; Kazmi, A.A. Corporate Sustainability Performance and Firm Performance Research: Literature Review and Future Research Agenda. Manag. Decis. 2013, 51, 361–379.
40. Alvino, F.; di Vaio, A.; Hassan, R.; Palladino, R. Intellectual Capital and Sustainable Development: A Systematic Literature Review. J. Intellect. Cap. 2020, 22, 76–94.
41. Ying, Q.; Hassan, H.; Ahmad, H. The Role of a Manager's Intangible Capabilities in Resource Acquisition and Sustainable Competitive Performance. Sustainability 2019, 11, 527.
42. Xu, J.; Wang, B. Intellectual Capital, Financial Performance and Companies' Sustainable Growth: Evidence from the Korean Manufacturing Industry. Sustainability 2018, 10, 4651.
43. Malik, S.Y.; Cao, Y.; Mughal, Y.H.; Kundi, G.M.; Mughal, M.H.; Ramayah, T. Pathways towards Sustainability in Organizations: Empirical Evidence on the Role of Green Human Resource Management Practices and Green Intellectual Capital. Sustainability 2020, 12, 3228.
44. Rayner, J.; Morgan, D. An Empirical Study of 'Green' Workplace Behaviours: Ability, Motivation and Opportunity. Asia Pac. J. Hum. Resour. 2018, 56, 56–78.
45. Omar, M.K.; Yusoff, Y.M.; Zaman, M.D.K. The Role of Green Intellectual Capital on Business Sustainability. World Appl. Sci. J. 2017, 35, 2558–2563.
46. Mukherjee, T.; Sen, S.S. Intellectual Capital and Corporate Sustainable Growth: The Indian Evidence. J. Bus. Econ. Environ. Stud. 2019, 9, 5–15.
47. Nirino, N.; Ferraris, A.; Miglietta, N.; Invernizzi, A.C. Intellectual Capital: The Missing Link in the Corporate Social Responsibility–Financial Performance Relationship. J. Intellect. Cap. 2020, 23, 420–438.
48. Hsu, L.C.; Wang, C.H. Clarifying the Effect of Intellectual Capital on Performance: The Mediating Role of Dynamic Capability. Br. J. Manag. 2012, 23, 179–205.

49. Wang, Z.; Wang, N.; Liang, H. Knowledge Sharing, Intellectual Capital and Firm Performance. Manag. Decis. 2014, 52, 230–258.
50. Delgado-Verde, M.; Amores-Salvadó, J.; Martín-De Castro, G.; Navas-López, E. Green Intellectual Capital and Environmental Product Innovation: The Mediating Role of Green Social Capital. Knowl. Manag. Res. Pract. 2017, 12, 261–275.
51. Dickel, P.; Ritter, T. Networking for the Environment: The Impact of Environmental Orientation on Start-Ups' Networking Frequency and Network Size. J. Clean. Prod. 2018, 179, 308–316.
52. Matinaro, V.; Liu, Y.; Lee, T.R.; Jiun, S.; Poesche, J. Extracting Key Factors for Sustainable Development of Enterprises: Case Study of SMEs in Taiwan. J. Clean. Prod. 2019, 209, 1152–1169.
53. Cillo, V.; Petruzzelli, A.M.; Ardito, L.; Giudice, M.D. Understanding Sustainable Innovation: A Systematic Literature Review. Corp. Soc. Responsib. Environ. Manag. 2019, 26, 1012–1025.
54. Huang, C.L.; Kung, F.H. Environmental Consciousness and Intellectual Capital Management: Evidence from Taiwan's Manufacturing Industry. Manag. Decis. 2011, 49, 1405–1425.