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Antecedent Factors of Corporate Strategic Alliances and Their Impact on Corporate Sustainability Performance in the Information Communication Technology Industry in Indonesia

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Abstract. The rapid growth of information technology (IT) has brought both positive and negative impacts to society. As businesses strive to adapt to the changing landscape, it is crucial to understand the relationship between intellectual capital, digital innovation, corporate strategic alliances, and corporate sustainability performance, especially within the domain of digital transformation. This research aims to investigate these relationships in the context of the information and communication technology (ICT) industry in Indonesia. A quantitative research approach was employed, utilizing purposive sampling techniques to collect data from more than 90 ICT companies in Indonesia. The data were collected through written questionnaires and analyzed using SmartPLS 4.0. The findings indicate that intellectual capital does not directly influence corporate sustainability performance. However, it does have a significant impact on corporate strategic alliances. In contrast, digital innovation influences both corporate strategic alliances and corporate sustainability performance. Furthermore, corporate strategic alliances play a vital role in influencing corporate sustainability performance in ICT companies in Indonesia. These results contribute to a deeper understanding of the interplay between intellectual capital, digital innovation, corporate strategic alliances, and corporate sustainability performance in the ICT industry. The findings have practical implications for industry practitioners, highlighting the importance of leveraging intellectual capital, fostering digital innovation, and establishing effective strategic alliances to enhance corporate sustainability performance.

Keywords: Intellectual Capital, Digital Innovation, Corporate Sustainability Performance, Corporate Strategic Alliance, and Information Communication Technology.

1. Introduction

Information technology (IT) has grown continuously and has both positive and negative impacts on humanity (Ramdhani & Sumiyani, 2020). The internet, particularly in the digital era, has expanded widely and is used to access information. Additionally, advances in information and communication technology (ICT) have improved ICT infrastructure, including devices and networks, and increased internet access speeds (ITU, 2009, as cited in Badan Pusat Statistik, 2022). ICT has become an essential aspect of people's lives, supporting work, education, socializing, and numerous other activities. The Covid-19 pandemic created significant opportunities for ICT companies. Demand for their services grew rapidly as people became increasingly reliant on technology (Badan Pusat Statistik, 2022). In the global context, the ICT Development Index evaluates the performance of countries. Indonesia lags behind neighboring countries including Malaysia and Singapore in terms of ICT development, primarily due to a lack of expertise among human resources in mastering technology. Skilled human resources are crucial to ensure optimal ICT infrastructure and utilization (ITU data, 2022, as cited in Badan Pusat Statistik, 2022). Table 1 shows that Indonesia is ranked 111, with a score of 3.85, far below neighboring Malaysia, which is ranked 63 with a score of 6.38, and Singapore, ranked 18 with a score of 8.05 (ITU data, 2022, as cited in Badan Pusat Statistik, 2022).

Table 1: World ICT Development Index

Ranking	Country	Index
18	Singapore	8.05
63	Malaysia	6.38
111	Indonesia	3.85

Source: ITU data (2022)

However, intellectual capital, which includes human capital, structural capital, relational capital, and innovation capital, plays a crucial role in enhancing company performance (Al-Jinini et al., 2019; Bontis, 1998; Shang et al., 2020). Intellectual capital is critical to the development of corporate sustainability performance within corporate strategic alliances (Al-Jinini et al., 2019; Bontis, 1998; Ferreira & Franco, 2017; Oliveira et al., 2020). Research on intellectual capital focuses on maximizing its value to improve company performance, while corporate strategic alliances involve collaborations between companies aimed at leveraging opportunities and addressing business challenges. This highlights the importance of both intellectual capital and strategic alliances for creating sustainable business performance. Companies that effectively utilize intellectual capital and form strategic alliances are better positioned to achieve long-term success and adapt to changing market dynamics. However, research on the relationship between intellectual capital and corporate strategic alliances in the ICT industry in Indonesia remains somewhat limited. Nevertheless, academics, consultants, and business practitioners have begun to recognize the importance of intellectual capital and corporate strategic alliances in delivering corporate sustainability performance, which has led to an increase in research in this area. The growing interest in this field reflects an understanding that harnessing intellectual capital through strategic alliances can significantly contribute to the overall performance and resilience of companies in the dynamic ICT industry. As research in this area expands, it is expected to unlock valuable insights for businesses to navigate the complexities of the industry and drive sustainable growth. Furthermore, digital innovation is essential in creating corporate sustainability performance (Dilyard et al., 2021; Gao & Hands, 2021; Hidayat et al., 2022; Kohli & Melville, 2019). Research on digital innovation and corporate strategic alliances to date has tended to focus on how to utilize digital innovation to enhance corporate sustainability performance and form and manage effective corporate strategic alliances among companies (Chan et al., 2016; Hanelt et al., 2021; Klus et al., 2019; Teguh et al., 2022). This emphasizes the significance of digital innovation as a key driver of sustainable business performance in the ICT industry, along with that of intellectual capital as a driving force behind a

company's success and sustainability.

Moreover, digital technology is crucial for achieving digital transformation, where digital dynamic capability and innovation are vital for companies to succeed. Digitalization also has the potential to accelerate the transition to a more efficient resource production system, although only limited research has been conducted on its impact on the circular economy. Nevertheless, a positive correlation has been identified between digital practices, digital business innovation, and performance in the circular economy (Chowdhury et al., 2019; He et al., 2020; Klus et al., 2019). This underlines the broader implications of digital technology and innovation for not only business performance but also sustainability and resource efficiency. As digital technology intensifies and advances, business models need to adjust, and integrated ecosystem capabilities become essential. It is crucial to strike a balance between advancing digital technology and addressing societal challenges to ensure the development of ICT and business while preserving human identity within the ecosystem. IT Nation (2017) emphasized three domains that organizations need to consider when implementing a digital workplace: business alignment, people alignment, and IT alignment.

Further research on digital innovation and corporate strategic alliances is essential in the ICT industry. However, the research in this field in Indonesia has not been as extensive as that in other developed countries (Hidayat et al., 2022). Nevertheless, given the continuous growth of the ICT industry in Indonesia, it is expected that more research will be conducted in the future, indicating the growing importance of this area of study. In addition, corporate business performance is influenced by various internal and external elements. To enhance corporate business performance and gain a competitive advantage, businesses must optimize their use of IT (Shang et al., 2020). Technology, organizational, and environmental variables significantly impact IT adoption and the role of managers in the decision-making process. Business sustainability in the ICT industry involves creating collaborative networks and corporate strategic alliances. Previous studies have shown that establishing corporate strategic alliances promotes corporate sustainability performance (Koka & Prescott, 2008; Paracha et al., 2019; Seo et al., 2020). This highlights the importance of the corporate strategic alliance as a means of achieving sustainable business performance. Additionally, research on the combination of intellectual capital and digital innovation for corporate strategic alliances, which in turn impacts corporate sustainability performance in the ICT industry, is crucial. This will help companies understand how to leverage all of the relevant factors to achieve business goals and form the most effective corporate strategic alliances. In Indonesia, while relatively few studies have been conducted within this combined field, various institutions, consultants, universities, and the government have now commenced research into all these factors, indicating a growing interest in this area of study. The ICT industry is crucial for the Indonesian economy. Based on the information presented above, the objective of this study is to explore in greater detail the connection between intellectual capital and digital innovation, both of which are key components of digital transformation. The focus is on how these elements impact collaboration and synergy among ICT companies, particularly through corporate strategic alliances. The ultimate goal is to develop sustainable competitiveness and enhance corporate sustainability performance within the ICT industry in Indonesia, underlining the importance of aligning technology, innovation, intellectual capital, and corporate alliances to achieve sustainable business performance.

2. Literature Review

2.1 Intellectual Capital

Intellectual capital strengthens the relationship between corporate strategic alliances and corporate sustainability performance (Ferreira & Franco, 2017). Ferreira and Franco (2017), in research on Portuguese technology-based small and medium-sized enterprises (SMEs), proved the crucial importance of intellectual capital in enhancing the relationship between corporate strategic alliances

and corporate sustainability performance. By optimizing the use of intangible resources, companies can maximize the benefits of alliances. According to Chang et al. (2008), corporate strategic alliances and intellectual capital have influenced the value created from international strategic alliances in the context of a data security company in America. The study found a positive and significant relationship between alliance experience and the value created from the alliance. Intellectual capital also plays a crucial role in influencing the value created by enhancing the positive effects of the alliance experience.

It has been shown that intellectual capital plays a crucial role in influencing corporate sustainability performance, notably in response to recent pandemic-induced crises in the food industry in Jordan (Al-Omoush et al., 2021). Investment in intellectual capital will impact company profitability by helping companies enhance their capabilities and efficiency, strengthen their competitive position, and improve profitability. Companies with strong intellectual capital tend to be more profitable than those with weaker intellectual capital. Therefore, investing in intellectual capital is essential for companies to ensure corporate sustainability performance (Buallay, 2017; Costa et al., 2022). Based on the description above, Hypothesis 1 (H1) is proposed as follows:

H1. Intellectual Capital has a positive influence on Corporate Sustainability Performance.

Intellectual capital has also been observed to influence corporate strategic alliances in uncertain environments in multisectoral industries in China (Liu et al., 2022). It plays a significant role in enhancing alliance performance by facilitating access to complementary resources. The study also found that the level of environmental uncertainty moderates the relationship between intellectual capital and corporate strategic alliances. We thus formulate Hypothesis 2 (H2) as follows:

H2. Intellectual Capital has a positive influence on Corporate Strategic Alliances.

2.2 Digital Innovation

Klus et al. (2019) explored the motivations and types of interactions between banks and fintech companies when forming strategic alliances for digital innovation. The research aimed to understand the reasons why banks and fintech companies choose to collaborate, as well as the forms of collaboration, and provide insights into corporate strategic alliances between banks and fintech companies in Germany in terms of digital innovation. Chan et al. (2016) explored agility in the context of responding to digital innovation in SMEs in Singapore. They studied the business strategies that SMEs employed to respond effectively to digital innovation. The researchers also analyzed the factors influencing SMEs' ability to become agile and the impact of digital innovation on them, and provided insights and directions for future research on strategic alliances. Based on the description above, Hypothesis 3 (H3) is given as follows:

H3. Digital Innovation has a positive influence on Corporate Strategic Alliances.

Hidayat et al. (2022) examined the internet service provider industry in Indonesia regarding the development of quality digital innovation to enhance competitive advantage and corporate sustainability performance. The optimal use of company resources can result in quality digital innovation and have a positive impact on corporate sustainability performance. It is possible, by optimally leveraging company resources, to enhance digital innovation, improve productivity, efficiency, and service quality, gain a competitive advantage, and subsequently enhance corporate sustainability performance. Digital organizational culture and digital capabilities have positively influenced corporate sustainability performance through the mediation of digital innovation in the pharmaceutical industry in Indonesia (Teguh et al., 2022). Digital capabilities assisted companies in addressing challenges during the Covid-19 pandemic, such as increased demand and limitations in

distribution. A strong digital organizational culture also helps companies leverage technology and promote innovation. Meanwhile, digital innovation has been found to positively impact corporate sustainability performance in Europe, aiding companies in overcoming challenges and improving business efficiency in multisectoral industries (Hanelt et al., 2021). Based on the description above, Hypothesis 4 (H4) is developed as follows:

H4. Digital Innovation has a positive influence on Corporate Sustainability Performance.

2.3 Corporate Strategic Alliance

Organizational culture influences the relationship between corporate strategic alliances and corporate sustainability performance in the telecommunications industry in Indonesia. An organizational culture that is aligned with the corporate strategic alliance can strengthen the latter's positive impact on organizational performance. Conversely, a misaligned organizational culture can weaken or even negate the alliance's positive impact (Paracha et al., 2019). Koka and Prescott (2008) conducted research on the alliance networks, environmental changes, and strategies that influenced the sustainability performance of companies in the steel industry across 48 countries. The study found that corporate strategic alliance plays a crucial role in influencing corporate sustainability performance. Companies that hold central positions within alliance networks have better access to resources and information compared to those in peripheral positions. Therefore, companies should consider their prospective position within the network when establishing a corporate strategic alliance. In addition, environmental changes and company strategies influence corporate sustainability performance through corporate strategic alliances. Companies need to monitor environmental changes and ensure that the strategies implemented remain relevant and capable of meeting the evolving environmental demands (Koka & Prescott, 2008). Based on the description above, Hypothesis 5 (H5) is developed as follows:

H5. Corporate Strategic Alliances have a positive influence on Corporate Sustainability Performance.

2.4 Corporate Sustainability Performance

The notion of corporate sustainability performance refers to how a company conducts its operations while simultaneously considering the impact of its business on the environment, economy, and society, in both the present and the future. Companies thus strive to meet current needs without neglecting the needs of future generations and by taking into account the evolving dynamics of the environment, economy, and society. To enhance corporate sustainability performance, companies must make long-term commitments to ensure that their business meets its social and environmental responsibilities. Sustainability principles should be integrated into all aspects of the business, with continuous monitoring and evaluation to ensure that it continues to operate responsibly and sustainably (Daud & Asha'ari, 2018; Munir et al., 2019; Shang et al., 2020; Tseng et al., 2018; Xie & Zhu, 2020). Green training can help companies to improve their corporate sustainability performance (Xie & Zhu, 2020). In this way, employees are assisted in their understanding and application of sustainability principles in their daily work, thereby helping the company to achieve its goals. Corporate sustainability performance emphasizes three important dimensions in a company, known as the triple bottom line: economic, environmental, and social aspects (Daud & Asha'ari, 2018). Shang et al. (2020) examined the relationship between dynamic sustainability capabilities, resource management capabilities, and corporate sustainability performance. Dynamic sustainability capabilities are defined as a company's ability to swiftly and effectively address and respond to changes in the internal and external environment. Resource management capabilities refer to a company's ability to efficiently and effectively manage resources and ensure that they meet current needs without compromising the ability of future generations to meet their own needs. Dynamic sustainability and resource management capabilities are crucial in enhancing corporate sustainability performance. From these hypotheses, a research framework is set out in Fig. 1.

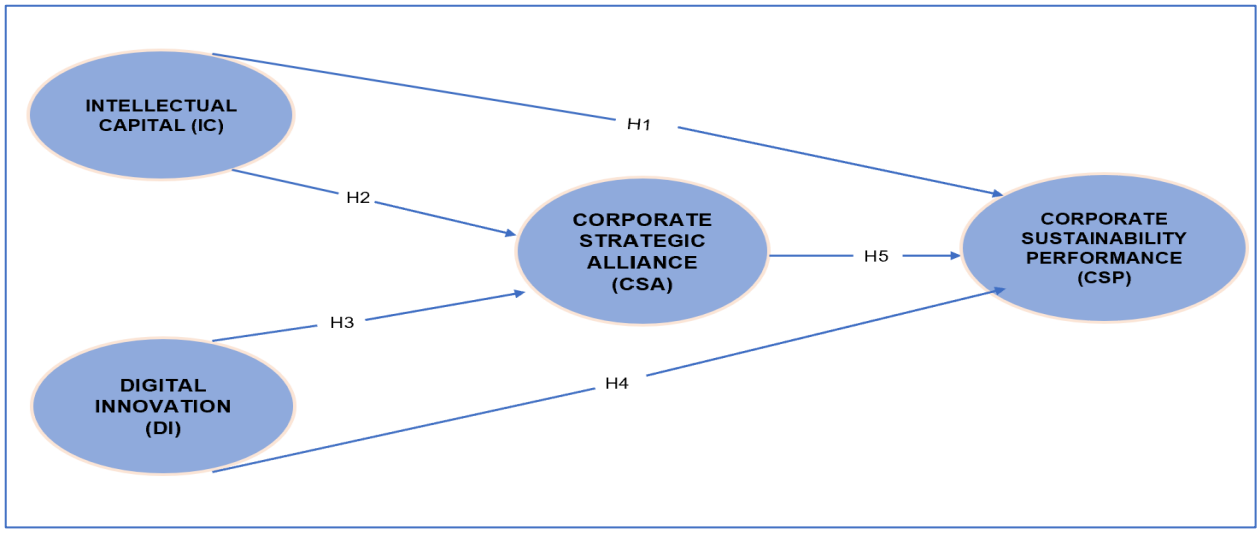

Fig. 1: Research Framework
Source: Researcher (2023)

2.5 The ICT Industry in Indonesia

ICT companies in Indonesia have in general developed continuously over the past 10 years; however, not all companies have experienced growth (Badan Pusat Statistik, 2022; Farhana & Ullah, 2022; Struckell et al., 2022). Many studies have suggested that a dominant factor impacting companies' sustainability performance is the resilience of their human resources and the alliances they form (Rahman, 2021; Yoel & Itzhak, 2022). Corporate strategic alliances emerge as ICT companies seek alternative strategies for survival in an increasingly competitive market (Hagedoorn & Schakenraad, 1994; Hidayat et al., 2016; Hidayat et al., 2022; Kannan, 2017). Intellectual capital and digital innovation are the key determinants of corporate strategic alliances. The formation of strategic alliances between ICT companies, which inherently complement each other in meeting market demands, is one of the most effective ways to ensure sustainability in challenging situations (Cacciolatti et al., 2019; Emami et al., 2022; Satpathy et al., 2020; Xue & Li, 2022). A key element in accelerating the achievement of corporate sustainability is how different companies perceive and make strategic decisions in dynamic environments or rapidly changing circumstances (Chao & Kang, 2022; Frank et al., 2017; Mustafa et al., 2021). To effectively meet this challenge, leaders in the ICT industry must make rapid decisions using their intuition and experience (Dost et al., 2016; Jansen et al., 2009; Luciano et al., 2020; Paudel, 2019; Prasad & Junni, 2016).

Furthermore, one of the most challenging factors in digital transformation is "people" (Gardan et al., 2018; Gulyamov & Yes, 2021; Pirogova et al., 2020). Intellectual capital is critical in determining the success of corporate strategic alliances, as the relationships among individuals are pivotal for companies in terms of their ability to achieve success and sustainability (Ferreira & Franco, 2017; Gardan et al., 2018; Sáez et al., 2007; Zavertiaeva, 2016). Meanwhile, technology is also crucial to the success of strategic alliances (Li et al., 2022; Monteiro et al., 2013; Teng, et al., 2022;). Digital innovation can accelerate corporate strategic alliances via the adoption of the latest technological innovations in the ICT industry and their implementation in line with customers' business needs (Byl et al., 2022; He et al., 2020; Tang et al., 2022). Digital innovation, in combination with data analytics and business intelligence, is thus relevant for companies when seeking to develop corporate strategic alliances and achieve sustainability (Božič & Dimovski, 2019; He et al., 2020).

This research addresses several controversies in the ICT field, particularly in Indonesia, which are outlined as follows:

1. Indonesia's inadequate internet network infrastructure raises questions about how to ensure that all Indonesian people have proper and affordable access to technology and information (Hidayat et al., 2022).
2. Human resources and knowledge within organizations must be optimally, effectively, and fairly utilized and shared to ensure that knowledge is used to benefit the organization and deliver optimal corporate sustainability performance (Ferreira & Franco, 2017; Rehman et al., 2021).
3. Business environment changes and uncertainties, such as rapid market and technological changes, data and information security, and government regulations, are constant concerns for business practitioners (Liu et al., 2022; Taghizadeh et al., 2020).

These are just some of the examples of the debates present within the ICT field. In this rapidly developing digital era, such issues will continue to evolve and require ongoing discussion as to how they should be addressed and ensure that digital innovation serves the interests of all parties. Moreover, enhancing intellectual capital will improve the quality of life of Indonesians. This in turn will enable them to implement optimal business strategies by leveraging appropriate technology, thus contributing directly to the strengthening of the national economy.

3. Research Methodology

This study employs a quantitative research methodology with the aim of explaining and testing various indicators as a basis for the theory. The indicators are developed based on specific conditions and situations relevant to the research subject. The data collection followed a cross-sectional time horizon, where information was gathered directly from the location at a specific point in time (Sekaran & Bougie, 2016). To collect the research data, a questionnaire was administered using Google Forms. The survey method was utilized as the primary tool for data collection, with questionnaires distributed to division managers, directors, and owners of IT system integrators/vendors, principals, and distributors in Indonesia (Sekaran & Bougie, 2016). Additionally, secondary data sources including journal articles, company profiles, and relevant internal data were utilized as supporting data. The research instrument refers to the tool required for data collection.

Subsequently, the collected data were managed and analyzed using SmartPLS 4.0. The study employed Structural Equation Modeling (SEM) with Partial Least Squares (PLS) to analyze the influence of exogenous and endogenous variables, represented by the parameters X1, X2, M, and Y. Bootstrap resampling was used to address estimation issues, obtain optimal estimations, and overcome assumptions. The objective of this analysis was to confirm the research hypotheses. Prior to analysis, all data underwent validation, reliability, and completeness checks. Validity testing is crucial to ensure that the questionnaire items accurately predict the aspects under investigation (Ghozali, 2014). In this study, validity testing was conducted using the Outer Model measurement, which examined the values of convergent validity and discriminant validity. Loading factors with values ≥ 0.50 were considered acceptable, while those with values < 0.50 were excluded from the model. Reliability testing assesses the consistency or stability of responses over time (Ghozali, 2014). The reliability of the research instrument was evaluated using the Outer Model measurement, specifically by examining the values of composite reliability and Cronbach's alpha. Constructs with Cronbach's alpha and composite reliability values ≥ 0.70 were considered reliable.

Furthermore, sampling involves selecting a representative portion of the population for investigation (Sekaran & Bougie, 2016; Sugiyono, 2009). In this study, non-probability sampling with a purposive sampling technique was employed. Following the rule of thumb for the SEM method, the sample size consisted of 99 respondents representing principals, distributors, and integrators/vendors of IT systems in Indonesia (Hair et al., 2010).

4. Result and Discussion

4.1 Construct Validity and Reliability

The research model was evaluated using a construct validity test, which aimed to determine the extent to which the questionnaire, as a measuring instrument, effectively captures the essence of the model. Based on Hair et al. (2019), the convergent validity test specifies that each question indicator should have a loading factor value above 0.50 (> 0.50). In meeting this criterion, the questionnaire comprehensively captures the perception of all variables and enables accurate measurement of the latent variables. Two reliability tests were conducted, namely a Cronbach's alpha test and the composite reliability test (refer to Table 2). Hair et al. (2019) and Ghozali (2014) recommend that all constructs employed in the research model should have composite reliability and Cronbach's alpha values equal to or greater than 0.7 (≥ 0.7). In this respect, all variables utilized in this study demonstrated a high level of reliability.

Table 2: Construct Reliability
Source: SmartPLS 4.0 output

	CA	RA	CR	AVE
Intellectual Capital (IC)	0.929	0.933	0.938	0.489
Digital Innovation (DI)	0.939	0.945	0.946	0.542
Corporate Strategic Alliance (CSA)	0.895	0.906	0.913	0.493
Corporate Sustainability Performance (CSP)	0.884	0.896	0.903	0.422

Note:CA: Cronbach's alpha; RA: rho_A; CR: Composite reliability; AVE: Average variance extracted

4.2 Structural Model

Structural modeling is an ideal data analytics method for examining complex relationships among multiple analytical variables. It is used to test the degree to which a hypothesized model accurately represents the interrelationships among its variables. The bootstrapping process, which involves generating a large number of samples, was employed to check for errors and calculate the P-values to determine the significance of the measurement model at the 5% significance level. The bootstrapping process for the structural model is illustrated in Fig. 2.

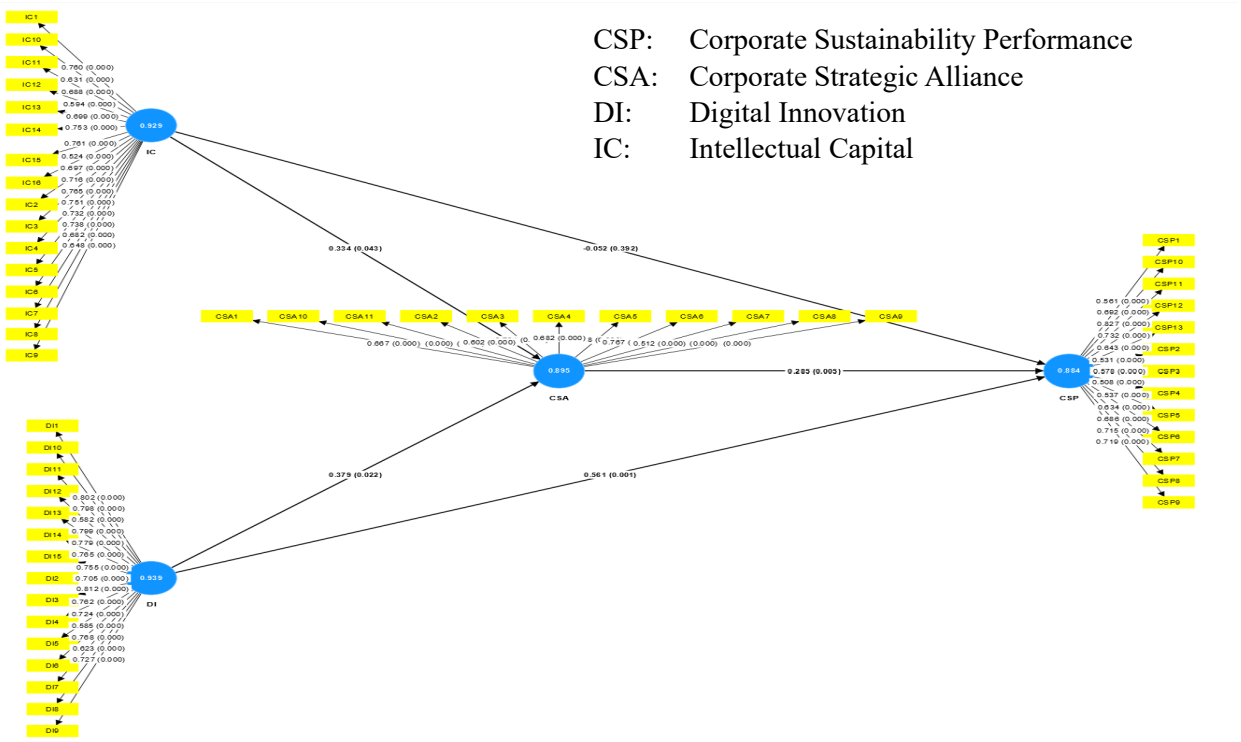

Fig. 2. The Structural Model
Source: Researcher (2023)

4.3 Hypothesis Testing

Table 3 presents a summary of the analysis results for the hypotheses. This study used the bootstrapping procedure, as recommended by the literature.

Table 3. Hypothesis Test Results
Source: SmartPLS 4.0 output

		O	M	STDEV	T-Values	P-Values	Decision
H1	IC --- CSP	-0.052	-0.048	0.188	0.275	0.392	Rejected
H2	IC --- CSA	0.334	0.364	0.193	1.729	0.043	Accepted
H3	DI --- CSA	0.379	0.357	0.186	2.035	0.022	Accepted
H4	DI --- CSP	0.561	0.574	0.176	3.181	0.001	Accepted
H5	CSA --- CSP	0.285	0.276	0.110	2.602	0.005	Accepted

O: Original sample
M: Sample mean
STDEV: Standard deviation
IC: Intellectual Capital
DI: Digital Innovation
CSA: Corporate Strategic Alliance
CSP: Corporate Sustainability Performance

4.4 Discussion

The guidelines state that a significant influence can be inferred by P-values of less than 0.05 and T-values greater than 1.645 for a one-tailed test with a level of significance of 0.05. Having tested the hypotheses, no influence was found for Intellectual Capital on Corporate Sustainability Performance, as indicated by the T-value of 0.275 and P-value of 0.392. Neither of these values meets the guidelines, meaning Hypothesis 1 is rejected. This finding contradicts the study by Al-Omoush et al. (2021), which found that intellectual capital played a significant role in influencing corporate sustainability

performance, notably in response to recent pandemic-induced crises in the food industry in Jordan. The hypothesis test results also indicate that Intellectual Capital has a significant influence on Corporate Strategic Alliance, with a T-value of 1.729 and a P-value of 0.043. Both values meet the guidelines, meaning that Hypothesis 2 is accepted. This finding aligns with Ferreira and Franco's (2017) study of technology-based SMEs in Portugal, which demonstrated the crucial role of intellectual capital in strengthening the relationship between corporate strategic alliances and corporate sustainability performance.

Furthermore, the results demonstrate that Digital Innovation has a significant influence on Corporate Strategic Alliance, with a T-value of 2.035 and a P-value of 0.022, both of which satisfy the guidelines. Therefore, Hypothesis 3 is accepted. This result aligns with previous research by Klus et al. (2019), which explored the motivation and types of interactions between banks and fintech companies when forming strategic alliances for digital innovation, as well as the study by Chan et al. (2016), which explored the concept of agility in responding to digital innovation among SMEs in Singapore. The study additionally reveals a significant influence of Digital Innovation on Corporate Sustainability Performance, as indicated by a T-value of 3.181 and a P-value of 0.001, which adhere to the guidelines. Consequently, Hypothesis 4 is accepted. This finding is supported by previous research by Hidayat et al. (2022). Their study investigated Internet service providers in Indonesia and found that the development of quality digital innovation can enhance competitive advantage and corporate sustainability performance. The finding is further supported by the study of Teguh et al. (2022) in the pharmaceutical industry in Indonesia, which found that organizational digital culture and digital capabilities have a positive influence on corporate sustainability performance through the mediation of digital innovation.

Similarly, the hypothesis test results indicate that Corporate Strategic Alliance has a significant influence on Corporate Sustainability Performance, with a T-value of 2.602 and a P-value of 0.005, meeting the guidelines. Thus, Hypothesis 5 is accepted. This finding is consistent with Paracha et al. (2019), whose study found that organizational culture influences the relationship between corporate strategic alliance and corporate sustainability performance in the telecommunications industry in Indonesia. An organizational culture aligned with a corporate strategic alliance can strengthen the positive impact of the alliance on organizational performance. This finding supports Koka and Prescott (2008), who in research on alliance networks, environmental changes, and strategies influencing the sustained performance of companies in the steel industry across 48 countries, found that corporate strategic alliance plays a crucial role in influencing corporate sustainability performance.

The research results indicate that Intellectual Capital does not significantly influence Corporate Sustainability Performance in ICT companies in Indonesia. This may be because, in Indonesian ICT companies, intellectual capital is not the primary factor driving and improving it. Instead, technology, the increasing number of outsourcing companies providing affordable IT talent, and the relatively high turnover rates in ICT companies are replacing factors such as the role of intellectual capital. However, strategic alliances between companies play a significant and highly influential role in enhancing corporate sustainability performance in ICT companies in Indonesia. All of these findings are presented in Table 3.

4.5 Research Implication

The theoretical benefits of this research are expected to contribute to the advancement of knowledge, particularly in the field of strategic management related to corporate sustainability performance. The study can serve as a reference for future researchers, particularly regarding the role of corporate strategic alliances in the sustainability performance of ICT companies in Indonesia. The findings of this study can enrich the existing theoretical framework and provide new insights into the factors influencing sustainable business practices in the context of the ICT industry. Additionally, the practical benefits of the study lie in its potential to provide valuable insights for strategic management professionals in

decision-making processes, ultimately enhancing corporate sustainability performance. Management at various levels can learn about the impact of intellectual capital, digital innovation, and corporate strategic alliances, which can accelerate the development of business ecosystem capabilities that positively influence the performance of companies, especially in the ICT industry in Indonesia. By comprehending the significance of intellectual capital and digital innovation in forming effective strategic alliances, business leaders can make informed decisions to foster collaboration and innovation, leading to improved corporate sustainability performance. The practical implications of this research extend to ICT companies in Indonesia, where the findings can guide them in leveraging their intellectual capital and adopting digital innovations to create strategic alliances that enhance their overall sustainability performance. The study's insights can assist these companies in optimizing their resources, improving productivity, and developing more resilient business models to adapt to ever-changing market conditions.

In conclusion, this research not only contributes to theoretical knowledge in the field of strategic management and corporate sustainability performance but also provides practical implications for businesses in the ICT industry in Indonesia. By understanding the role of intellectual capital, digital innovation, and strategic alliances, these companies can strengthen their competitive position, achieve sustainable growth, and make positive contributions to the overall development of the industry and the economy.

5. Conclusions

The objective of this research was to examine how intellectual capital and digital innovation impact the corporate sustainability performance of ICT companies in Indonesia. The study also investigated the role of the corporate strategic alliance as a mediator in this relationship. The research findings indicate that digital innovation has a significant and positive influence on driving corporate strategic alliances, ultimately leading to an improvement in corporate sustainability performance. Therefore, ICT companies must implement digital innovation as a strategic approach to enhance their corporate sustainability performance. These insights are valuable for professionals, particularly those working in the ICT sector. However, it is important to acknowledge that the scope of this research is limited to ICT companies in Indonesia, and thus caution should be exercised if seeking to generalize the findings to other countries or diverse industries. The specific context and characteristics of the ICT industry in Indonesia may differ from other regions and sectors, which could affect the applicability of the research findings in different settings.

It is recommended that future research aims to not only analyze the aforementioned independent variables but also include additional ones to gain a deeper understanding of the factors affecting corporate sustainability performance in ICT companies in Indonesia. ICT companies can be categorized into three types: principals, distributors, and IT system integrators/vendors. It is advisable to conduct a separate analysis for each category since each one encompasses different company resources and capabilities. Exploring the influence of these variables could provide a more comprehensive view of the determinants of corporate sustainability performance in the ICT industry in Indonesia. In conclusion, this study offers valuable insights for professionals, especially those working in the ICT sector. However, it is crucial to acknowledge that the scope of this research is confined to ICT companies within Indonesia. As such, it is not possible to extrapolate the findings to other countries or diverse industries. The limitations of the study should thus be considered when interpreting and applying the results, and further research with broader and more diverse samples is recommended to validate and extend these findings.

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