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Green Intellectual Capital, Employee Innovativeness, Job Performance and Firms' Financial Performance: Evidence From SOEs in Indonesia

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Abstract

Objectives: The aim of this research is to analyze the influence of green intellectual capital on job performance and financial performance with employee innovativeness as an intervening variable. **Methods:** This research is quantitative research using primary data taken through questionnaires. Respondents came from employees of BUMN/BUMN subsidiaries in the logistics services sector from top manager positions to staff. **Results:** The research results show that green intellectual capital has a direct positive effect on employee innovativeness, financial performance, and job performance. Employee innovativeness fails to mediate the relationship between green intellectual capital and job performance and financial performance. **Implications:** The implication of this research is that to achieve the goal of producing an organizational workforce that is high performing, innovative, and can improve the company's financial performance, policy makers and company management must adopt an employee-focused approach by implementing intellectual capital development in company employees. The results of this study state the same thing. The better the intellectual capital, the higher the employee innovativeness, job performance and financial performance. Therefore, the big step on the part of the employer is to develop and maintain intellectual capital that is constructive for the company and employees.

Keywords: Employee Innovativeness; Green Intellectual Capital; Job Performance; Financial Performance

JEL Classification: M41; M48

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INTRODUCTION

Technological developments have changed how individuals and companies act to realize their goals. One of these things has an impact on environmental damage. Indirectly, economic activities result in climate change whose impacts are very dangerous for humans. Problems of environmental damage, such as resource depletion, carbon pollution, climate change, and decline in biodiversity, lead to a decline in ecological balance Cankaya & Sezen, 2019 dalam Firmansyah (2017).

Climate change and environmental damage have then become a very important issue for all parties. The goal of net zero emissions launched by 2050 has made the Government and the business world try to make it happen. Based on Ahdiat (2022), Indonesia's environmental protection efforts are classified as bad on the global scale, even on the Asia Pacific scale. Indonesia is ranked 164th out of 180 countries based on Environmental Performance Index 2022 (EPI) research. Therefore, hard efforts need to be

made to improve the environment and still make a profit. For the Government, State-Owned Enterprises (BUMN) are a tool that can be used to achieve sustainability goals. Sustainable performance or often referred to as sustainability performance (SP) can be interpreted as company performance in all dimensions and for all indicators of company sustainability (Schaltegger & Wagner, 2006). Indicators that are often used to measure sustainability performance are environmental, social, economic, operational, and financial.

State-Owned Enterprises (BUMN) in Indonesia have assets whose value will exceed IDR 9,000 trillion in 2021 or 53% of GDP in 2021 (Rafie, 2022). This indicates that BUMN is one of the drivers of the national economy. However, in its operations, BUMN is also one of the largest carbon emitters. In fact, 7 BUMNs in 2022 will contribute 20% of carbon emissions in Indonesia, namely Pertamina, PLN, Pupuk Indonesia, Semen Indonesia, PTPN, Perhutani, and MIND ID (Fajrian, 2023). Due to these conditions, it is necessary to have policies that can reduce the rate of environmental damage, but still maintain company productivity.

State-Owned Enterprises (BUMN) are companies whose shares are mostly owned by the state. One of the aims of establishing BUMN is to act as a development agent where BUMN is intended to be able to carry out equitable development and achieve the goal of improving community welfare. BUMN is also expected to be able to provide profits, some of which will contribute to state revenues. As SDGs goals have been set, BUMN is also given the obligation to achieve economic, social, and environmental goals as stated in BUMN Ministerial Regulation No. 2/MBU/3/2023 concerning Guidelines for Governance and Significant Corporate Activities of State-Owned Enterprises and Ministerial Regulations BUMN Number 1/MBU/3/2023 concerning Special Assignments and Social and Environmental Responsibility Programs for State-Owned Enterprises.

Several BUMNs experienced losses and were dissolved by the Government. There are various reasons that accompany this, but one of them comes from inefficiency and lack of professionalism placed in BUMN (Nainggolan, 2020). This is directly related to its importance green intellectual capital. Based on the Central Government's financial report, in 2021 there were 27 BUMNs that experienced losses and in 2022 there were 23 BUMNs that suffered losses.

Green Intellectual Capital (GIC) plays a major role so that companies always focus on sustainability, through developing employee capacity, transferring technology, implementing best practices to initiate the achievement of the company's sustainability goals (Firmansyah, 2017). Y. S. Chen (2008) explains GIC as all resources controlled by a company which include intangible assets, knowledge, abilities, and other things related to environmental protection and environmentally sound discoveries at the individual level and the company organizational level.

Yusliza et al. (2020) in their research also produced that green intellectual capital has a positive effect on sustainability performance, economic, environmental, and social performance. NR & Yurniwati (2018) found that green intellectual capital influences financial performance in manufacturing companies in Indonesia. (Soewarno & Tjahjadi, 2020) found that intellectual capital has a positive effect on financial performance in Indonesian banking. Different from NR & Yurniwati (2018), Sukirman & Dianawati (2023) produced the finding that green intellectual capital has no effect on financial performance in mining companies in Indonesia. Recent research from (Bhatti et al., 2023)

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shows that green intellectual capital has no effect on sustainability performance.

As mentioned by Firmansyah (2017), thatgreen intellectual capital become a source for innovation. Innovation here can be in the form of individual or company innovation. Human resources are one of the factors that influence the success of company innovation. Ali et al. (2021) in their research on manufacturing companies in Pakistan found that green intellectual capital has a positive influence on green innovation. The same thing was also found in research by D. Liu et al. (2022) which states that three dimensions of green intellectual capital have a positive influence on green innovation. Slightly different, research from Ali et al. (2021) found that green relational capital does not have a significant effect on green innovation, but for green human capital and green structural capital positive influence on green innovation.

Based on BUMN regulations, the company's main performance indicators are measured individually and will be reduced to the level of individual employees. Therefore, every employee will have a job performance target. (Zerr & Aaqoulah, 2021) found that intellectual capital has a positive effect on individual performance and the organizational performance of universities in Jordan. Findings (Zerr & Aaqoulah, 2021) also followed by (Rahmisyari & Musafir, 2023) which states that intellectual capital has a positive effect on employee work productivity at the Bank Mandiri Taspen Gorontalo Branch Office. In contrast to previous research, (Kartikasari & Sukarno, 2023) found that structural capital, one of the dimensions of intellectual capital, has no effect on job performance.

Based on previous research, the recommendation offered is to look for other variables that influence employee performance and company performance. (Sarmawa et al., 2022) and (M. Khan et al., 2022) recommends replacing other variables in researching job performance and employee innovativeness. Then, looking at previous research, there are still differences in results. Apart from that, there has never been any research discussing this matter in state companies. Therefore, this research will discuss the influence of green intellectual capital on job performance and financial performance with green employee innovativeness as an intervening variable.

What differs from previous research is that this research focuses on environmental issues. The questions in the questionnaire are aimed at respondents' perceptions of intellectual capital, employee innovativeness, financial performance, and job performance which are linked to environmental issues. The next difference is that the measurement indicators are linked to existing provisions in state companies. The final difference is that this research provides empirical evidence on the theory of green intellectual capital, employee innovativeness, financial performance and job performance with the research object being BUMN.

This research is structured in the order of introduction, literature review, research methodology, results and discussion and closed with conclusions. This research has the implication that to improve company performance, job performance and employee innovativeness with an environmental perspective, companies need to increase their green intellectual capital.

METHODS

This research is quantitative research, specifically a causal association approach to examine the influence and relationships between the variables used. Quantitative research includes measuring variables to test the hypotheses that are built. The data collection

technique uses purposive sampling. Questionnaires were distributed to employees from top management to employees who are experienced and understand related to company and individual performance indicators. Data was obtained through a questionnaire survey of BUMN/subsidiaries in the field of transportation services or logistics services. From distributing the questionnaire via Google Form, 60 respondents were obtained who had filled it out. Respondents were asked to fill out multiple-choice questions to obtain data, both on the respondent's profile and company aspects. Demographic characteristics are gender, age, and educational qualification, while organizational aspects are experienced duration.

Data were analyzed using partial least squares (PLS). The questionnaire was developed from previous research by adapting it to environmental issues and existing provisions in BUMN. The indicators for the GIC variable develop measurements from Y. S. Chen (2008), Huang & Kung (2011), C. Chang & Chen (2012), Firmansyah (2017), Yusliza et al. (2020). Financial performance develops measurement indicators from Ahmad et al. (2019), Ong & Chen 2013). Employee innovativeness and job performance develop measurement indicators from M. Khan et al. (2022).

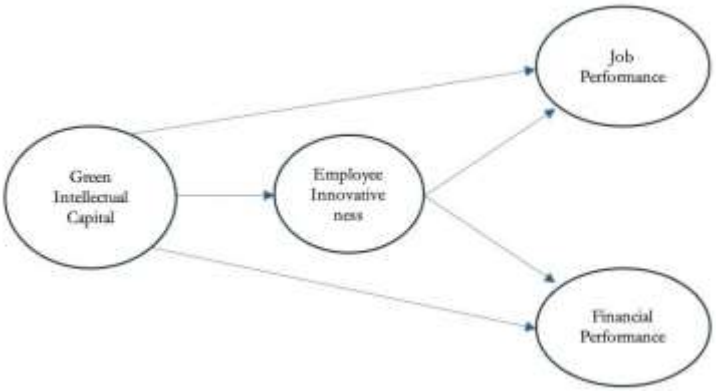

Figure 1. Research Framework

RESULTS AND DISCUSSIONS

The data obtained from the questionnaire amounted to 60 respondents. Respondents came from BUMN/Subsidiary employees who work in logistics services. Data was obtained in the period 7-14 November 2023. Based on table 1, it can be seen that 83% of respondents were male and 17% were female. Most of the respondents' education was Bachelor's or Diploma IV with a proportion of 37%, followed by Master's/Master's education level at 30%. Furthermore, based on work experience in BUMN/Children, most respondents have more than 15 years of experience (40%) followed by respondents with 2-5 years of work experience (25%). Regarding the respondent's position, 3 respondents (5%) are in top management positions. Half of the respondents are in middle management (50%) followed by 15 staff or 25%.

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Tabel 1. Demographic Data

	Frequency	%
Gender:		
Male	50	83%
Female	10	17%
Education:		
S2/Master	18	30%
Sarjana/Diploma IV	22	37%
Diploma 3	16	27%
STM/SMA/Equivalent	4	7%
Experience in BUMN/Subsidiary		
2 to 5 years	15	25%
5 to 10 years	10	17%
10 to 15 years	11	18%
Above 15 years old	24	40%
Position		
Top Management	3	5%
Middle Management	30	50%
Lower Management	12	20%
Staff	15	25%

Source: data processed

In PLS SEM data analysis, the first test is the outer model test to assess the validity and reliability of the data. To carry out a reliability test, it is done by looking at the outer loading, composite reliability (CR) and Average Variance Extracted (AVE) values. This research model consists of 1st order and 2nd SEM orders. The initial step is to test the reliability and validity of the data on 1st SEM orders. Based on the results of the first outer loading, it was found that there were 2 indicators in the green intellectual capital variable with values below 0.7. Therefore, the GIC 1 and GIC 7 indicators are removed.

After deleting, model 1st order SEM is then tested to see its reliability and validity. Based on table 2 above, it can be seen that the outer loading value is above 0.7, meaning that all indicators are reliable. After carrying out the outer loading test, the next test is to look at the CR and AVE values.

Tabel 2. Outer Loading

	Employee Innovativeness	Finansial Sustainability	GHC	GRC	GSC	Green Intellectual Capital	Job Performance
FP1		0.854					
FP2		0.862					
FP3		0.796					
FP4		0.851					
FP5		0.843					
FP6		0.868					
GI1	0.922						
GI2	0.901						
GI3	0.867						
GI4	0.857						
GI5	0.851						
GIC10					0.855		
GIC11					0.837		
GIC12					0.889		
GIC13					0.936		
GIC14					0.867		
GIC15					0.876		
GIC16					0.875		
GIC17				0.895			
GIC18				0.905			
GIC19				0.732			
GIC20				0.917			
GIC21				0.865			
GIC22				0.813			
GIC23				0.850			
GIC24				0.908			
GIC2			0.802				
GIC3			0.806				
GIC 4			0.854				
GIC 5			0.870				
GIC 6			0.894				
GIC 8					0.858		
GIC 9					0.827		
JP1							0.807
JP2							0.889
JP3							0.918
JP4							0.840
JP5							0.727

Source: data processed

Based on table 3, all indicators used are reliable and valid as seen from the CR value above 0.7 and the AVE value above 0.5.

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Table 3. Realibility Test

	Composite Reliability	Average Variance Extracted (AVE)
Employee Innovativeness	0,947	0,78
Financial Sustainability	0,938	0,715
GHC	0,926	0,716
GRC	0,959	0,744
GSC	0,965	0,756
Green Intellectual Capital	0,979	0,682
Job Performance	0,922	0,704

Source: data processed

After the data and indicators are declared reliable, the next step is to measure validity. The validity of the model is measured using cross loading. Based on the cross-loading test in appendix 1, the loading value of each item on the construct is greater than the cross-loading value. This indicates that all valid indicators are used to measure the variables. Furthermore, the discriminant validity value can be seen from the fornell larcker value in table 4.

Table 4. Fornell Larcker

Employee Innovativeness		FP	GHC	GRC	GSC	GIC	JP
Employee Innovativeness	0,883						
FP	0,585	0,846					
GHC	0,613	0,69	0,846				
GRC	0,74	0,695	0,816	0,863			
GSC	0,717	0,666	0,834	0,931	0,869		
GIC	0,733	0,711	0,899	0,972	0,979	0,826	
JP	0,605	0,825	0,619	0,615	0,583	0,629	0,839

Source: data processed

Based on the results of the Fornell-Larcker criterion test in table 5, the square root AVE value for Financial Performance (FP) is 0.846, which is greater than the correlation value of FP with Employee Innovativeness of 0.585, which shows that the discriminant validity value requirements have been met and are acceptable. Then, the square root AVE value in JP is 0.839, which is greater than the employee innovativeness correlation value of 0.605, besides that it is greater than the FP correlation value of 0.825, and so on. This shows that the discriminant validity value requirements have been met and are acceptable.

Because the research model contains dimensions in the green intellectual capital (GIC) variable, the next model test is to test 2nd SEM orders. The GIC variable is measured by the GHC, GSC and GRC indicators. The GHC, GSC, and GRC values are taken from the latent variable values in test 1st order SEM.

Tabel 5. Loading Factor 2nd Order SEM

Employee Innovativeness	Financial Performance	Green Intellectual Capital	Job Performance
FP1	0,88		
FP2	0,874		
FP3	0,825		
FP4	0,834		
FP5	0,814		
GI1 0,921			
GI2 0,901			
GI3 0,867			
GI4 0,874			
GI5 0,851			
GHC LV		0,915	
GRC LV		0,946	
GSC LV		0,934	
JP2			0,862
JP3			0,938
JP4			0,875
JP5			0,752

Source: data processed

The next step is to test the AVE and Composite reliability values. Based on table 7, the AVE value is above 0.5 and the CR value is above 0.7. So, it can be said that all variable measures are declared valid and reliable.

Table 6. CR and AVE values on 2nd Order SEM

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Employee Innovativeness	0,93	0,931	0,947	0,781
Financial Performance	0,921	0,93	0,938	0,715
Green Intellectual Capital	0,924	0,925	0,952	0,868
Job Performance	0,893	0,902	0,922	0,704

Source: data processed

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Then, after carrying out the reliability test, proceed to test discriminant validity. The discriminant test was carried out by looking at the cross-loading value and the Fornell Larcker criteria. Based on the cross-loading test in table 7, it can be seen that the loading value of each item on the construct is greater than the cross- loading value. This indicates that all valid indicators are used to measure the variables.

Table 7. Cross Loading 2nd Order SEM

Employee Innovativeness	Financial Performance	Green Intellectual Capital	Job Performance
FP1	0,602	0,855	0,728	0,661
FP2	0,357	0,864	0,515	0,653
FP3	0,527	0,799	0,574	0,588
FP4	0,543	0,849	0,66	0,723
FP5	0,421	0,841	0,512	0,767
FP6	0,449	0,865	0,535	0,805
GHC LV	0,631	0,695	0,915	0,637
GI1	0,921	0,483	0,67	0,516
GI2	0,901	0,552	0,626	0,602
GI3	0,867	0,558	0,628	0,502
GI4	0,875	0,442	0,605	0,471
GI5	0,851	0,536	0,66	0,566
GRC LV	0,728	0,658	0,946	0,588
GSC LV	0,66	0,624	0,934	0,563
JP1	0,478	0,694	0,564	0,808
JP2	0,523	0,754	0,56	0,889
JP3	0,579	0,753	0,56	0,917
JP4	0,562	0,691	0,543	0,839
JP5	0,366	0,541	0,45	0,729

Source: data processed

Furthermore, the discriminant validity value can be seen from the fornell larcker value in table 8. Based on the results of the fornell-larcker criterion test in table 9, the square root AVE value on Financial Performance (FP) is 0.846 greater than the correlation value of FP with Employee Innovativeness of 0.593 which shows the discriminant validity value requirements have been met and are acceptable. Then, the square root AVE value in JP is

0.86 greater than the employee innovativeness correlation value of 0.599, besides that it is greater than the FP correlation value of 0.779, and so on. This shows that the discriminant validity value requirements have been met and are acceptable.

Table 8. Fornell Larcker Criteria 2nd Order SEM

	Employee Innovativeness	Financial Performance	Green Intellectual Capital	Job Performance
Employee Innovativeness	0,883			
Financial Performance	0,593	0,846		
Green Intellectual Capital	0,723	0,721	0,932	
Job Performance	0,599	0,779	0,617	0,86

Source: data Processed

After testing the outer model, the next step is to test the inner model. The first test is the model feasibility test. Based on the SRMR value of 0.080, the research model is said to be feasible because it is below the value of 0.1. Furthermore, the R Square value shows a value of 0.530 for financial performance and 0.430 for job performance. The R square value of financial performance shows that the financial performance value can be explained by the variables in the research model by 53% and the rest is explained by other factors. The figure 53% indicates that the model is a medium model. Then for R Square job performance, it indicates that the value of job performance can be explained by the research model by 43% or a weak model.

The final step is to carry out a significance test through the bootstrapping test. The results can be seen in table 9. Based on table 9, H4, H5, H7 are rejected and H1, H2, H3, H6 are accepted.

Table 9. Significance Test

Correlation	Hipotesis	Coefficient	Std. Dev	t-count	p-value	Decision
GIC→JP	H1	0.4266	0.1544	2.7631	0.0059	Accepted
GIC→FP	H2	0.5986	0.1639	3.6514	0.0003	Accepted
GIC→EI	H3	0.7230	0.0695	10.4010	0.0000	Accepted
EI→JP	H4	0.2957	0.1789	1.6523	0.0991	Rejected
EI→FP	H5	0.1520	0.1905	0.7964	0.4262	Rejected
GIC→EI→JP	H6	0.2140	0.1256	1.7020	0.0894	Rejected
GIC→EI→FP	H7	0.1100	0.1383	0.7928	0.4282	Rejected

Source: data processed

Based on table 9, this research found that H1, H2, H3 were accepted and H4 and H5 were rejected. Then, the significance test for mediation shows that Employee Innovativeness fails to mediate the relationship between GIC and job performance and GIC with financial performance so that H6 and H7 are rejected.

GIC directly positively influences employee performance as shown by the P-value less than 0.05. These findings are in accordance with research (Mahmood et al., 2023) which states that employee innovativeness influences individual job performance and firm's financial performance. This research provides results that are in line with research (Zerr & Aaqoulah, 2021) who found that intellectual capital has a positive effect on individual performance and also organizational performance and (Rahmisyari & Musafir, 2023)

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which states that intellectual capital has a positive effect on employee work productivity.

This research also supports that GIC has a positive effect on financial performance in accordance with research (Mahmood et al., 2023) and NR & Yurniwati (2018) found that green intellectual capital influences financial performance in manufacturing companies in Indonesia. This research also shows that GIC has a positive effect on employee innovativeness in accordance with research (Örnek & Ayas, 2015) which states that intellectual capital will facilitate employee behavior to innovate which will ultimately provide the company with a competitive advantage.

This research also found that employee innovativeness failed to prove its effect on job performance and financial performance. This research is not in line with research (Osman et al., 2015) and Mohsin Khan (2021) in his research proves that employee innovativeness influences job performance. The failure to prove this hypothesis may be due to the demographics of the respondents. Of the respondents, 25% are staff and 25% of respondents also have 2-5 years of experience and may not yet clearly understand the innovations that need to be carried out in the company. With staff levels, it is possible that innovation tends to come from the management level. In BUMN/subsidiaries, each company has a Main Performance Indicator (KPI) which is included in the management contract in accordance with BUMN Ministerial Regulation Number 11 of 2020 which was updated by BUMN Ministerial Regulation Number 2 of 2023. The KPI will be cascaded up to the level of individual employees. It is possible that individual respondents failed to meet the innovation targets assigned to them so that the employee innovativeness variable had no effect on job performance and financial performance. It is possible that the failure of this influence was influenced by other factors.

Employee Innovativeness also failed to mediate the relationship between GIC and financial performance and the relationship between GIC and job performance. This failure does not follow from the research results (Pea-Assounga & Yao, 2021) who succeeded in becoming a mediator between internet banking and job performance. GIC can have a positive influence on employee innovativeness, but employee innovativeness fails to have an influence on employee performance and the company's financial performance. Innovative employee behavior is an important factor for organizational performance and long-term survival (Campo et al., 2014). Innovative work behavior not only produces new ideas but also develops, adopts, and implements new ideas to produce new products, work methods, and improve service quality and even customer satisfaction (Orfila-Sintes & Mattsson, 2009). It is possible that the level of education and work experience has an influence on employee innovativeness. Innovation ideas and the ability to implement these ideas into reality require intellectual capital apart from other factors. This is one of the recommendations for further research to be able to carry out tests by adding other variables.

CONCLUSION

This research contributes to literature related to green intellectual capital, employee innovativeness, job performance and financial performance. This research also provides empirical evidence from GIC testing of employee innovativeness, job performance and financial performance and tests employee innovativeness as a mediator in BUMN/Subsidiaries in the logistics services sector.

This research shows that GIC has a positive and direct effect on financial performance, job

performance and employee innovativeness. The GHC, GRC, and GSC dimensions can measure GIC validly and reliably. Apart from that, this research also shows that employee innovativeness has no influence on financial performance and job performance. Another finding is that employee innovativeness fails to mediate the relationship between GIC and financial performance and job performance.

Limitations in this research include that quantitative methods are considered to have limitations because carrying out self-assessment on a questionnaire can lead to biased responses. Apart from that, time constraints also resulted in respondents not filling in according to expectations. There is a possibility that errors in determining respondents are another limitation in this research. Future research is expected to use more respondents and various types of companies. The mixed method method can be applied to obtain data information that more accurately represents the research variables. Further research can be carried out using different variables to evaluate the influence on job performance and financial performance.

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