International Journal of Human Capital Management
E-ISSN 2580-9164
Vol. 8, No. 2, December 2024, p 100-117

Available online at
http://journal.unj.ac.id/unj/index.php/ijhcm

# THE INFLUENCE OF ACADEMIC CULTURE AND KNOWLEDGE SHARING ON GREEN INNOVATION PERFORMANCE

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## ABSTRACT

*This study investigates the influence of academic culture and knowledge sharing on green innovation performance at Mercu Buana University, Jakarta. A quantitative approach with a survey technique was employed to test the proposed hypotheses. The respondents comprised 100 lecturers selected through random sampling. Data were collected using questionnaires on academic culture, knowledge sharing, and green innovation performance, which were validated using the product moment correlation and reliability tested with Cronbach's Alpha. Structural Equation Modeling with SmartPLS was applied for hypothesis testing and model evaluation. The findings reveal three key results. First, academic culture has a direct, positive, and significant influence on green innovation performance. Second, knowledge sharing positively and significantly affects green innovation performance. Third, academic culture exerts a direct and significant influence on knowledge sharing. Among the indicators, cooperation in academic tasks emerged as the strongest reflection of academic culture, while discussions between two or more parties proved to be the most influential indicator of knowledge sharing. Comfortable environmental innovation was found to be the most dominant indicator of green innovation performance. The study concludes that strengthening academic culture and promoting knowledge sharing are effective strategies to enhance green innovation performance in higher education institutions. These results provide theoretical implications for organizational behavior models and practical insights for universities to improve academic quality through sustainable innovation initiatives.*

***Keywords:*** *Academic Culture, Knowledge Sharing, Green Innovation Performance*

Publish: December, 2024.

**How to Cite:**
Kartika, K., Susita, D., & Yohana, C. (2024). The Influence of Academic Culture and Knowledge Sharing on Green Innovation Performance. *International Journal of Human Capital Management, 8(2), 100-117. Special Issue: International Management Science Conference (IMSC) 2024*. https://doi.org/10.21009/IJHCM.08.02.9

## INTRODUCTION

Theoretical analysis in this research refers to Collquitt's grand theory (2019), while empirical analysis focuses on the phenomenon of lecturers at Mercu Buana University, by analyzing green innovation performance. Theoretical and empirical analyses were conducted to examine the research gap developed for modification (novelty) purposes. This constitutes the innovation and originality of this research.

In the Organizational Behavior theory model developed by Collquitt in 2019, variables are divided into three groups: Independent variables consisting of organizational mechanisms, group mechanisms, and individual characteristics. These variables are believed to influence other variables in the study.

The modification of the theoretical model includes individual outcomes variables, namely job performance modified into green innovation performance. Individual mechanisms variables, namely learning and decision making, are modified into knowledge sharing, and organizational mechanisms, namely organizational culture, are modified into academic culture. The modification of the Organizational Behavior Theory model aims to explain variables in more detail by replacing them with other variables (Guerin et al., 2018).

Green innovation performance refers to the improvement of product design or production processes carried out by organizations in terms of environmental protection and management. Green innovation performance includes environmentally friendly product innovation performance and environmentally friendly process innovation performance from the innovation object's perspective. Improvements in pollution prevention, energy savings, non-toxic or environmentally friendly product designs, waste recycling, etc., in product innovation and manufacturing processes allow companies to gain first-mover advantages and different competitive advantages in the market. There is also previous literature on the content of environmentally friendly innovation performance, including company economic performance, company environmental performance, and company social performance; this view focuses more on the development or adoption of new technologies to add economic and social value to a company (Zhang & Liu, 2023). Some experts believe that the evaluation of green innovation performance should also consider talent utilization, equipment, and asset circulation, in addition to economic and environmental benefits, thus reflecting the positive impact of cost savings and increased utilization efficiency (Saudi et al., 2019). There is also a view that environmental innovation performance can be divided into indirect performance, direct performance, and knowledge output level (Nuryakin, 2022). Considering that Green innovation Performance caused by strategic influences may not be reflected in short-term financial performance but can be reflected in environmentally friendly products, environmentally friendly processes, accumulation of environmentally friendly knowledge, and other aspects, this paper adopts the perspective (Li et al., 2023) to measure GIP in two aspects: environmentally friendly product innovation and environmentally friendly process innovation.

Universities, as formal education institutions, are endeavored to prepare graduates to meet the needs of the industrial market by providing professional expertise. Hawkins states that universities are complex organizations that conduct activities through dynamic education and teaching, research, and public services, which are interrelated activities to build institutional progress in universities (Hawkins, H.J., 2016).

In efforts to produce university graduates capable of meeting the needs of the job market, universities are required to establish partnerships with the industrial world, the users of graduates. The partnership between universities and the industrial world and job market is mutually beneficial and mutually beneficial by exchanging knowledge and skills through industrial research. In this context, Jauhari (2013) states that the partnership between universities and the industrial users of graduates has the potential for significant economic growth for a nation, considering that the quality of knowledge generation and talent from universities can enhance the green innovation performance of the industry. Furthermore, (Jauhari, Vinnie, 2013) states that universities generally have agendas centered on producing employable graduates and entrepreneurs, although their specific goals vary and usually include: graduates who can be employed, involved in meaningful and beneficial research outcomes that can serve as recommendations for education and industry policy-makers, thereby influencing public policy, offering lifelong learning opportunities, involvement in industry-sponsored projects, and producing good citizens in society.

In Indonesia, higher education institutions are provided by both government and private entities, namely State Universities and Private Universities. The role of universities as venues for learning activities is aimed at producing individuals with academic abilities and skills in their fields in line with industrial needs.

To analyze the influence of academic culture and knowledge sharing on green innovation performance, research needs to be conducted at higher education institutions in Region III Jakarta. This research is focused at Mercu Buana University Jakarta, in an effort to improve quality for various strategic breakthroughs that can support university quality improvement through enhanced green innovation performance, which can be seen from academic culture and knowledge sharing.

Green innovation performance has an optimal contribution to improving academic quality. Therefore, in order to enhance quality, universities need Green innovation performance development programs through various means to create a friendly environment (Janah, 2009). In his research on the realization of improving green innovation performance related to learning models, research, community service, and academic services by empowering the potential and creativity of university resources, especially lecturers as the main actors in university management, states that some aspects that need to be improved by lecturers in the learning process as a strategic effort to improve green innovation performance include the intensity and optimization of media and learning resources usage as well as adjustments to course references both in terms of quality and quantity with the development of science and current technological advancements. However, in reality, there is still academic debate among experts, researchers, and academics in analyzing the influence of Academic Culture, Knowledge Sharing on Green innovation performance. Thus, research on the influence of Academic Culture, Knowledge Sharing on Green innovation performance is very important to be conducted in improving the quality of university management.

## LITERATURE REVIEW

### Green innovation performance

Green Innovation Performance refers to the enhancement of production processes encompassing environmentally friendly product innovation performance and environmentally friendly process innovation performance through pollution prevention, energy savings, non-toxic or environmentally friendly product design, waste recycling, and so forth. In product innovation, it enables companies to gain first mover advantage and different competitive advantages in the market. Green Innovation Performance is reflected in environmentally friendly products, environmentally friendly processes, accumulation of environmental knowledge, and other aspects. (Li et al., 2023) measure GIP in two aspects: environmentally friendly product innovation and environmentally friendly process innovation.

Green Innovation Performance refers to the improvement of product design or production processes undertaken by organizations in terms of environmental protection and environmental management. Green Innovation Performance includes environmentally friendly product innovation performance and environmentally friendly process innovation performance from the perspective of innovation objects. Improvements in pollution prevention, energy savings, non-toxic or environmentally friendly product design, waste recycling, and so forth, in product innovation and manufacturing process innovation enable companies to gain first mover advantage and different competitive advantages in the market. (Noor et al., 2023) There is also previous literature on environmental innovation performance content, including company economic performance, company environmental performance, and company social performance; this view is more focused on the development or adoption of new technologies to add economic and social value to a company. (He et al., 2023) Some experts believe that the evaluation of green innovation performance should also consider talent utilization, equipment, and asset circulation, in addition to economic and environmental benefits, thus reflecting the positive impact of production cost savings and increased utilization efficiency. (Dong et al., 2023) There is also a view that environmental innovation performance can be divided into indirect performance, direct performance, and knowledge output level. (Yang & Li, 2023) Considering that Green Innovation Performance caused by strategic influences may not be reflected in short-term financial performance, but can be reflected in environmentally friendly products, environmentally friendly processes, accumulation of environmental knowledge, and other aspects, this paper adopts Zameer et al.'s perspective (2020), measuring GIP in two aspects: environmentally friendly product innovation and environmentally friendly process innovation. With indicators...

Green innovation performance plays a strategic role in preparing quality human resources, namely those with knowledge and mastery of technology, personality, adaptability, creativity, innovation, (Novitasari & Agustia, 2021) because Green innovation performance in implementation focuses on the organization's success in achieving its goals. Strategic roles and functions can only be realized by upgrading systems and creating various constructive, adaptive policy programs in harmony with societal dynamics.

Achieving green innovation performance requires drivers to achieve sustainable conditions. In an organization, the role of academic culture is significant in efforts to encourage green innovation performance. As stated by (Wang et al., 2022), academic culture influences green innovation performance, thus in efforts to enhance green innovation performance, it can be done through creating a good academic culture and optimizing knowledge sharing.

In driving green innovation performance, knowledge sharing is influenced by academic culture. According to (Luan et al., 2023) (Sagafi-Nejad in Cummings, 2003), there are four variables that influence knowledge sharing, namely: (1) Characteristics of the technology being transferred, (2) Activities and models of transfer, (3) Organizational profiles and parties involved in the transfer, (4) Academic cultural factors.

Academic Culture The success of a university can be measured by how far the university has implemented its tri dharma, namely education and teaching, research, and community service. This is closely related to the extent to which the academic community fosters academic culture in implementing the tri dharma of Higher Education. (Mulyana, 2005). Laseur in Santana, (2019), states that there are five issues that determine the development of learning activities at universities, namely: faculty quality, available facilities, curriculum, quality of teaching and learning processes, and academic culture (Santana, 2009).

Universities have certain cultures that form the basis and actions or behaviors of lecturers. Culture is one of the determining factors for the success of education; Weiner states that cultural differences can be a problem in the success of an institution. (Shadaway, 2015). Schein defines culture as unearthed or developed by a particular group when that group learns to overcome external adaptation and internal integration issues, which then function well and therefore are accepted, thought, felt, and followed by new members of the organization as a correct way to address these issues. (Schein, 2017).

**Academic Culture**

The success of a university can be measured by how well it has implemented its tri dharma, namely education and teaching, research, and community service. This is closely related to the extent to which the academic community fosters and develops an academic culture in implementing the tri dharma of Higher Education (Mulyana, 2005). Laseur in Santana (2019) states that there are five issues that determine the development of learning activities in universities: faculty quality, available facilities, curriculum, quality of the teaching and learning process, and academic culture (Santana, 2009).

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Academic culture, as one subsystem of the university, plays an important role in efforts to build and develop the culture and civilization of society and the nation involved in academic activities. Academic culture is a way of life enshrined in three aspects: (1) continuous efforts to develop new knowledge, (2) continuous efforts to seek truth, (3) efforts to preserve the existing knowledge from various types of falsification (Buchari, 2000). According to Kurniatami, academic culture is a university system that plays an important role in efforts to build and develop human and national culture and civilization as a whole, where the quality indicators of the university are determined by the quality of the academic community in developing and building its academic culture (Kurniatami, 2014). Academic culture is a system of shared values and beliefs embraced by university members (Hanipah, M., 2010).

Academic culture should be instilled and preserved (Suryanto, 2003). Culture is defined as a system of knowledge, experience, beliefs, values, attitudes, meanings, hierarchies, religions, time, roles, spatial relationships, concepts of the universe, material objects, and property acquired by a large group of people from generation to generation through individual and group efforts. Building academic culture in universities is not an easy task; socialization efforts toward academic activities are needed so that there is a habit among academics to follow these academic activity norms (Anonymous, 2012). Paltzian describes academic culture as an art of education and is progressive. The art of education becomes progressive if art has many meanings and values. Art requires imagination, and imagination questions thoughts about something that does not yet exist. Thinking creatively is intellectual freedom. This intellectual freedom of thought implies intellectual risks in the form of critical thinking, debate, and often contradicting authority are commonplace. Unlike political cultures, which tend not to be progressive but tend toward regulations, orders, and rules (Bowen, 2001).

Based on the description of academic culture above, researchers synthesize that academic culture is the habit of academic activities in the form of a set of values, beliefs, and norms embraced jointly by members of the academic community as guidelines in carrying out activities or actions and problem solving, with indicators of (1) providing satisfactory service, (2) Responsibility, (3) honesty. (4) establishing cooperation in carrying out academic tasks, (5) Rewards and punishments, (6) using facilities according to their functions, (7) maintaining facilities properly.

In the research by Miftakhul Arif (2019) entitled "The Relationship between Academic Culture and Organizational Culture with Teacher Performance (Study at Al-Azhar Islamic School Bumi Serpong Damai)," it is stated that there is a positive and significant relationship between academic culture and teacher performance. There is a positive and significant relationship between organizational culture and teacher performance. There is a positive and significant relationship between academic culture and organizational culture together with teacher performance. The Academic Culture variable is able to encourage Green innovation performance.

Discrepancies among some researchers and experts regarding the focus of the issues described above are briefly presented in the inconsistent findings of the relationship between research variables. Inconsistent findings regarding the influence of academic culture on green innovation performance, where the research findings by Kurniawana, P. (2019), show that knowledge sharing has a positive and significant relationship with performance. While knowledge absorption has a positive and significant relationship with innovation capability and innovation capability has a positive and significant relationship with company quality performance. This research is expected to help business actors in the creative industry improve their quality performance through increased knowledge sharing, absorption capacity, ambidexterity, and innovation capability. Inconsistencies in the findings of the influence of academic culture on Lecturer Performance can be analyzed from the research results: Pradana, ArbiI. (2019), Knowledge management does not affect Green innovation performance, Aristanto, D.B. (2019), states that Knowledge Sharing has a significant positive effect on individual innovation capability, individual innovation capability has a significant positive effect on individual performance, Knowledge Sharing has a significant positive effect on individual performance, and Knowledge Sharing has a partial significant effect on individual performance through individual innovation capability.

Inconsistencies in the findings of the influence of academic culture on green innovation performance can be seen from the research results: Mukhtar, et. al. (2020), that the positive influence of academic culture has a positive effect on Green innovation performance through knowledge sharing. Thus, to increase green innovation performance, it can be done through increasing the effectiveness of knowledge sharing. Inconsistencies in the findings of the influence of academic culture on green innovation performance through knowledge sharing. where the research results: Utoyo, at. al. (2019), that academic culture has a significant positive direct effect on employee performance through knowledge sharing, so to improve employee performance can be done through increasing competence and knowledge sharing. Zaim, et. al. (2013) states that academic competence has a very significant positive direct effect on employee performance through knowledge sharing.

**Knowledge Sharing**

Knowledge is considered a core asset for the growth, development, sustainability, and competitive advantage of organizations (Ullah Khan et al., 2023; Xu & Cavusgil, 2019). Particularly, creating and exchanging knowledge within organizations creates value and enables them to grow and evolve, transforming organizational structures (Bouncken et al., 2020; Bouncken et al., 2021; Chang & Hung, 2021). Experts characterize knowledge sharing as "cultural social interaction involving the exchange of knowledge, experiences, and skills across departments or organizations" (Lin, 2007, p. 315). Moreover, exchanging thoughts with desired individuals, via conversations and interactions, is also referred to as knowledge sharing (Castaneda & Cuellar, 2020). Furthermore, interpersonal relationships lead to innovation practices emerging from bottom-up, through individual interactions that explore, engage, integrate, adapt, separate, and even steal from each other (Li et al., 2022). This is demonstrated by innovative individuals who prioritize knowledge outputs over company performance outcomes (Jin et al., 2022). Innovation through personal interaction is a continuous interaction process among individuals with various goals, experiences, and knowledge (Lorenzen & Mudambi, 2013). The quality and quantity of interaction between human capital, willingness to apply knowledge, and individual skills affect knowledge sharing (Liao, 2006).

Knowledge sharing occurs when an individual is highly motivated to engage in knowledge acquisition and contribute to generating new ideas (Bock & Kim, 2002). Thus, knowledge sharing is "a process in which individuals exchange knowledge and collectively create new knowledge" (Van Den Hooff & De Ridder, 2004, p. 118). Additionally, it has been found that knowledge sharing is a coping behavior that facilitates individuals when they exchange knowledge in the workplace to solve complex problems or enhance performance (McCarthy et al., 2019). A culture of knowledge sharing helps organizations enhance creativity while enabling individuals to boost their self-confidence (Mittal & Dhar, 2015). Furthermore, when employees perceive that their knowledge aligns with their peers in a knowledge-sharing organizational culture, it enhances their CSE (Wang & Noe, 2018).

Thus, we argue that knowledge sharing can serve as an effective coping tool for individuals, enhancing their confidence to tackle challenges, take risks, and navigate uncertain situations with creative solutions. Knowledge exchange through employee discussions provides psychological strength to generate and implement new ideas, enabling them to improve their abilities, autonomy, and professional performance (Almulhim, 2020). Some scholars emphasize that knowledge exchange strengthens employee learning by increasing their engagement in creative and innovative activities by solving complex organizational problems in the workplace (Gerlach et al., 2020; Saffar & Obeidat, 2020). The researchers of this study argue that the process of self-motivation and self-management knowledge exchange with peers provides cognitive strength in their creative confidence, which may lead to higher creative skills and abilities.

**Factors Affecting Knowledge Sharing**

Firstly, at the organizational level, De Long & Fahey (2010) found that the benefits of new technological infrastructure would be limited when old organizational values and practices do not support knowledge sharing based on a qualitative study of 50 companies. This suggests that organizational factors in knowledge sharing play a significant role, namely technical, creative, competitive, fair, and team diversity.

Secondly, at the individual level, personal characteristics such as age, education, and work experience tend to moderate the relationship between knowledge promoter and the process. Ojha, A.K. (2015). Personality will impact knowledge sharing. 1) Openness Personality Research indicates that if individuals have high openness, they tend to have a high level of curiosity to seek ideas and opinions of others. Conversely, members with high introversion tend to be lonely, solitary, poor communicators, and tend to avoid social interactions (Zhou, Z., Zhang, J., & Xiong, Y., 2014), which is not conducive to knowledge sharing. 2) Proactive Personality Proactive personality refers to the stable tendency of individuals not being bound by the existing environment; they can seek new ways to influence the external environment through active behavior. According to a survey of 199 employees, researchers showed that proactive personality has a positive effect on knowledge sharing (Zhang, Z., Yu, C., & Li, Y., 2016). 3) Responsibility Personality Cabrera & Cabrera (2012) believe that individual responsibility contributes to the smooth implementation of knowledge management systems; personal responsibility is considered an important personality characteristic factor included in knowledge-sharing system studies. Cabrera, Á., & Cabrera, E.F. (2012).

Knowledge sharing is required as a driver for all parties in the organization to create a form of cooperation that can produce good work, thus creating a culture within the organization. The integration of knowledge sharing with academic culture will create a more productive company, where knowledge sharing is something gained from what has been lost. Knowledge sharing is a synergistic process where we gain something more than what we keep (Gurteen, 1999). Universities have certain cultures that form the basis and actions or behaviors of lecturers. Culture is one of the factors determining the success of education; Weiner states that "That isn't lack of school success is thought to be 'due problems in student, their families, their culture, or their communities'" (Shadaway, 2005). Schein defines culture as unearthed or developed by a particular group when the group learns to overcome external adaptation problems and internal integration, which then functions well and is therefore accepted, thought about, felt, and followed by new members of the organization as a correct way to address these problems (Schein, 2017).

Based on the gap in research results on the impact of Academic Culture on Green innovation performance, it is important to conduct further research with different focuses and objects, namely the analysis of academic culture on Green innovation performance through Knowledge Sharing among lecturers at Mercu Buana University Jakarta.

## METHODOLOGY

This study used Structural Equation Modeling (SEM) which was estimated using SmartPLS software (Smart Partial Least Square). Data analysis and modeling of structural equations using SmartPLS software with several stages as follows: (1) Indicator validity test, (2) Conversion of path diagram into equation system, (3) Construct reliability test, (4) Hypothesis testing, (5) Inner Model equations, and (6) Structural Model Evaluation (Garson, 2016).

Indicators of the Academic Culture (AC) variable include: (1) satisfactory service, (2) cooperation in academic tasks, and (3) maintenance and use of facilities according to their functions.

Indicators of the Knowledge Sharing (KS) variable include: (1) proactivity, (2) knowledge delivery methods, (3) discussions between two or more parties.

Indicators of the Green Innovation Performance (GIP) variable include: (1) environmentally friendly product innovation, (2) environmentally friendly quality innovation,

(3) environmentally friendly process innovation, (4) comfortable environmental innovation, and (5) environmental input innovation.

The measurement scale used for each variable is: Strongly Disagree (SD = 1), Disagree (D = 2), Neither Agree nor Disagree (NAD = 3), Agree (A = 4), and Strongly Agree (SA = 5).

## RESULT AND DISCUSSION

### Result

Descriptive Statistical Analysis Results

The research findings provide an overview of the data distribution. Based on the number of variables and referring to the research problem, the data description can be grouped into the following categories: (1) academic culture; (2) knowledge sharing; (3) green innovation performance.

**Table 1**
**Results of Descriptive Statistical Analysis**

| | Mean | Median | Min | Max | Standard Deviation | Number of Observations Used |
|---|---|---|---|---|---|---|
| **Academic Culture (AC)** | 0,000 | -0,044 | -4,678 | 1,501 | 1,000 | 100,000 |
| **Green Innovation Performance (GIP)** | 0,000 | 0,073 | -3,944 | 1,709 | 1,000 | 100,000 |
| **Knowledge Sharing (KS)** | 0,000 | 0,140 | -4,689 | 1,234 | 1,000 | 100,000 |

Based on the results of Descriptive Statistical Analysis of the Green Innovation Performance (GIP) variable, the following values were obtained: a mean of 0.000, a median of 0.073, a minimum of -3.944, a maximum of 1.709, a standard deviation of 1.000, and a total of 100.00 observations.

Based on the results of Descriptive Statistical Analysis of the Academic Culture (AC) variable, the following scores were obtained: a mean score of 0.000, a median of -0.004, a minimum of -4.678, a maximum of 1.501, a standard deviation of 1.000, and a total of 100.00 observations.

Based on the results of Descriptive Statistical Analysis of the Knowledge Sharing (KS) variable, the following values were obtained: a mean of 0.000, a median of 0.1405, a minimum of -4.689, a maximum of 1.234, a standard deviation of 1.000, and a total of 100.00 observations.

Validity Indicator Testing Results. According to Garson (2016) and Yamin (2011), validity testing can be conducted using convergent validity and discriminant validity. Convergent validity testing is an evaluation of each construct indicator. Convergent validity evaluation is done by observing the loading factor values of each indicator to be developed. It is aimed that the loading factor values on constructs are greater than 0.50. If the loading factor value of an indicator in a construct is below 0.50, then the indicator must be removed from the model (Garson, 2016; Yamin & Kurniawan, 2011). The loading factor is the correlation between the indicator and the construct. The higher the correlation, the higher the level of validity, while discriminant validity is a test conducted by looking at the values of cross-loading results. This is done to determine whether each indicator that measures its construct is highly correlated with its construct compared to other constructs (Garson, 2016; Yamin & Kurniawan, 2011).

**Table 2**
**Results of Descriptive Statistical Analysis**

| Indikator Variabel | Mean | Median | Min | Max | Standard Deviation | Number of Observations Used |
|---|---|---|---|---|---|---|
| GIP1 | 3,810 | 4,000 | 1,000 | 5,000 | 0,821 | 100,000 |
| GIP2 | 3,970 | 4,000 | 2,000 | 5,000 | 0,768 | 100,000 |
| GIP3 | 3,980 | 4,000 | 2,000 | 5,000 | 0,761 | 100,000 |
| GIP4 | 3,860 | 4,000 | 1,000 | 5,000 | 0,813 | 100,000 |
| GIP5 | 4,000 | 4,000 | 1,000 | 5,000 | 0,927 | 100,000 |
| AC1 | 3,870 | 4,000 | 1,000 | 5,000 | 0,833 | 100,000 |
| AC2 | 4,000 | 4,000 | 1,000 | 5,000 | 0,735 | 100,000 |
| AC3 | 4,180 | 4,000 | 1,000 | 5,000 | 0,767 | 100,000 |
| KS1 | 4,010 | 4,000 | 1,000 | 5,000 | 0,728 | 100,000 |
| KS2 | 4,270 | 4,000 | 1,000 | 5,000 | 0,733 | 100,000 |
| KS3 | 4,440 | 5,000 | 1,000 | 5,000 | 0,726 | 100,000 |

**Source: Data Processed by SEM PLS**

a. Green Innovation Performance (GIP)

Based on the results of convergent validity testing and loading factor of the Green Innovation Performance (GIP) variable, the following statistics were obtained: GIP1 has a mean of 3.810, a median of 4.000, a minimum of 1.000, a maximum of 5.000, and a standard deviation of 0.821. GIP2 has a mean of 3.970, a median of 4.000, a minimum of 2.000, a maximum of 5.000, and a standard deviation of 0.927. GIP3 has a mean of 3.980, a median of 4.000, a minimum of 2.000, a maximum of 5.000, and a standard deviation of 0.761. GIP4 has a mean of 3.860, a median of 4.000, a minimum of 1.000, a maximum of 5.000, and a standard deviation of 0.813. GIP5 has a mean of 4.000, a median of 4.000, a minimum of 1.000, a maximum of 5.000, and a standard deviation of 0.927.

b. Academic Culture (AC)

Based on the results of convergent validity testing and loading factor of the Academic Culture (AC) variable, the following statistics were obtained: AC1 has a mean of 3.870, a median of 4.000, a minimum of 1.000, a maximum of 5.000, and a standard deviation of 0.833. AC2 has a mean of 4.000, a median of 4.000, a minimum of 1.000, a maximum of 5.000, and a standard deviation of 0.735. AC3 has a mean of 4.180, a median of 4.000, a minimum of 1.000, a maximum of 5.000, and a standard deviation of 0.767.

c. Knowledge Sharing (KS)

Based on the results of convergent validity testing and loading factor of Knowledge Sharing, the following statistics were obtained: KS1 has a mean of 4.101, a median of 4.000, a minimum of 2.000, a maximum of 5.000, and a standard deviation of 0.728. KS2 has a mean of 4.270, a median of 4.000, a minimum of 2.000, a maximum of 5.000, and a standard deviation of 0.733. KS3 has a mean of 4.225, a median of 4.000, a minimum of 1.000, a maximum of 5.000, and a standard deviation of 0.726.

Based on the results of convergent validity testing and loading factor for the Green Innovation Performance (GIP) variable with indicators: GIP1, GIP2, GIP3, GIP4, and GIP5 as indicators, it is expected to represent latent variables. The Academic Culture (AC) variable with indicators AC1, AC2, AC3, as representations of latency, has loading factors greater than 0.50, which means these indicators are valid for representing latent variables. Knowledge Sharing (KS) with indicators KS1, KS2, KS3, as representations of latency, also has loading factors greater than 0.50, indicating that these indicators are valid for representing latent variables, as shown in Figure 1 below.

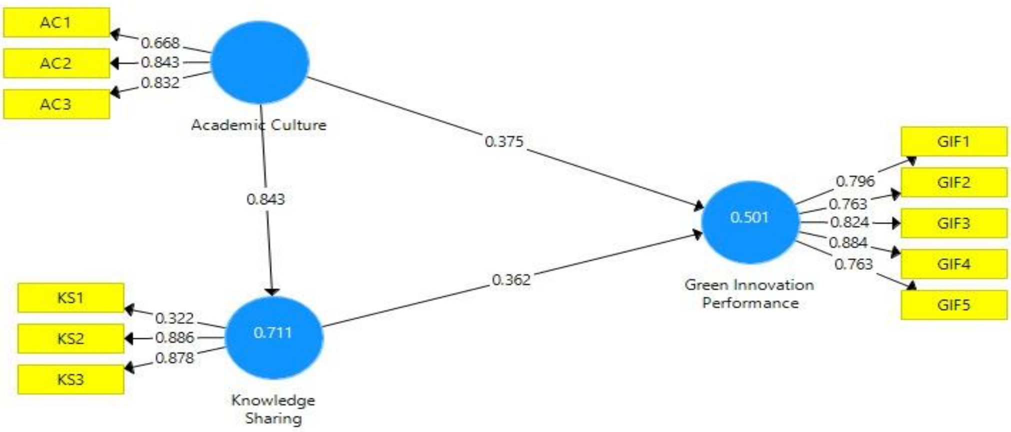


**Figure 1. Path Diagram Phase 1**

**Source:** Output from Sem PLS

From Figure 1 above, all indicator scores have loading factors greater than 0.50, indicating that all indicators of the academic culture, knowledge sharing, and green innovation performance variables are declared valid. Discriminant validity testing for each variable indicator uses cross-loading values where the cross-loading value of each indicator is compared with other latent variables. An indicator can be said to have good and high ability in representing its latent variable if the indicator's cross-loading value is higher than the cross-loading value of its latent variable. The results of discriminant validity testing for each indicator are shown in Table 2 below.

**Tabel 3**
**Results of Discriminant Validity Testing with Cross Loading**

| Indikator Variabel | Academic Culture | Green innovation performance | Knowledge sharing |
|---|---|---|---|
| GIP1 | | 0,768 | |
| GIP2 | | 0,729 | |

| | | | |
|---|---|---|---|
| **GIP3** | | **0,808** | |
| **GIP4** | | **0,832** | |
| **GIP5** | | **0,750** | |
| **AC1** | **0,809** | | |
| **AC2** | **0,853** | | |
| **AC3** | **0,845** | | |
| **KS1** | | | **0,778** |
| **KS2** | | | **0,883** |
| **KS3** | | | **0,885** |

Based on the results in the table above, it can be explained that the indicators of academic culture and knowledge sharing, as valid indicators for explaining the latent variable of green innovation performance (GIP), have valid cross-loadings, with all variable indicators having cross-loading scores above 0.7. This indicates that all indicators are declared valid.

Conversion of Path Diagram to Equation System.

After obtaining valid indicators both convergent and discriminant for each latent variable, the conversion of the path diagram based on Figure 1 into an equation system to explain the relationship and influence of each indicator on its respective latent variable (Outer Equation Model) was obtained.

Outer Model Equations for the Green Innovation Performance Latent Variable:

GIP1 = 0.768, GIP2 = 0.729, GIP3 = 0.808, GIP4 = 0.832, GIP5 = 0.750.

From the research results, the highest indicator of the Green Innovation Performance variable is reflected in indicator GIP4 at 0.832, representing comfortable environmental innovation. Thus, in efforts to enhance green innovation performance, the development of comfortable environmental innovation needs to be continuously fostered and developed. The smallest latent variable of green innovation performance is reflected in indicator GIP2 at 0.729, representing environmentally friendly quality innovation. Therefore, efforts to enhance green innovation performance should focus on improving environmentally friendly quality innovation.

Outer Model Equations for the Academic Culture Latent Variable:

AC1 = 0.809, AC2 = 0.853, AC3 = 0.845.

The latent variable of academic culture with the highest score is reflected in indicator AC2 at 0.853, representing cooperation in academic tasks. Therefore, in efforts to enhance academic culture, cooperation in academic tasks needs to be promoted. However, on the other hand, there is the lowest indicator of the academic culture variable, reflected in indicator AC1 with a score of 0.809, representing satisfactory service. Hence, efforts to enhance academic culture should include improving satisfactory service.

Outer Model Equations for the Knowledge Sharing Latent Variable:

KS1 = 0.778, KS2 = 0.883, KS3 = 0.885.

The largest latent variable of knowledge sharing is reflected in indicator KS3 at 0.885, representing discussions between two or more parties. This variable contributes the most to representing other latent variables compared to the other two indicators. Thus, discussions between two or more parties need to be continuously emphasized as an effort to build green innovation performance. The smallest latent variable of knowledge sharing is reflected in indicator KS1 at 0.778, representing proactive knowledge sharing. Therefore, in efforts to enhance knowledge sharing, proactive engagement in sharing various knowledge is needed to support knowledge sharing.

Construct Reliability Testing.

Construct Reliability Testing is conducted on each construct to determine whether the construct is reliable or not. A construct is considered reliable if the Composite Reliability value of the construct is greater than 0.70 (Garson, 2016; Noor, 2014; Yamin & Kurniawan, 2011). The results of Construct Reliability testing for each construct are as shown in the table below.

**Table 4**

**Testing Results on the Construct Reliability of each variable**

| | **Composite Reliability** |
|---|---|
| **Academic culture** | **0,874** |
| **Green innovation performance** | **0,885** |
| **Knowledge sharing** | **0,886** |

Source: Out Put from SEM PLS

Based on the table 3 above, it can be observed that the Composite Reliability values of academic culture (AC), green innovation performance (GIP), and knowledge sharing (KS) are greater than 0.70. Therefore, it can be said that all constructs in this study meet the requirements. A construct (latent variable) can be considered reliable. These results imply that all latent variables used in the study are free from errors or biases and consistently use the same indicators throughout the time (Garson, 2016; Latan, 2014).

**Hypothesis Testing**

Hypothesis testing is conducted to determine the strength of influence between constructs, namely between exogenous latent variables and endogenous latent variables. The testing is done by examining path coefficients and observing the t-test values. If the p-value is less than 0.05, it can be said that the influence or relationship between constructs is statistically significant, meaning H1 is accepted and H0 is rejected. However, if the obtained p-value is greater than 0.05, it can be said that the influence or relationship between constructs is not statistically significant, meaning H0 can be accepted and H1 is rejected (Garson, 2016; Latan, 2014; Noor, 2014; Yamin & Kurniawan, 2011). The results of Path Coefficient Testing are shown in Table 4 below.

**Table 5**

**Results of Path Coefficient Testing**

| | **Green innovation performance** | **Knowledge sharing** |
|---|---|---|
| **Academic culture** | 0,118 | 0,816 |
| **Green innovation performance** | | |

| | | |
|---|---|---|
| **Knowledge sharing** | 0,612 | |

**Source: Out Put from SEM PLS**

Based on the table 5 above, statistically: (1) there is a significant positive direct influence of the academic culture (AC) latent variable on the green innovation performance (GIP) latent variable. This is evidenced by the coefficient value of the green innovation performance variable being 0.118, meaning there is a significant positive direct influence of the academic culture variable on green innovation performance by 11.8 percent. (2) There is a significant positive direct influence of the knowledge sharing (KS) latent variable on the green innovation performance (GIP) latent variable. This is evidenced by the coefficient value of the variable being 0.612, meaning there is a significant positive direct influence of the knowledge sharing variable on green innovation performance by 61.2 percent. (3) There is a significant positive direct influence of the academic culture (AC) latent variable on the knowledge sharing (KS) latent variable. This is evidenced by the coefficient value of the variable being 0.816, meaning there is a significant positive direct influence of the academic culture variable on knowledge sharing by 81.6 percent.

The inner model equation is used to determine the influence of exogenous latent variables on endogenous latent variables. Based on the results of path coefficient testing using the Smart PLS 3.2.6 program, it can be explained that the coefficient of academic culture (AC) is 0.118 and the coefficient of green innovation performance (GIP) is 0.816. Thus, the equation model is obtained as follows: GIP = 0.118AC + 0.612KS This equation indicates that the green innovation performance variable can be explained by the academic culture variable by 11.8% and by the knowledge sharing latent variable by 61.2%. These results have implications for organizational performance. They imply policies of institutions in enhancing green innovation performance through academic culture and knowledge sharing.

a. Inner Model Evaluation. Inner model evaluation is conducted in three ways: by examining the F-Square value, R-Square value, and model fit. R-Square testing is conducted to determine the strength of exogenous latent variables on endogenous latent variables at the structural level. If the value is 0.02, it indicates a weak capacity of exogenous latent variables to explain endogenous latent variables, if the value is 0.15, it is considered moderate, and if the value is 0.35, it indicates a strong capacity of exogenous latent variables to explain endogenous latent variables (Garson, 2016; Yamin & Kurniawan, 2011). Below are the results of the R-Square test.

**Table 6**

**R Square Test Results**

| | **Green Innovation Performance** | **Knowledge Sharing** |
|---|---|---|
| **Academic culture** | **0,209** | **1,994** |
| **Knowledge sharing** | **0,253** | |

| Constructs | F –Square |
|---|---|
| AC > GIP | 0,209 |

| | |
|---|---|
| KS > GIP | 0,253 |
| AC > KS | 1,994 |

**Source: Authors**

Based on table 5 above, the F-Square values reveal that the strength of academic culture (AC) on green innovation performance (GIP) is 0.209. This indicates that academic culture (AC) has the ability to explain 20.9% of green innovation performance. Meanwhile, the strength of knowledge sharing (KS) on green innovation performance (GIP) is 0.253. This indicates that the strength of the academic culture (AC) latent variable in explaining green innovation performance at the structural level is moderate. On the other hand, the strength of knowledge sharing (KS) on green innovation performance (GIP) is 0.253. This shows the strong ability of the knowledge sharing (KS) latent variable in explaining green innovation performance at the structural level is moderate.

b. R-Square Adjusted Test. The R-Square Adjusted Test is conducted to determine the amount of variation in endogenous variables that can be explained by variations in exogenous variables (Garson, 2016; Yamin & Kurniawan, 2011). The R-Square Adjusted values can be seen in Table 7 below.

**Table 7**

**Test Result R-Square Adjusted**

| | **R Square** | **R Square Adjusted** |
|---|---|---|
| **Green Innovation Performance** | 0,506 | 0,496 |
| **Knowledge Sharing** | 0,666 | 0,663 |

**Source: Out Put from SEM PLS**

From table 7 above, it can be seen that the value of R-Square Adjusted is 0.496. This means that 49.6 percent of the variation in the endogenous variable green innovation performance (GIP) can be explained by the exogenous variables academic culture (AC) and employee knowledge sharing (KS), while the remaining 50.4 percent is explained by variations in variables not included in this model.

c. Model Fit Test. Model fit testing is conducted by observing the NFI value in the model. Normed Fit Index (NFI) is a measure of the model's fit relative to the comparative base or zero. The NFI value will vary from 0 (not at all fit) to 1.0. Based on the statistical table presented by Bentler (1990), a good fit NFI value for a research sample of around 150 is above 0.921; therefore, it can be said that the model is consistent with the comparative base and in line with the baseline. The following are the results of the model fit test.

**Table 8**

**Fit Model Test Results with NFI**

| | **Saturated Model** | **Estimated Model** |
|---|---|---|
| **SRMR** | 0,108 | 0,108 |
| **d_ULS** | 0,765 | 0,765 |

| | | |
|---|---|---|
| **d_G** | 1,766 | 1,766 |
| **Chi-Square** | 464,710 | 464,710 |
| **NFI** | 0,508 | 0,508 |

| | Saturated Model | Estimated Model |
|---|---|---|
| NFI | 1.000 | 1.000 |

**Source: Authors**

Based on table 7 above, it can be seen that the Normed Fit Index (NFI) value of 0.508 is below 1.000 (0.508 < 1.000), indicating that the model fits. This means that the model is able to reflect the actual data, demonstrating its capability to explain the data and facts accurately.

**Discussion**

Influence of academic culture on green innovation performance.

The research results indicate a significant positive direct influence of the academic culture (AC) latent variable on the green innovation performance (GIP) latent variable. This is evidenced by the coefficient value of the green innovation performance variable being 0.118, meaning there is a significant positive direct influence of the academic culture variable on green innovation performance by 11.8 percent. Consistent with these findings, (Wang et al., 2022) stated that academic culture affects green innovation performance.

Influence of knowledge sharing on green innovation performance.

The research results show a significant positive direct influence of the knowledge sharing (KS) latent variable on the green innovation performance (GIP) latent variable. This is evidenced by the coefficient value of the variable being 0.612, meaning there is a significant positive direct influence of knowledge sharing on green innovation performance by 61.2 percent. This is supported by (Luan et al., 2023) indicating that knowledge sharing affects green innovation performance.

Influence of academic culture on knowledge sharing.

The research results demonstrate a significant positive direct influence of the academic culture (AC) latent variable on the knowledge sharing (KS) latent variable. This is evidenced by the coefficient value of the variable being 0.816, meaning there is a significant positive direct influence of academic culture on employee knowledge sharing by 81.6 percent. Consistent with research findings, (Castaneda & Cuellar, 2020) stated that academic culture affects knowledge sharing.

## CONCLUSION

From the findings of the research, it can be concluded that:

1. There is a significant positive direct influence of the latent variable academic culture (AC) on the latent variable green innovation performance (GIP).
2. There is a significant positive direct influence of the latent variable knowledge sharing (KS) on the latent variable green innovation performance (GIP).
3. There is a significant positive direct influence between the latent variable academic culture (AC) and the latent variable knowledge sharing (KS).

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