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To cite this article: Suswadi *et al* 2022 *IOP Conf. Ser.: Earth Environ. Sci.* **1108** 012033

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# The nexus between green strategic consensus, innovation, and performance evidence from eco-friendly food agro-industry companies in Indonesia

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**Abstract.** Many companies with an agro-industry base have not implemented a green strategy in their business, so it impacts strategic consensus, product innovation, and company performance. Barriers to implementing a green vision and strategy occur because many top management teams have not yet reached a green consensus in their business. The green strategy consensus is when all levels of management, from top to bottom, agree and commit to putting in place a work culture, business model, and eco-friendly product innovation. This study aims to determine the effect of the green strategy consensus on eco-friendly product innovation and the performance of food agro-industry companies in Indonesia. We distributed 100 questionnaires through LinkedIn to the top management team at food agro-industry companies in Indonesia, with the result that 50 people returned the questionnaire. Data analysis used partial least squares on three variables and 15 indicators. The results showed that the green consensus positively affected environmentally friendly product innovation. The green consensus also positively affects the performance of food agro-industry companies in Indonesia. Eco-innovation has a positive effect on company performance. Finally, the green consensus significantly affects company performance through eco-innovation.

## 1. Introduction

The demands of consumers who want food agro-industry products to meet the rules of environmentally friendly product standards have prompted many agro-industrial companies to adopt national standards and ratify several international standard regulations. The Indonesian National Standards (SNI) relevant to the food agro-industry consist of SNI 6729-2016 on organic farming systems and SNI 01-6729-2002 on organic food systems [1]. International organizational standards (ISO) must also be met, including ISO 22000 on food safety management systems and ISO 9001 for the organic food industry [2]. Both national and international standards that the food agro-industry must meet aim to protect consumers from manipulation [3] or fraud of unhealthy food products that harm consumers' health while contributing to the preservation of local and global ecology [4].

The problem in Indonesia is that many companies with an agro-industry basis still have not implemented a green strategy consensus in their business [5], which impacts company performance in the market and consumers' perceptions [6]. For agro-industry companies adopting a green strategy, the problem arises of how to innovate their products to meet the standards of environmentally friendly food



products. Applying the green strategy consensus (GSC) and eco-friendly product innovation (EPI) will undoubtedly affect the company's performance, particularly the green performance (GP) of food agro-industry companies.

The performance of green companies certainly requires additional costs and has an impact on financial performance. The green strategy consensus implies that it is necessary to increase the competence, skills, and knowledge of human resources [7]. Of course, this increases the workload from top-level management to employees [8]. This increased workload gives rise to the dynamics of comfort, culture, motivation, and even stress [9]. If this does not end, it can impact the performance of employees and the company.

EPI will also affect the demand for a skilled and competent workforce [10]. EPI products that can be produced through incremental innovation by food and agro-industry companies are not only short-term but have become part of the solution to environmental and social problems in the long term. This paper aims to determine the relationship between strategic consensus, eco-friendly product innovation, and the company's green performance. Hopefully, this paper will contribute to the novelty of the company's performance appraisal model based on consensus strategy and green product innovation. In addition, it contributes to the analysis of the development of the company's performance based on environmental preservation and the fulfillment of consumer preferences.

## 2. Hypothesis Development

### 2.1. Green strategic consensus and eco-friendly product innovation

GSC is a collective agreement among members of the top management team with lower levels containing strategic change decisions [11], considered a step towards an environmentally sound company. This agreement is reflected in operational activities to generate new output changes through research, development, and sustainable green innovation [12]. Top-level managers play a vital role in the distribution of changes in the company's vision and mission [13] through policies to promote environmentally friendly product innovation strategies under national and international standards [14]. The GSC encourages management to coordinate and cooperate after policy changes [15], leading to the implementation of green innovation strategies [16]. Green innovations carried out after consensus encourage filtering information to produce research and development of environmentally friendly products [17]. Green strategy and innovation decisions are made independently [18], consistent with change objectives and operational input [19].

*H1: Green strategic consensus has a positive effect on innovation (eco-friendly food product innovation)*

### 2.2. Green strategy consensus and agro-food company performance

The GSC got all the employees to agree on the same things, which led to the company putting a green human resource management system [20]. The company will conduct an employee selection process to achieve performance [21]. Employee training to increase competence in green production is a consequence of the GSC [22]. Green rewards and career opportunities are open to employees who can implement plans to increase production and sales [23]. Optimizing a green work-life balance is possible because people create green products and contribute to environmental sustainability [24]. Participatory policies and growth targets result in substantial financial growth after the GSC agreement [25].

*H2: Green strategic consensus has a positive effect on agro-food company performance*

### 2.3. Eco-friendly product innovation and agro-food company performance

Research and development activities for green innovation can be started with environmentally friendly raw materials, aiming to attract consumers to buy green innovation products [26]. This eco-innovation activity aims to reduce production costs from unsustainable raw materials or at least increase the selling price of the product [27]. Through production activities according to national and international standards, green innovation activities become branding materials for selling environmentally friendly

products to increase consumer awareness and sales [28]. Green innovation products that have been certified promote safety and healthy food production so that this guarantee boosts consumer purchasing power and company sales targets [29]. Production operational activities utilizing recycled materials can reduce production costs, pollution, and environmental damage [30]. If the innovation runs, the remaining production waste can go through the innovation stage to generate additional income for the company [31]. Understanding national and international standards and production procedures increases training and certification costs to the company's burden [32]. On the other hand, research and development of eco-friendly products developed by agro-industry companies [33] help organizations obtain the latest resource capabilities [34], provide new market share opportunities [35], increase profits [36], business growth [37], and new visions from management to employees [38].

*H3: Green innovation has a positive effect on agro-food company performance*

#### *2.4. The green strategic consensus, eco-friendly product innovation, and agro-food company performance*

GSC encourages green innovation through the production process and produces environmentally friendly products [39]. There are several consequences faced by entrepreneurs: a) increasing production costs to meet production standards [40], b) reducing production costs from the efficiency of raw materials or recycling inputs [41], c) increasing consumer confidence and product selling prices [42], and d) increasing product competitiveness through eco-friendly branding [43]. GSC encourages innovation; therefore, the absorption of a good workforce increases the competence of all lines of the organization and becomes the company's competitiveness to be accepted by the market [44]. GSC and innovation encourage employee competence in production and cost efficiency [45], thereby increasing added value and company profits [46]. If successful, the market share that can grow from the GSC agreement [47] and green product innovation can provide long-term benefits [48] by conducting research and developing new product diversification sustainably [49].

*H4: Green strategic consensus has a positive effect on agro-food company performance through innovation (eco-friendly product innovation)*

### **3. Methodology**

The research runs from January to April 2022. In the first step, researchers tracked 238 agro-industrial companies using data from the Directory of Food Industry Companies of the Ministry of Industry of the Republic of Indonesia. In the second step, we use LinkedIn media because it is easy to track company names and target potential respondents based on their position in the company (in this case, the manager level). The third step is to make friends and distribute questionnaires to conduct surveys. Researchers used a Likert scale to measure how respondents answered the questions. We have delivered 100 questionnaires, but only 50 provide valid data for analysis.

The indicators used to develop the GSC variables are: a) mutual agreement from top management to operational level employees [50] (GSC1); b) the company's change policy to become pro-environmental sustainability [51] (GSC2); c) management distributes change strategy transparently [52] (GSC3); d) improve green policies throughout all staff lines [53] (GSC4); e) screening information for green policy development [54] (GSC5); and f) green consensus policy decisions are made independently [55] (GSC6).

The indicators used to develop the EPI variables are: a) eco-innovation input using eco-friendly materials [56] (EPI1); b) eco-innovation activities through eco-friendly products, qualified workers, and green technologies [57] (EPI2); c) eco-innovation outputs when the community accepts eco-friendly products [58] (EPI3); and d) eco-innovation efficiency where resources lead to ecologically sustainable production, such as decreasing pollution, reusing raw materials and recycling [59] (EPI4).

The indicators used to develop the GP variables of food agro-industry companies are: a) green human resource management performance [23] (GP1); b) green human resource competence [50] (GP2); c)

green operational performance [60] (GP3); d) green products' market share [24] (GP4); and e) green product sales growth and margin [33] (GP5).

#### 4. Result

Based on the results of the output path model, it can be continued to the next stage to determine the suitability of the model and its supporting tests as described in table 1 below :

**Table 1.** The discriminant validity, construct reliability, validity, and the goodness fit test results.

Variable	Indicator	Cross Loading			CA	rho_A	CR	AVE	R <sup>2</sup>
		GSC	EPI	GP					
Green Strategic Consensus (GSC)	GSC1	<b>0.795</b>	0.570	0.499	<b>0.881</b>	<b>0.882</b>	<b>0.910</b>	<b>0.626</b>	
	GSC2	<b>0.804</b>	0.575	0.592					
	GSC3	<b>0.780</b>	0.661	0.666					
	GSC4	<b>0.742</b>	0.532	0.673					
	GSC5	<b>0.834</b>	0.556	0.677					
	GSC6	<b>0.791</b>	0.591	0.595					
Eco-friendly Product Innovation (EPI)	EPI1	0.510	<b>0.792</b>	0.572	<b>0.807</b>	<b>0.818</b>	<b>0.872</b>	<b>0.631</b>	<b>0.542</b>
	EPI2	0.660	<b>0.816</b>	0.661					
	EPI3	0.670	<b>0.817</b>	0.660					
	EPI4	0.459	<b>0.751</b>	0.496					
Green Performance (GP)	GP1	0.678	0.668	<b>0.807</b>	<b>0.830</b>	<b>0.839</b>	<b>0.879</b>	<b>0.594</b>	<b>0.676</b>
	GP2	0.660	0.534	<b>0.750</b>					
	GP3	0.640	0.719	<b>0.800</b>					
	GP4	0.500	0.472	<b>0.711</b>					
	GP5	0.506	0.483	<b>0.781</b>					

Source: Data processing results

The convergent validity test aims to measure the validity of the indicators used in this study. The researcher used a factor loading limit of 0.7 so that the indicator estimation results on the latent variables GSC, EPI, and GP passed the validity test. Discriminant validity (DV) aims to test to what extent the latent construct is different from other constructs. A high DV value indicates that a construct is unique and can explain the measured phenomenon. After testing, the average variance extract (AVE) value is more than 0.5, and each latent variable's correlation value is much higher than its correlation value with other latent variables, confirming that the analytical test data has a valid discriminant. The R<sup>2</sup> value of the GSC variable on the EPI of 0.542 indicates that the model can explain the moderate effect of 54.2 percent, and variables outside the model explain the rest. On the other hand, the R<sup>2</sup> value of the EPI variable on the GP of 0.676 indicates that the model can explain the high effect of 67.6 percent, and variables outside the model explain the rest.

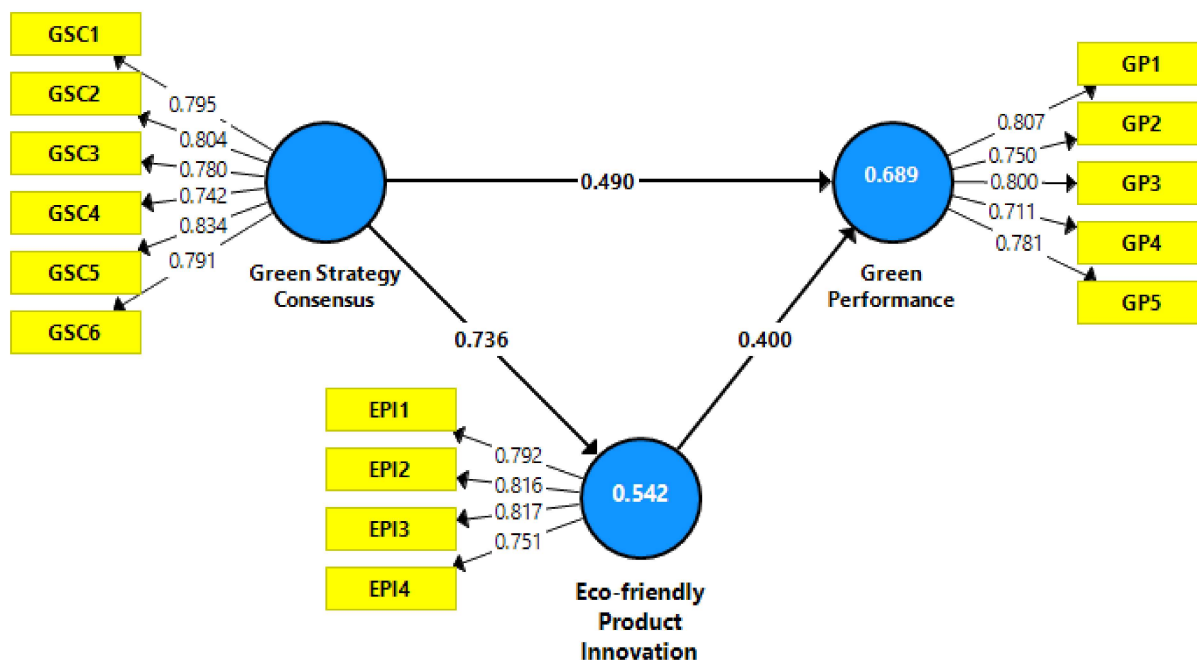


Figure 1. The output path model

Table 2. The direct-indirect effect path coefficient and hypothesis testing.

Variable	Original Sample (O)	T Statistics	P Values	Sig.
<u>Direct effect</u>				
GSC → EPI	0.736	11.904	0.000	***
GSC → GP	0.490	3.424	0.001	***
EPI → GP	0.400	2.776	0.006	***
<u>Indirect effect</u>				
GSC → EPI → GP	0.294	2.571	0.010	***

Source: Data processing results - Significance level: \*\*\* = 99%; \*\* = 95%; \* = 90%; ns = not significant

5. Discussion

5.1. The green strategic consensus affects eco-friendly product innovation

Information from table 2 and figure 1 shows that GSC has a positive and significant effect on EPI; this is evidenced by the path coefficient value (the original sample estimate) of 0.736 and a significant level of the p-value of 0.000, so the first hypothesis is accepted. The results of this effect indicate that with a positive increase in GSC, the EPI of food agro-industry companies also increases positively. Leadership and top management are essential for operational divisions to accept green strategic policies—their role is promoting change and establishing a collective agreement to innovate eco-friendly food products. GSC encourages companies and management to have a transparent vision toward pro-environmental preservation by encouraging eco-innovation activities that produce environmentally friendly products. GSC reflects increasing coordination and cooperation in strengthening employee competence and using eco-friendly technologies to create eco-friendly food product innovations. GSC encourages information filtering and management independence in input-output eco-innovation programs; this promotes the efficiency of raw materials, reduces waste, and recycles production factors to reduce environmental pollution [61].

### 5.2. *The green strategic consensus affects agro-food company performance*

Information from table 2 shows that GSC has a positive and significant effect on GP; this is evidenced by the path coefficient value (the original sample estimate) of 0.490 and a significant level of the p-value of 0.000, so the second hypothesis is accepted. The results of this hypothesis test indicate that with a positive increase in GSC, the GP of food agro-industry companies also increases positively. The GSC contains a mutual change agreement, encouraging the improvement of the performance of green human resources or being pro-environment, which positively impacts the image of the food agro-industry company. GSC promotes cooperation and coordination to improve the company's operational performance and increase the food agro-industry's competence to become a national and international competitiveness strategy. The GSC encourages the search for competitor information and establishes a competitive position so that it can filter data in formulating green strategic policies.

### 5.3. *Eco-friendly product innovation affects agro-food company performance*

Information from table 2 shows that EPI has a significant effect on GP; this is evidenced by the path coefficient value (the original sample estimate) of 0.400 and a significant level of the p-value of 0.006, so the third hypothesis is accepted. The results of this test indicate that with a positive increase in EPI, the GP of food agro-industry companies also increases positively. Eco-innovation of inputs using environmentally friendly raw materials improves the company's competitive performance, so that market share increases. Through human resource capabilities and advanced environmentally friendly technology, eco-innovation activities improve company performance by introducing new eco-friendly products from research and development to open up new market shares. Eco-innovation outputs drive increased sales and customer numbers by producing environmentally friendly end products. Eco-innovation efficiency through reducing, reusing, and recycling either increases company revenue or reduces production costs.

### 5.4. *The green strategic consensus, eco-friendly product innovation, and agro-food company performance*

Table 2 shows that GSC has a significant effect on GP through EPI; this is evidenced by the path coefficient value (the original sample estimate) of 0.294 and a significant level of the p-value of 0.010, so the fourth hypothesis is accepted. It is positively increasing GSC and positively driving EPI as well as GP. The GSC, which contains a collective agreement, encourages eco-innovation so that production cost efficiency occurs and, on the other hand, the company's financial performance increases. The company uses increased revenue to conduct employee training to achieve green competence. This agreement increases the company's competitiveness through human resource management performance and profit growth of food agro-industry companies in Indonesia. Information distribution and GSC independence provide the company with eco-innovation freedom to achieve optimal green company performance. Some information from the management level respondents says they prefer products resulting from green innovations that provide higher selling points and opportunities for company income. The more environmentally conscious consumers are, the faster green innovation goods penetrate the market, and the corporation chooses which GSC to use [62]. The agreed GSC provided optimal results, so the operational division will gladly carry out and improve HR performance. The continuity and cohesiveness of the company's organization will cause all aspects and tools to work hand in hand to achieve the goals of a green organization.

## 6. Conclusion and Implication

First, this study concludes that GSC positively and significantly affects EPI. The implication is the importance of coordination, transparency, and information transfer regarding green business strategies, development prospects, and benefits to increase employees' competence to participate in eco-innovation in the long term. This eco-innovation requires certification and training according to national and international green standards. Second, GSC has a positive and significant effect on GP. The implication is that management at the top has critical thinking starting from the upper echelons. If necessary,

superiors go directly and actively promote management changes in a green direction so that all employees are in line with the success of the company's green performance. Third, EPI has a significant effect on GP. The implications are involving employees in all operational processes and achieving eco-innovation. Without the active role and contribution of eco-innovation from the operational section of employees, management and the company cannot achieve the goals of GSC. Finally, GSC has a significant effect on GP through EPI. The implication is that the company's innovation strategy must select the right employees according to green competencies to be involved in GSC. The right employees can increase their contribution to eco-innovation, thereby increasing the opportunity to participate in the company's competitive strategy, namely healthy food production. As the performance of human resources increases, the financial performance has the opportunity to provide more significant income.

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