# ENVIRONMENTAL INNOVATION AND SUSTAINABILITY PRACTICES OF MANUFACTURING COMPANIES IN BALI THROUGH GOVERNMENT REGULATIONS

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**Abstract:**

This study aims to examine how environmental innovation and sustainable practices impact the operations of manufacturing companies, especially within Bali Province, and considers how government regulations may amplify or moderate these effects. The research uses a quantitative approach, focusing on relevant variables from existing literature on environmental sustainability. By surveying 413 manufacturing firms, the study captures insights into how respondents perceive and implement environmentally innovative practices, particularly in line with sustainable objectives and regulatory expectations. Each survey question was structured using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). It assessed respondent agreement on various aspects of sustainable practices, such as their adherence to environmental standards and perceptions on how these practices benefit operational efficiency and public image. The data was then analyzed using the Moderated Regression Analysis (MRA) technique within the SPSS 22.0 statistical software. Findings from this analysis help determine how sustainability practices directly impact business performance and the role of government regulation in enhancing the effectiveness of these practices. This study contributes to a deeper understanding of how environmental strategies, moderated by regulatory influences, can shape the manufacturing sector's sustainability efforts.

**Keywords**: Environmental Innovation, Sustainability Practices, Government Regulations

## INTRODUCTION

The global landscape has recently been filled with pressing challenges characterized by environmental pollution and climate change, as underlined by the United Nations Environment Programme (UNEP, 2023). The degradation of the Earth's natural environment and the resulting ecological imbalances have shown a marked increase. This situation has strengthened the calls emerging from academics, practitioners, policymakers and social movements, all advocating a shift away from conventional and unsustainable practices (Martin et al., 2021; Whiteman et al., 2013). Furthermore, human activities, especially those characterized by the release of greenhouse gases, have undeniably played a significant role in driving global warming. It is supported by empirical evidence showing that global surface temperatures have increased by about 1.1°C above pre-industrial levels from 2011–2020 (UNEP, 2023).

Global greenhouse gas emissions continue to rise, characterized by a complex interplay of historical and current factors stemming from unsustainable energy consumption, land use and change, diverse lifestyles, consumption patterns and production practices. These factors show

disparities across regions, within and across countries, highlighting the multifaceted nature of the global challenge (UNEP, 2023). Therefore, effectively addressing this challenge requires a concerted global effort and a strong commitment from businesses across sectors. In addition, governments worldwide are intensifying their efforts to compel companies to adopt sustainability practices (SP). However, it is evident that not all companies show the same dedication to their environmental obligations, and some companies struggle to achieve comparable levels of SP (Balasubramanian & Shukla, 2020). Given the importance of a better environment, modern businesses are shifting their business methods towards green operations [Albino & Dangelico, 2009]. The inspiration for organizations to achieve the green label is motivated by several reasons. First, it is based on the personal preference of companies to adopt environmentally friendly procedures to fulfill their environmental responsibilities (Dangelico, 2015). Second, it relies on the organization's response to the increasing customer demand for sustainable goods and services to intensify the idea of a customer-driven business ideology (Chang & Fong, 2010). Third, it must comply with government regulations and foreign markets to ensure sustainable business growth (Tang et al., 2018).

Consequently, this study focuses on green organizational practices used to assess sustainability. Green organizational practices are considered environmentally friendly actions that contribute to environmental conservation and create a sustainable future. Green practices influence how things are done within a company, gaining benefits (Perez-Valls et al., 2016). Thus, green practices should be closely linked to critical management and organizational activities (Helfat et al., 2007). This process should be based on established procedures to identify and fully utilize opportunities and adapt to environmental adversities. Environmental stewardship is becoming more critical within businesses and has become an integral element of their strategies and perspectives (Wang & Juo, 2021). According to Li et al. (2018), green initiatives can help organizations achieve better results by lowering production costs and increasing economic efficiency (Ghisellini et al., 2016). Consequently, environmental efforts are often critical to long-term performance (Ainin et al., 2016).

Environmental innovation combines the core aspects of green product and process innovation. Green product innovation involves the creation of goods or services that have no or minimal adverse effects on the environment (Wong et al., 2012). Similarly, green process innovation is the improvement of existing creation procedures and using environmentally friendly innovations to produce products and provide benefits that do not impose or reduce adverse effects on ecological conditions (Wong et al., 2012). The benefits of green innovation result in improvements in knowledge enhancement, time efficiency and cost reduction; however, the extent to which green innovation benefits translate into performance varies in several aspects. In this regard, (Tang et al., 2018) stated that the effect of green innovation on firm performance is unclear on organizational profitability and varies with different forms of innovation.

The concept of environmental sustainability can be interpreted as an activity that maintains the original condition of the environment while gaining benefits from it. Environmental sustainability is also related to limiting impacts and finding a balance where we give back as much as we take. Companies must take effective steps to minimize detrimental economic activities and preserve the environment. It is about the importance of preserving the environment for future generations while maintaining the consistency of economic activities that can be more important for the current generation.

Government regulations and green innovation play a significant role in shaping the implementation of sustainable manufacturing and its impact on the environment. Several previous

studies have discussed how sustainable manufacturing impacts the environment, including the interaction between government regulations and technological advancement. For example, Nordin et al. (2014) showed that implementing sustainable manufacturing in Malaysian firms is influenced by environmental regulations, top management commitment, and corporate image. In addition, Kulatunga et al. (2013) highlighted various drivers and barriers to sustainable manufacturing, including limited awareness of sustainability, lack of government tax incentives or rewards, market pressures, and government promotion and regulation. Furthermore, Rashid et al. (2014) emphasized the relationship between environmental innovation and environmental performance, emphasizing how environmental innovation affects pollution prevention, resource conservation, and recycling. However, a research gap exists in understanding how government regulations and technological advancement interact with sustainable manufacturing practices to improve environmental outcomes.

Further investigation is needed to explore this relationship and identify effective strategies to achieve sustainable manufacturing goals. According to the institutional theory proposed by Berrone et al. (2013), stringent external regulations encourage firms to actively adopt environmental practices and take on greater corporate environmental responsibilities. In terms of the role of sustainable manufacturing in driving innovation and business growth, previous studies have consistently shown a relationship between green innovation in manufacturing firms and overall improvements in environmental efficiency, including environmental benefits. However, more research is needed to understand how government influence and sustainable manufacturing practices drive innovation and contribute to business growth. Nezakati et al. (2016) stated that government, as a critical stakeholder, can shape the resources of the business world through regulatory power. Berrone et al. (2013) proposed that stringent external regulations encourage firms to engage in environmental practices. Innovation is essential for firms to thrive and remain competitive, especially in responding to environmental challenges. Studies examining the relationship between environmental innovation and sustainability practices have been conducted. However, the results have yet to provide a clear explanation of whether adopting environmental innovation practices tends to improve sustainability practices for their firms, thus remaining ambiguous. Research needs to be conducted to examine the impact of environmental innovation and sustainable practices moderated by government regulations.

The manufacturing industry is vital to driving the Indonesian economy. Local knowledge spillovers are significant in the Indonesian manufacturing industry and are stronger among factories in the same industrial sector (Aw & Palangkaraya, 2004; Yang et al., 2020). The industrial sector is essential in its contribution to national output and energy consumption (Hartono et al., 2011; Iskandar et al., 2020; Simatupang, 2021).

**Table 1.** Data on the Growth of the Number of Manufacturing Industries in Bali

| Regency/City | 2020 | 2021 |
|---|---|---|
| | Number of Companies | Number of Companies |
| (1) | (2) | (3) |
| 1 Jembrana | 22 | 24 |
| 2 Tambanan | 30 | 38 |

| | | | |
|---|---|---|---|
| 3 | Badung | 65 | 74 |
| 4 | Gianyar | 55 | 61 |
| 5 | Klungkung | 22 | 23 |
| 6 | Bali | 7 | 7 |
| 7 | Karangasem | 14 | 20 |
| 8 | Buleleng | 14 | 17 |
| 9 | Denpasar | 136 | 149 |
| | **Bali Province** | **365** | **413** |

According to data from the Central Statistics Agency, the manufacturing industry in Bali, in particular, is increasing every year.
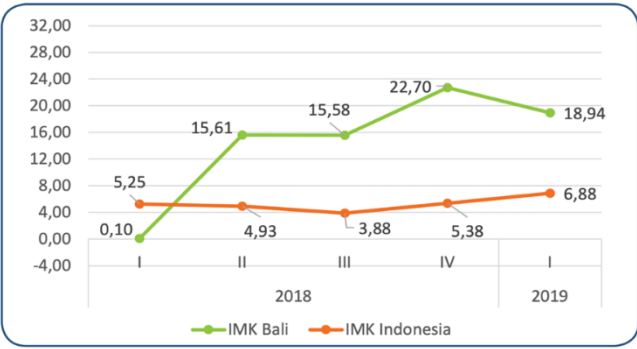


**Figure 1.** Quarterly Production Growth Development (y-on-y) of Bali and National IMK Q1 2018 - Q1 2019 (in percent)

**Table 2.** Annual Production Growth (y-on-y) of Bali and National IMK According to the 2-Digit Indonesian Standard Classification of Industrial Fields (KBLI) Quarter I - 2018 and Quarter I - 2019 (in percent)

| No | Code KBLI | Type of Industry | Growth (%) | | | |
|---|---|---|---|---|---|---|
| | | | Bali | | National | |
| | | | y-on-y | | y-on-y | |
| | | | Triw I-2018 | Triw I-2019 | Triw I-2018 | Triw I-2019 |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 1 | 10 | Food industry | 3,99 | 42,61 | 7,17 | 3,92 |
| 2 | 11 | Beverage industry | 5,96 | 5,90 | 3,47 | 7,70 |
| 3 | 14 | Ready-to-wear Industry | 0,63 | 4,63 | 7,79 | 11,14 |
| 4 | 15 | Leather, Leather Goods and Footwear Industry | -8,93 | 8,00 | -3,28 | 2,68 |

| No | KBLI | Industry | | | | |
|---|---|---|---|---|---|---|
| 5 | 16 | Wood Industry, Wood and Cork Products (Excluding Furniture) and Woven Products from Bamboo, Rattan, and the Like | 4,22 | 15,70 | 1,65 | 3,70 |
| 6 | 17 | Paper and Paper Products Industry | 34,03 | 10,92 | 13,83 | -5,53 |
| 7 | 18 | Printing and Recorded Media Reproduction Industry | -17,90 | -3,89 | 18,84 | 29,63 |
| 8 | 23 | Non-Metallic Mining Industry | -8,95 | 7,43 | 7,11 | 3,52 |
| 9 | 25 | Metal, Non-Machine, and Equipment Products Industry | 21,72 | 18,96 | 1,73 | 8,63 |
| 10 | 31 | Furniture Industry | -5,96 | 5,25 | 1,00 | 8,79 |
| 11 | 32 | Other Processing Industries | -3,86 | 0,05 | 2,93 | 9,63 |
| | | **IMK (Micro and Small Industries)** | **0,10** | **18,94** | **5,25** | **6,88** |

On an annual basis (y-on-y), Bali IBS production in Q1-2019 was recorded to have experienced positive growth of 24.12 percent. This figure is above the national growth of 4.45 percent in the same period (table 2). The growth of IBS production in Q1-2019 was recorded to have experienced positive growth, namely (1) the beverage industry (KBLI code 11) grew by 58.43 percent, (2) the textile industry (KBLI code 13) grew by 53.25 percent, (3) other processing industries (KBLI code 32) grew by 16.00 percent, and (4) the food industry (KBLI code 10) grew by 13.94 percent. Meanwhile, the industries that experienced a decline in Quarter I-2019 were (1) the ready-to-wear clothing industry (KBLI code 14), which experienced growth of -27.65 percent, and (2) the wood industry, wood and cork products (excluding furniture) and woven goods from bamboo, rattan and the like (KBLI code 16) which experienced growth of -24.40 percent.

The presence of multinational companies can increase technological knowledge and export markets, which increases the possibility of domestic companies entering export markets and improving export performance (Harahap et al., 2020; Narjoko, 2009; Supiyadi & Anggita, 2020). In terms of the role of sustainable manufacturing in driving innovation and business growth, previous studies have consistently shown a relationship between green innovation in manufacturing companies and overall environmental efficiency improvements, including environmental benefits. However, a research gap exists in understanding how government influence and sustainable manufacturing practices drive innovation and contribute to business growth. Nezakati et al. (2016) stated that the government, as a critical stakeholder, can shape the resources of the business world through regulatory power. Berrone et al. (2013) proposed that strict external regulations encourage companies to engage in environmental practices. Innovation is essential for companies to thrive and remain competitive, especially in responding to environmental challenges.

Based on the background that has been explained, the research questions that arise in this study are:
1. Can environmental innovation provide valuable insights in outlining the gaps in companies' dedication and contribution to sustainability practices?

2. What specific mechanisms do governments use to influence sustainable practices in manufacturing industries, which stimulate innovation and contribute to the environmental performance of small and medium enterprises?

**Environmental Innovation.** Linnenluecke et al. (2019) argue that green process innovation can improve environmental performance by enabling the adoption of cleaner technologies, increasing efficiency, and reducing emissions. They highlight the potential for green process innovation to generate significant environmental benefits by minimizing resource consumption and waste generation. However, Chen and Rathore (2016) raise concerns that green process innovation alone does not guarantee sustainability outcomes. They argue that process innovation can inadvertently lead to a rebound effect, where higher production levels or increased consumption offset efficiency gains, ultimately negating potential environmental benefits. Balachandran and Ramanathan (2019) suggest that green process innovation may have a more significant and direct impact on sustainability, focusing on improving manufacturing processes rather than introducing new products. However, Große-Bölting and Pietzsch (2020) argue that product innovation can be a powerful driver of sustainability, mainly if it includes a life cycle perspective. They argue that innovative product design, functionality, and related business models can lead to sustainable consumption patterns, circular economy practices, and environmental impact reduction. In their study, Jum'a et al. (2023) investigated the relationship between extensive data technology capabilities, personal competencies, and sustainable performance in Jordanian manufacturing firms, emphasizing the mediating role of innovation. In contrast, this study focuses on SP, which encompasses a wide range of actions undertaken by manufacturing firms that impact environmental, social, and economic dimensions.

This innovation includes discovering and using new technologies, methods, and products to reduce pollution, use fewer resources, and shift to a more environmentally conscious economy (Dangelico & Pujari, 2019; Nidumolu et al., 2022). Empirical research shows that manufacturing firms prioritizing EI will improve their environmental performance and gain a competitive advantage in the market (Dangelico & Pujari, 2019; Zhu & Liu, 2022). Despite the potential of EI to drive SPs, the complex relationship between these two variables remains underexplored in the scientific literature, especially in less developed countries. Environmental innovation is an essential driver of sustainability practices in manufacturing firms, primarily through innovative environmentally friendly products and processes. Existing literature underlines the fusion of innovation and sustainability and the importance of innovation and sustainability in improving social welfare (Silvestre, 2015a, b; Kibet & Korir, 2013). Based on dynamic capabilities theory, innovation catalyzes transformative change across sectors, enabling the implementation of sustainability initiatives (Huisingh et al., 2013).

The practical application of innovation, especially green product and process innovation, reshapes social, economic and environmental performance (Smerecnik & Anderson, 2011; Silvestre, 2015a, b). Product innovation, especially environmental variants, drives SPs (Johansson & Ramanathan, 2016). Green, energy-efficient and resource-efficient products can improve SPs by limiting energy consumption, emissions and raw material waste (Johansson & Ramanathan, 2016). However, considering the entire product life cycle is essential as some innovations may inadvertently increase consumption and environmental impacts (Luchs et al., 2011). Combining green product innovation with manufacturing improvements is essential (Grinza et al., 2018), as is aligning them with customer demand and long-term sustainability goals (Teixeira et al., 2020).

Similarly, process innovation, which addresses new methods and operational efficiencies, is critical for SPs (Cagliano et al., 2013).

**Sustainability Practice Concept.** Realizing the integration of environmental, social and economic dimensions (Haanes, 2016). Elkington's (1997) conceptualization of sustainability reinforces these interconnected aspects, while Leung and Rosenthal (2019) emphasize the importance of aligning these aspects holistically. Nasrollahi et al. (2020) distinguish between weak and strong sustainability orientations. Weak sustainability orientations focus on the planet, people, and profit.

In contrast, strong sustainability orientations extend to industrialization and technology, which aligns with the green economy concept put forward by Nave et al. (2021). Schaltegger and Burritt (2018) define sustainability practices as strategies that deliberately combine environmental responsibility, economic profit and social progress, as put forward by Bansal and Roth (2000), who underline the alignment of policies with stakeholder expectations. Lozano (2008) agrees, characterizing sustainability practices as a seamless integration of economic, environmental and social issues. In the context of manufacturing, as shown in previous studies in Uganda, entities contribute to sustainability challenges through emissions, waste, and non-renewable energy consumption (NEMA, 2019). To address this, SPs are needed, which encourage cleaner production, resource efficiency, waste management, and renewable energy (Kaawaase et al., 2021; NEMA, 2019). These strategies are aligned with the objectives of environmental sustainability and socio-economic well-being.

**Government Regulation.** Government regulations, green innovation, and eco-innovation play a significant role in shaping the implementation of sustainable manufacturing and its impact on the environment. Several previous studies have discussed how sustainable manufacturing impacts the environment, including the interaction between government regulations and technological advancement. For example, Nordin et al. (2014) showed that implementing sustainable manufacturing in Malaysian firms is influenced by environmental regulations, top management commitment, and corporate image. In addition, Kulatunga et al. (2013) highlighted various drivers and barriers to sustainable manufacturing, including limited awareness of sustainability, lack of government tax incentives or rewards, market pressures, and government promotion and regulation.

Furthermore, Rashid et al. (2014) emphasized the relationship between environmental innovation and environmental performance, emphasizing how environmental innovation influences pollution prevention, resource conservation, and recycling. However, a research gap exists in understanding how government regulations and technological advancement interact with sustainable manufacturing practices to improve environmental outcomes. Further investigation is needed to explore these relationships and identify effective strategies to achieve sustainable manufacturing goals.

According to the institutional theory proposed by Berrone et al. (2013), stringent external regulations encourage firms to actively adopt environmental practices and take on greater corporate environmental responsibilities. In terms of the role of sustainable manufacturing in driving innovation and business growth, previous studies have consistently shown a relationship between green innovation in manufacturing firms and overall improvements in environmental efficiency, including environmental benefits. However, a research gap exists in understanding how government influence and sustainable manufacturing practices drive innovation and contribute to business growth. Nezakati et al. (2016) stated that the government, as a critical stakeholder, can

shape the resources of the business world through regulatory power. Berrone et al. (2013) proposed that stringent external regulations encourage firms to engage in environmental practices. Innovation is essential for firms to thrive and remain competitive, especially in responding to environmental challenges.

**METHODS**

This study uses a quantitative approach. The model contains variables sought from the literature that are relevant to the study. This study surveyed 413 industry players in Bali. Each statement is a five-point item (i.e., 1-5) asking respondents to agree or disagree with the perception, behavior, or experience specified in the statement. The statements were taken from published studies but modified for the current study. Data processing and analysis were conducted using the Statistical Package for the Social Sciences (SPSS) 22.0. The properties of the variables examined were explored using a Likert scale indicating 5 (Strongly Agree) to 1 (Strongly Disagree). Overall, the current examination used five elements to be studied. They consist of environmental innovation, sustainability practices, and government regulations. Government regulations are taken as a moderator variable in the relationship of these variables. Data analysis used MRA.

**RESULT AND DISCUSSION**

**Respondent Characteristics.**

**Table 3.** Respondent Characteristics

| Company Category | Number of Respondents | Percentage (%) |
|---|---|---|
| Food and Drink | 150 | 36.32% |
| Textiles | 100 | 24.21% |
| Plastic and Rubber Goods | 50 | 12.10% |
| Chemical material | 30 | 7.26% |
| Etc | 83 | 20.10% |
| **Total** | **413** | **100%** |

Table 3 shows that most respondents came from the food and beverage industry (36.32%), followed by the textile industry (24.21%).

**Descriptive Statistics of Variables.**

**Table 4.** Descriptive Statistics

| Variables | Mean | Std. Deviation | Minimum | Maximum |
|---|---|---|---|---|
| Environmental Innovation (X) | 3.89 | 0.65 | 2.00 | 5.00 |
| Sustainability Practices (Y) | 4.12 | 0.58 | 2.50 | 5.00 |
| Government Regulation (Z) | 3.75 | 0.71 | 2.00 | 5.00 |

Table 4 shows that the average score of environmental innovation is 3.89, which indicates a relatively high implementation of environmental innovation in Balinese manufacturing companies. Sustainability practices have the highest average value among the three variables.

**Classical Assumption Test.**

**1. Normality Test**

**Table 5.** Results of Normality Test (Kolmogorov-Smirnov)

| Variables | Statistics K-S | Sig. (p-value) |
| --- | --- | --- |
| Environmental Innovation (X) | 0.073 | 0.112 |
| Sustainability Practices (Y) | 0.065 | 0.153 |
| Government Regulation (Z) | 0.070 | 0.135 |

Based on Table 5 Kolmogorov-Smirnov test, all variables have a p-value> 0.05, which means the data is usually distributed.

**2. Multicollinearity Test**

**Table 6.** Multicollinearity Test Results (VIF)

| Variables | Tolerance | VIF |
| --- | --- | --- |
| Environmental Innovation (X) | 0.520 | 1.923 |
| Government Regulation (Z) | 0.530 | 1.887 |
| Moderation (X*Z) | 0.460 | 2.174 |

Table 6 shows no multicollinearity problems because all VIF values were below 10, and the tolerance value was above 0.1.

**3. Heteroscedasticity Test**

**Table 7.** Glejser Test Results

| Variables | t- Statistics | Sig. (p-value) |
| --- | --- | --- |
| Environmental Innovation (X) | 1.125 | 0.263 |
| Government Regulation (Z) | 0.987 | 0.314 |
| Moderation (X*Z) | 1.435 | 0.178 |

Based on Table 7, the Glejser test shows that the regression model is not heteroscedastic because all p-values are> 0.05.

**Moderation Regression Test Results.**

**Table 8.** Regression Test Results

| Independent Variables | Coefficient β | t-statistic | Sig. (p-value) | Information |
| --- | --- | --- | --- | --- |
| (Constant) | 1.230 | 5.432 | 0.000 | Significant |
| Environmental Innovation (X) | 0.450 | 6.789 | 0.000 | Significant |

| | | | | |
|---|---|---|---|---|
| Government Regulation (Z) | 0.200 | 4.567 | 0.001 | Significant |
| Moderation (X*Z) | 0.180 | 3.123 | 0.002 | Significant |

**Table 9.** Goodness of Fit Model Results

| Statistics | Score |
|---|---|
| R-squared | 0.56 |
| Adjusted R-squared | 0.54 |
| F- Statistics | 23.78 |
| Sig. F | 0.000 |

The regression results in Tables 8 and 9 show that environmental innovation significantly positively affects sustainability practices ($\beta$ = 0.450, p < 0.01). Government regulations also significantly mediate the relationship between environmental innovation and sustainability practices ($\beta$ = 0.180, p < 0.05). This model can explain 56% of the variation in sustainability practices (R-squared = 0.56).

**Hypothesis Testing.**

**Table 10.** Summary of Hypothesis Test Results

| Hypothesis | Coefficient $\beta$ | Sig. (p-value) | Results |
|---|---|---|---|
| H1: Environmental Innovation → Sustainability Practices | 0.450 | 0.000 | Accepted |
| H2: Government Regulation → Sustainability Practices | 0.200 | 0.001 | Accepted |
| H3: Moderation (Innovation x Regulation) → Sustainability Practices | 0.180 | 0.002 | Accepted |

Table 10 shows that all research hypotheses were accepted, indicating a significant relationship between the tested variables.

**The Influence of Environmental Innovation on Sustainability Practices.** The results of this study indicate that environmental innovation has a significant favorable influence on the sustainability practices of manufacturing companies in Bali, with a $\beta$ coefficient of 0.450 and a p-value <0.01. It confirms that the higher the company implements environmental innovation, the better the sustainability practices are implemented. These results align with the theory of environmental innovation, which states that companies that adopt environmentally friendly innovations reduce negative environmental impacts and increase operational efficiency. Environmental innovation can be in the form of using more environmentally friendly materials, reducing waste, or saving energy. Research by Wong et al. (2012) also found that green product innovation and processes directly improve companies' sustainability performance. In the context of manufacturing in Bali, which primarily focuses on the food, beverage, and textile industries, implementing this innovation can be seen in using more environmentally friendly raw materials and more efficient energy-use production processes. In addition, these results support the literature

showing that environmental innovation is one of the main pillars in achieving sustainability practices. In a study by Ghisellini et al. (2016), green product innovation reduced production costs while improving environmental performance. Thus, these findings strengthen the argument that environmental innovation is not only a moral obligation but can also be a profitable business strategy.

**The Moderation Role of Government Regulations on the Relationship between Environmental Innovation and Sustainability Practices.** The results of the moderation test show that government regulations significantly strengthen the relationship between environmental innovation and sustainability practices with a moderation coefficient β of 0.180 and a p-value <0.05. It indicates that stricter government regulations force companies to implement environmental innovation more effectively, encouraging better sustainability practices. In the Indonesian context, government regulations are often the main driver in implementing environmentally friendly policies. Laws such as Law No. 32 of 2009 concerning Environmental Protection and Management require companies to comply with specific environmental standards. In this case, regulation becomes an instrument that incentivizes companies to innovate in their environmental practices. The institutional theory supports it, which states that external regulatory pressure can encourage companies to adopt environmental responsibility actively (Berrone et al., 2013). Previous research by Nordin et al. (2014) found that companies facing strict environmental regulations are more likely to adopt sustainability practices in Malaysia. Similar things happened in Bali, where manufacturing companies that had to comply with local and national environmental regulations showed increased sustainability practices. Furthermore, these results provide practical implications that the government should continue to tighten environmental regulations and provide incentives for companies that carry out environmental innovation. It will not only improve sustainability at the company level but will also have a positive impact on the overall environmental condition.

**Theoretical and Practical Implications.** From a theoretical perspective, this study adds insight into the literature on the relationship between environmental innovation and corporate sustainability, especially in the context of government regulation moderation. This study supports the existing literature and provides additional empirical evidence that environmental innovation is essential to improving sustainability practices. This study also highlights the critical role of government regulation in strengthening the impact of environmental innovation on sustainability. In practical terms, the results of this study provide several recommendations for manufacturing companies in Bali. First, companies should be more active in adopting environmental innovation as part of their business strategy. Second, companies should establish closer relationships with the government to understand and comply with environmental regulations. Thus, companies will improve sustainability performance and meet applicable legal requirements. In addition, the government also needs to pay attention to the importance of clear and firm regulations and provide incentives for companies that implement sustainability practices. This support can be in tax reductions, technical assistance, or ease in obtaining operating permits for companies that adopt environmentally friendly technologies.

**Research Limitations.** This study has several limitations that need to be considered. First, this study only focuses on manufacturing companies in Bali, so the results may only be generalizable to some of Indonesia. Second, this study uses a survey method that may be limited to respondents' perceptions, which may lead to social bias or responses that are not entirely objective. In addition, this study only includes a few variables, such as environmental innovation, sustainability practices,

and government regulations. The model does not consider other variables that may have an influence, such as market pressure or global competition.

## CONCLUSION

This study examines the influence of environmental innovation on the sustainability practices of manufacturing companies in Bali and the moderating role of government regulations. Based on the results of the moderation regression analysis (MRA), it can be concluded that:

1. Environmental Innovation has a significant positive effect on corporate sustainability practices. Companies that are more innovative in environmental aspects tend to implement better sustainability practices.
2. Government Regulation significantly moderates the relationship between environmental innovation and sustainability practices. Stricter regulations strengthen the impact of environmental innovation on corporate sustainability.

The results of this study indicate that effective regulation and environmental innovation can improve sustainability practices in manufacturing companies, especially in Bali.

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