Eco-Innovation and Non-Eco-Innovation in Shaping Financial Performance: The Moderating Role of Online Consumer Reviews from Indonesian Cosmetic Industry

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ABSTRACT: This study examines the relationship between eco-innovation, non-eco-innovation, online consumer reviews, and financial performance within the Indonesian context. Data from Indonesian companies were analyzed using quantitative methods. The findings show that both eco and non-eco-innovation positively influence financial performance. Online Consumer Reviews play a crucial moderating role, enhancing these relationships. These insights have practical significance for businesses, suggesting a balanced innovation approach and active online reputation management to maximize financial benefits. Digital reputation management and diversified innovation strategies are essential for enhancing financial performance in today's business landscape.

KEYWORDS: Eco-innovation, financial performance, non-eco-innovation, online consumer reviews.

INTRODUCTION
The development of technology and globalization has significantly influenced consumer behavior and shaped their preferences towards products (Acikdilli et al., 2018; Cleveland et al., 2016). Online product reviews have become a key factor influencing consumer purchasing decisions in the Internet and social media era (Forghani et al., 2022; Shirazi et al., 2022; Sun & Ly, 2023). Furthermore, the increasing awareness of environmental issues has formed consumer preferences for eco-friendly products (Hameed et al., 2019; Nguyen et al., 2020; Pahlevi & Suhartanto, 2020). Eco-innovation is a business approach to creating products and services that integrate environmental sustainability with financial profitability (Fernando et al., 2019; Larbi-Siaw et al., 2022; Wu et al., 2023). Products with eco-innovation typically use more environmentally friendly raw materials, energy-efficient processes, and sustainable production methods (Fernando et al., 2021; Hojnik et al., 2023; Pichlak & Szromek, 2022). However, there still needs to be more research exploring in-depth how eco-innovation and non-eco-innovation products affect a company's financial performance and their impact on the environment (da Silva Rabêlo & de Azevedo Melo, 2019; Zhang et al., 2022). It is essential to understand the role of online consumer reviews in shaping perceptions of both types of products and how these perceptions impact a company's financial performance (Bilghian et al., 2018; Mariani & Borghi, 2020; Y. Wang et al., 2021). This research aims to fill this knowledge gap by investigating the effects of eco-innovation and non-eco-innovation products on a company's financial performance (Ganda, 2018; C. Wang et al., 2023; Zaman et al., 2021).

The novelty of this research lies in its multidimensional approach, integrating eco-innovation, non-eco-innovation products, and online consumer reviews in a comprehensive study. This research focuses on how eco-innovation and non-eco-innovation products influence a company's environmental and financial performance while considering the impact of online consumer reviews on perceptions and acceptance of these products. This approach is relatively new and has yet to be extensively explored in previous literature. By leveraging online consumer review data, this study offers insights into consumer preferences and sentiments towards eco-innovation and non-eco-innovation products, which can serve as valuable guidance for companies in developing sustainable business strategies that align with market demands. Additionally, by linking eco-innovation and non-eco-innovation products to a company's environmental and financial performance, this research provides a deeper understanding of the products' impact on financial aspects. This contribution is significant in raising awareness about sustainability issues and motivating companies to take sustainable actions to address the escalating environmental challenges.
LITERATURE REVIEW

Eco-innovation and financial performance

Salo et al. (2020) assess that eco-innovation refers to developing and implementing new products, processes, or practices that aim to minimize environmental impact while enhancing sustainability. The relationship between eco-innovation and financial performance is intricate, as it involves finding a delicate balance between investing in environmentally responsible initiatives and achieving profitability (Dharmayanti et al., 2023; Marin-Vinuesa et al., 2018; Yao et al., 2019). When executed effectively, eco-innovation can improve financial performance by reducing operational costs, enhancing brand reputation, and capitalizing on emerging green markets (Q. Wang et al., 2023). Companies prioritizing eco-innovation find themselves better positioned to meet evolving environmental regulations and consumer demands, ultimately translating these efforts into sustainable financial growth and long-term success (Larbi-Siaw et al., 2022; Mady et al., 2023; Salim et al., 2019). Therefore, the proposed hypothesis is as follows:

H1: Eco-innovation has a positive impact on financial performance.

Non-eco innovation product and financial performance

Non-eco innovation, in contrast to eco-innovation, refers to developing and implementing new products, processes, or practices that do not prioritize environmental sustainability or consider the ecological impact (Yurdakul & Kazan, 2020). The relationship between non-eco innovation and financial performance is complex and can vary depending on the specific circumstances and industries (Cassetta et al., 2023; Rabadán et al., 2020). While non-eco innovations may offer short-term financial gains by reducing costs or improving product efficiency, they often come with long-term risks, including environmental liabilities, regulatory non-compliance, and reputational damage (Cecere et al., 2020). Companies focusing solely on non-eco innovation may miss opportunities to adapt to evolving ecological trends and consumer preferences, potentially jeopardizing their financial performance and competitiveness in the increasingly sustainability-conscious marketplace (Kondala et al., 2023). Thus, the presented hypothesis can be stated as follows:

H2: Non-eco-innovation has a positive impact on financial performance.

Online consumer reviews as moderator

According to Hussain et al. (2018), online consumer reviews, also known as electronic word-of-mouth (eWOM), are assessments and opinions shared by consumers on the internet about products, services, or experiences. When considered as a moderator in the context of research or analysis, online consumer reviews play a pivotal role in influencing the relationship between variables. As a moderator, online consumer reviews can either strengthen or weaken the relationship between independent and dependent variables, thereby helping researchers understand the nuances of consumer behavior and preferences within the digital marketplace. These reviews often serve as a critical lens through which various factors, such as product quality, brand reputation, or marketing strategies, are evaluated, shaping the ultimate impact on consumer choices and, consequently, businesses’ outcomes and performance (Babić Rosario et al., 2020). In light of this, the hypothesis being put forth is the following:

H3: Online Consumer Review moderates the relationship between eco-innovation has a positive impact on financial performance. 

H4: Online Consumer Review moderates the relationship between non-eco-innovation has a positive impact on financial performance.

METHODOLOGY

The research will employ a quantitative approach to investigate the interplay between eco-innovation, non-eco-innovation, online consumer reviews, and financial performance within a sample of 144 cosmetic companies in Indonesia. Data from these selected companies will be gathered through surveys, financial reports, and online consumer review platforms. To measure each variable accurately, we will utilize established instruments consisting of five indicators for each variable, drawing upon previous research (Cassetta et al., 2023; Hussain et al., 2018; Kondala et al., 2023; Larbi-Siaw et al., 2022; Mady et al., 2023; Rabadán et al., 2020; Salim et al., 2019; Q. Wang et al., 2023). For the dependent variable, financial performance, indicators include metrics like return on assets (ROA), equity (ROE), and profit margins. Eco-innovation and non-eco-innovation initiatives will be measured using indicators such as introducing eco-friendly products, environmentally responsible manufacturing processes, and investments in sustainable practices. Online consumer reviews will be assessed through indicators such as overall rating, sentiment analysis of
consumer comments, and the volume of reviews. These instruments have been widely used and validated in prior studies, ensuring the reliability and validity of our measurements. A stratified random sampling method will be used to ensure representativeness, encompassing a diverse range of Indonesian industries. The study's primary focus will be examining these variables' relationships. Simultaneously, the analysis will consider online consumer reviews a moderator variable. Statistical techniques, such as multiple regression and moderation analyses, will be employed for data analysis using Smart PLS software. Ethical considerations, including data privacy protection and adherence to ethical guidelines for research involving human subjects, will be strictly observed throughout the research process. While recognizing potential limitations, such as the study's limited generalizability beyond the Indonesian context and possible biases in online consumer reviews, this research aims to provide valuable insights to the sampled Indonesian cosmetic companies regarding the influence of innovation strategies and online reviews on their financial performance.

RESULT
Data analysis demonstrates strong construct reliability and validity (see Table 1). High Cronbach's Alpha values (>0.7) indicate robust internal consistency for Eco-innovation, Non-eco-innovation, and Online Consumer Reviews. Rho_A values (>0.7) reinforce reliability. Eco-innovation exhibits strong outer loadings (>0.88), a CR of 0.976, and an AVE of 0.871, confirming reliability and convergent validity. Non-eco-innovation also shows strong outer loadings (>0.79), a CR of 0.963, and an AVE suggesting convergent validity (0.812). Financial Performance has varying loadings, adequate CR (0.943), but a slightly lower AVE (0.735), implying scope for convergent validity improvement. Online Consumer Reviews exhibit high loadings (>0.93), a CR of 0.985, and a robust AVE (0.916), confirming reliability and validity. Overall, the analysis supports construct reliability and validity, ensuring the suitability of the measurement model for subsequent analysis within the study context. Further examination may enhance convergent validity for some Financial Performance items.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Items</th>
<th>Outer Loading</th>
<th>Cronbach's Alpha</th>
<th>rho_A</th>
<th>CR</th>
<th>AVE</th>
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<tr>
<td>Eco-innovation</td>
<td>EINN1</td>
<td>0.9360</td>
<td>0.970</td>
<td>0.971</td>
<td>0.976</td>
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<td></td>
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<td></td>
<td>EINN3</td>
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<td></td>
<td>EINN4</td>
<td>0.9640</td>
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<td></td>
<td>EINN5</td>
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<td></td>
<td>EINN6</td>
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<tr>
<td>Non-eco-innovation</td>
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<td>0.956</td>
<td>0.963</td>
<td>0.812</td>
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<td></td>
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<td>0.927</td>
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Hypotheses H1 and H2, indicating positive associations between Eco-innovation (EINN), Non-eco-innovation (NECO), and Financial Performance (FPER), are supported. The data analysis yields significant T-statistics and low P-values, confirming these relationships. Hypotheses H3 and H4 introduce moderation effects by Online Consumer Reviews (OCR) on Eco-innovation and Non-eco-innovation's impact on FPER. The data demonstrate statistically significant relationships, affirming these hypotheses. OCR moderates the relationships, influencing how innovation strategies relate to FPER. Overall, the analysis confirms the direct effects of Eco-innovation and Non-eco-innovation on FPER. Additionally, Online Consumer Reviews significantly moderate these relationships, shaping their impact in this context (see Table 2).
The analysis confirms the acceptance of Hypothesis 1 (H1), demonstrating that Eco-innovation positively influences financial performance. Statistically, the relationship is significant (T-statistic: 2.238, P-value: 0.026), highlighting that companies investing in eco-innovation experience improved financial outcomes. It underscores the alignment of sustainable practices with financial success. Similarly, Hypothesis 2 (H2) is strongly supported. It suggests a positive impact of Non-eco-innovation on financial performance. The statistical results indicate a robust relationship (T-statistic: 6.684, P-value: 0.000), emphasizing that even traditional innovation approaches can enhance financial performance. It highlights the diverse avenues through which innovation contributes to financial success. Hypothesis 3 (H3) introduces Online Consumer Reviews as a moderator between Eco-innovation and financial performance. The analysis reveals a significant interaction effect (T-statistic: 5.241, P-value: 0.000), signifying that positive online reviews strengthen the link between eco-innovation and financial performance. It highlights the growing role of online sentiment in shaping financial outcomes. Likewise, Hypothesis 4 (H4), involving Online Consumer Reviews moderating Non-eco-innovation's impact on financial performance, receives strong support. The data demonstrates a significant interaction effect (T-statistic: 2.033, P-value: 0.043), indicating that positive online reviews amplify the relationship between non-eco-innovation and financial performance. In summary, the analysis underscores the positive impacts of both eco and non-eco-innovation on financial performance. Additionally, it emphasizes the vital moderating role of Online Consumer Reviews, highlighting the intricate relationship between innovation, consumer perception, and financial outcomes in the digital era.

The comprehensive data analysis provides significant insights into the interplay between innovation strategies, online consumer reviews, and financial performance. The study confirms that Eco-innovation and Non-eco-innovation have distinct and positive impacts on financial performance, highlighting the multifaceted nature of innovation's influence on economic outcomes. Additionally, the results reveal the crucial moderating role of Online Consumer Reviews in shaping the relationship between innovation strategies and financial performance. Positive online consumer sentiment enhances the economic benefits of both eco and non-eco-innovation initiatives, emphasizing the growing significance of digital reputation management in contemporary business practices. These findings collectively underscore the importance of adopting a holistic approach to innovation that incorporates sustainability and digital reputation management to maximize financial success. They also provide valuable insights for businesses seeking to navigate the evolving landscape of innovation and consumer engagement in an increasingly digital world.

Implication and limitation

The implications of this study hold significance both in theoretical and practical contexts. Theoretically, the findings contribute to understanding how different innovation strategies, including eco and non-eco-innovation, influence financial performance within the digital age. Moreover, the role of Online Consumer Reviews as a moderator underscores the importance of considering digital reputation management in innovation-performance relationships. From a practical perspective, businesses can draw several important lessons. Firstly, firms should adopt a balanced approach to innovation, recognizing that sustainable and conventional innovation strategies can positively impact financial performance. Secondly, companies should proactively manage their online consumer reviews and digital reputation, as this can amplify the economic benefits of their innovation efforts. It underscores the growing importance of online presence and reputation management in the contemporary business landscape.
However, it's essential to acknowledge the study's limitations. The research, while insightful, is context-specific, potentially limiting its generalizability. It relies on quantitative data, which may not fully capture the complexity of innovation strategies and consumer sentiment. Future research should explore these dynamics in different industries and regions, consider qualitative aspects of online reviews, and investigate causality and temporal factors. Additionally, examining the effectiveness of specific strategies for managing online reviews and their impact on financial outcomes could provide practical insights for businesses navigating the digital landscape.

REFERENCES


