Entrepreneurship and Innovation: An Empirical Study in Agro-industry

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Abstract. As the backbone of Indonesia’s economy, micro, small, and medium enterprises (MSMEs) are the vital business to be concerned with. This study aims to determine how entrepreneurship orientation and product innovation affect agro-industry firm performance. This study used a quantitative approach with 157 respondents from MSMEs in South Sulawesi, Indonesia. The analysis used structural equation modeling (SEM) with Smart-PLS application. The results showed that entrepreneurial orientation is an important factor that affects firm performance, and product innovation mediates the relationship between entrepreneurial orientation and firm performance. The article deepens our understanding of the entrepreneurship orientation construct by examining how firm performance is positively impacted and including product innovation as a mediating factor. The results from our sample lend credence to the idea that creating entrepreneurship orientation influences firm performance directly or indirectly through product innovation. This study provides a theoretical and empirical basis on entrepreneurship and innovation in agro-industry.

1 Introduction

Micro, small, and medium enterprises, which generate revenue and provide employment for many people involved, are the foundation of the economy in many nations, notably Indonesia [1]. The pandemic reduced sales for MSME business players, particularly when the state implemented a mitigation strategy and lockdown policy to prevent the spread of Covid-19 [2]. Although the impact on the Indonesian agriculture sector may be less severe than in other sectors, efforts must be taken by the government and the community to sustain food crop productivity to build a stable environment of food security and avoid food crises. The agriculture sector has been ignored in conventional entrepreneurship studies despite its significance at both the micro and macro levels of the economy. Graduates of agricultural entrepreneurship programs, on the other hand, try to expand their line of work into other industrial sectors [3]. This decision was made because of the agricultural scholarly field's vital energy and diversity.

The situation has drastically changed in recent years as a result of economic liberalization, less agricultural market protection, and fast-changing rural societies, with research on novel and varied phenomena in multiple countries worldwide [4]. Furthermore, these changes have enabled new entrants and entrepreneurs to modernize their agricultural entrepreneurship skill portfolio and develop, create, and sustain farm responses to changing environments with an emphasis on doing things better rather than coming up with new ideas for a sustainable future.

According to [4], in sustainable value creation (profit, people, planet, and purpose), sustainable agribusinesses must innovate and take risks in future operations. While looking at the importance of entrepreneurial challenge to understand firm performance, the present study attempts to identify the mediating impact of product innovation on the relationship between entrepreneurial orientation and firm performance and its outcome for entrepreneurs in the South Sulawesi region of Indonesia. South Sulawesi region in Indonesia has a large agro-industry, with 89% of the business in that region concentrated on farming, forestry, and fishery activity. Therefore, the purpose of this study is to ascertain how entrepreneurial orientation affects firm performance as well as how product innovation acts as a mediator.

2 Literature Review

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2.1 Entrepreneurial Orientation and Firm Performance

Entrepreneurial orientation is a commonly used variable to understand entrepreneurship in a company [5]. It can be explained as an organization’s attributes that sustain entrepreneurial behavior patterns of new products, services, technology, market, or business model inside the organization [6]. A company with a robust entrepreneurial orientation tends to be more prone to start exploratory, innovative, proactive, and potentially risky business activities and behaviors [7]. This study used five dimensions, which are innovativeness, risk-taking, proactiveness, competitive aggressiveness, and autonomy, to measure entrepreneurial orientation [8].

Entrepreneurial orientation has a favorable and considerable impact on the performance of SMEs and startups, according to prior research. [9]–[12]. Furthermore, the relationship between both variables is also analyzed in several industries, such as the technology industry [6] and the food and beverages industry [12]. These studies showed that entrepreneurial orientation is essential and should be considered to increase firm performance. Therefore, it is interesting to see the results of this variable in the agro-industries context. Hence, we propose hypothesis 1:

Hypothesis 1: Entrepreneurial orientation positively and effectively affects firm performance.

2.2 Entrepreneurial Orientation and Product Innovation

Product innovation can be defined as the commercial contribution of a new product or service that the firm uses to achieve competitive advantages in the market [13]. Product innovation is related to three common themes: (1) the growing interest of consumers; (2) the custom-made products; and (3) the extension of the current products [14]. Product innovation is one of the innovation types besides paradigm, position, and process innovation [15]. Nevertheless, there is no clear distinction between those types of innovation [15].

Entrepreneurial orientation can improve the company’s environmental scanning behavior, enabling the company to find and create opportunities for innovation, create new technologies and products, capture market opportunities, get market share, and prepare for higher risks [7]. Based on this explanation, entrepreneurial orientation is highly related to product innovation. Thus, we propose hypothesis 2:

Hypothesis 2: Entrepreneurial orientation has a positive effect on Product innovation.

2.3 Product Innovation and Firm Performance

The study of innovation and how it affects firm performance has been an interesting research topic for scholars [16]. The relationship between product innovation and firm performance is positive from the previous study [16]. Another study also researches more specific variable, such as green product innovation and how it can be helpful for the company [17]. Thus, it is interesting to see how product innovation and firm performance are related in the agro-industry sector.

Previous studies also showed that product innovation could mediate entrepreneurial orientation to firm performance [16] and that all three variables are highly related [18]. Therefore, we propose hypotheses 3 and 4:

Hypothesis 3: Product innovation has a positive effect on firm performance.

Hypothesis 4: Product innovation mediates the relationship between entrepreneurial orientation and firm performance.

3 Methods

This study used 157 agro-industry MSMEs owners in South Sulawesi, Indonesia, as the respondents. Business owners from South Sulawesi were chosen because it is one of the provinces in Indonesia that focuses on agro-industry. A 5-point Likert scale with answers ranging from "1" for strongly disagree to "5" for strongly agree was used in the survey's online questionnaire.

Entrepreneurial orientation was measured using autonomy, innovativeness, risk-taking, proactiveness, and competitive aggressiveness from [8], [10], [19]. Meanwhile, product innovation was measured as an observed variable [20]. Lastly, market and operational performance were used to measure firm performance based on [21].

The indicators underwent validity and reliability evaluations prior to the hypothesis testing. Based on [22], the validity test kept items with average variance extracted (AVE) >0.50 and path loadings >0.60. Furthermore, to test the reliability of the items, we use the minimum Cronbach’s Alpha between 0.60 and 0.90, also composite reliability 0.60-0.90. After deducting the invalid items, Table 1 displays the results of the validity and reliability tests.
Table 1. Test results for validity and reliability

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Items</th>
<th>Loadings</th>
<th>Alpha</th>
<th>Composite Reliability</th>
<th>Average Variance Extracted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurial Orientation</td>
<td>EO1</td>
<td>0.757</td>
<td>0.814</td>
<td>0.863</td>
<td>0.512</td>
</tr>
<tr>
<td></td>
<td>EO2</td>
<td>0.702</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EO3</td>
<td>0.682</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>EO4</td>
<td>0.737</td>
<td></td>
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<tr>
<td></td>
<td>EO5</td>
<td>0.693</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EO6</td>
<td>0.721</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Innovation</td>
<td>PI1</td>
<td>0.756</td>
<td>0.864</td>
<td>0.887</td>
<td>0.509</td>
</tr>
<tr>
<td></td>
<td>PI2</td>
<td>0.700</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PI3</td>
<td>0.798</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>PI4</td>
<td>0.641</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PI5</td>
<td>0.662</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm Performance</td>
<td>FP1</td>
<td>0.643</td>
<td>0.846</td>
<td>0.887</td>
<td>0.570</td>
</tr>
<tr>
<td></td>
<td>FP2</td>
<td>0.747</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FP3</td>
<td>0.844</td>
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<tr>
<td></td>
<td>FP4</td>
<td>0.828</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>FP5</td>
<td>0.771</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FP6</td>
<td>0.677</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4 Results and Discussion

4.1 Results

This research used structural equation modeling (SEM) by using the SmartPLS program to test the hypotheses. The significant relationship was measured by using a 95% confidence level. In addition, we tested four hypotheses to understand the direct and indirect effects of the relationship.

Based on the result, all four hypotheses significantly affect firm performance. Entrepreneurial orientation positively and significantly impacts firm performance (path coefficient = 0.338; p-value = 0.000). Therefore, hypothesis one is supported.

Hypothesis two indicates that entrepreneurial orientation also significantly and directly affects product innovation. Based on the results, the path coefficient for this relationship is 0.736, with a p-value of 0.000. Thus, hypothesis two is also supported.

Product innovation positively affects firm performance (path coefficient = 0.548; p-value=0.000). Therefore, hypothesis 3 is supported. Nevertheless, not only direct relationships show a significant relationship. Based on the result, the indirect effect of entrepreneurial orientation towards firm performance mediated by product innovation also shows a positive and significant effect (path coefficient = 0.403; p-values = 0.000). Furthermore, the path coefficient of this relationship is more significant than the path coefficient of the direct relationship between entrepreneurial orientation and firm performance. Thus, product innovation fully mediates the relationship between entrepreneurial orientation and firm performance, which means that hypothesis 4 is also supported. Therefore, all the hypotheses analyzed in this study are supported. Table 2 presents the full results of the hypotheses testing.

Table 2. The results of direct and indirect relationship

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Path Coef.</th>
<th>SD</th>
<th>T Stat</th>
<th>p-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: EO → FP</td>
<td>0.338</td>
<td>0.068</td>
<td>4.965</td>
<td>0.000***</td>
</tr>
<tr>
<td>H2: EO → PI</td>
<td>0.736</td>
<td>0.027</td>
<td>27.418</td>
<td>0.000***</td>
</tr>
<tr>
<td>H3: PI → FP</td>
<td>0.548</td>
<td>0.065</td>
<td>8.416</td>
<td>0.000***</td>
</tr>
<tr>
<td>H4: EO → PI → FP</td>
<td>0.403</td>
<td>0.049</td>
<td>8.247</td>
<td>0.000***</td>
</tr>
</tbody>
</table>

***p-value <0.001; SD = Standard Deviation. EO = Entrepreneurial Orientation; PI = Product Innovation; FP = Firm Performance

The R^2 in this study measures the proportion of the variance predicted from the dependent variables. From the results, 68.8 percent of firm performance can be explained by entrepreneurial orientation and product innovation, while 54.1 percent of product innovation can be explained by entrepreneurial orientation. Fig 1 shows the research model, path coefficients, p-values, and R^2 measurements.
From this study, the $F^2$ value of firm performance from entrepreneurial orientation is 0.168, which means that the model fit improved by 16.8% by adding entrepreneurial orientation in measuring firm performance. The $F^2$ value of firm performance from product innovation is 0.441 or 44.1%. These results show that entrepreneurial orientation has a medium effect on firm performance, and product innovation significantly affects firm performance. The $Q^2$ values are 0.385 for firm performance and 0.262 for product innovation.

4.2 Discussion

Previous studies have shown that entrepreneurial orientation significantly positively affects firm performance. This study confirms the results from Hypothesis 1. Thus, for agro-industry in Indonesia, it is crucial to maintain the entrepreneurial orientation.

Product innovation is also vital to increase firm performance (hypothesis 2). The result of this study is aligned with previous research. Therefore, agro-industry MSMEs should keep innovating their products to ensure their business runs well.

According to our findings, entrepreneurial orientation has a considerable impact on both product innovation and business performance (hypothesis 3). This result emphasizes entrepreneurial orientation and how agro-industry MSMEs need to apply it.

Another interesting result in our study discussed the importance of product innovation as the mediating variable in the relationship between entrepreneurial orientation and firm performance (hypothesis 4). Product innovation has proven to be vital for agro-industry. Therefore, entrepreneurial orientation and product innovation should be considered when agro-industry MSMEs want to improve their firm performance.

5 Conclusion

The research presented in this paper was designed to explore the roles played by entrepreneurship orientation and product innovation in determining the firm performance of micro, small, and medium enterprises in the South Sulawesi region in Indonesia. The study’s findings suggest that entrepreneurship orientation and product innovation have significant effects on firm performance. At the same time, product innovation also exerts an indirect influence on firm performance through an increase in entrepreneurship orientation. The following sections go into further detail on the theoretical and managerial implications of this study’s findings.

5.1 Theoretical Implications

It was found that entrepreneurship orientation significantly and positively affected firm performance. This result aligns with previous findings by [9]. For small enterprises, entrepreneurial orientation tends to have a more significant impact on a firm’s financial performance. Product innovation is significantly positively impacted by entrepreneurship orientation. This finding is consistent with previous research [23]. An increase in a company's entrepreneurial mindset can foster innovation. For the organization's survival and embrace of innovation, it is necessary to adapt to changing market conditions by embracing new technologies, developing new skills, and combining all internal and external resources that improve innovation.

It was found that product innovation had a positive effect on firm performance. It is consistent with earlier findings from [24]. Our research demonstrates that enterprises may build superior products and achieve exceptional performance in intense market rivalry by gathering customer information and responding to customer wants with innovative products and services. The capacity to adapt to client demands and expectations effectively is a vital resource in the development of innovative products.

5.2 Managerial Implications

The research's conclusions offer several valuable recommendations for practitioners. First, small firms are encouraged to create new products or services, implement new business strategies, and implement new technology. These innovative initiatives can provide a competitive advantage by distinguishing the company from its competitors and meeting customers' changing needs. Second, small businesses should be proactive in searching for new opportunities and discovering client
demands, which can lead to developing creative goods. Furthermore, working with external partners such as consumers, suppliers, and institutions can bring new ideas, perspectives, and resources for developing creative goods. Last, small businesses must demonstrate their capacity to offer high-quality, innovative products to create consumer loyalty and brand support, which can lead to excellent sales and profitability.

5.3 Limitations and Future Research

Despite its theoretical contributions and management consequences, this study has some things that could be improved. First and foremost, because the scope of this study is limited to South Sulawesi companies, there are questions about the external validity of the findings. Second, the results generalizability could be better due to the sampling method used to collect data for the study. Understanding contributing elements to company performance could benefit from including additional factors at the people level, such as qualities, abilities, values, and competencies, and considering more factors at the organizational level.

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