



## Mediating role of competitiveness between process innovation and financial performance: Internationalization moderation

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### Keywords:

Competitiveness

Financial performance

Internationalization

Process innovation.

### JEL Classification:

F23; L26; O31.

Received: 18 August 2023

Revised: 9 October 2023

Accepted: 12 January 2024

Published: 25 January 2024

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### Abstract

This study focuses on investigating the relationship between process innovation and financial success through firm competitiveness and the effect of internationalization as moderation on this association. Innovation becomes one of the most important parts for companies because it will create a competitive advantage and indirectly improve the company's financial performance. This study used a sample of 389 Craft Micro, Small and Medium Enterprises (MSMEs) in West Java, Indonesia. SEM Analysis Moment of Structural (AMOS) 24 is used to test the path and multigroup analysis during the data analysis process. The empirical evidence of this study indicates that process innovation and company competitiveness have a substantial positive relationship with the financial performance of MSMEs. Furthermore, efforts to improve the performance of MSMEs come directly from process innovation and business competitiveness. Indirectly, firm competitiveness does not mediate the connection between process innovation and financial performance. Besides, this study also found that internationalization significantly moderates the impact of firm competitiveness on financial performance. We use a sample of companies that include ultra-micro companies, where they are not yet familiar with a good financial recording system or an efficient production process. Therefore, craft SMEs must be able to make a good financial record (for accessing funds from banks) so they can transform into modern tools and optimize their process innovation by improving their production processes. Thus, SMEs can more easily reach international markets for better financial performance.

**Funding:** This study received no specific financial support.

**Institutional Review Board Statement:** The Ethical Committee of the Universitas Negeri Malang, Indonesia has granted approval for this study (Ref. No. 8.12.6/UN32.20/PB/2023).

**Transparency:** The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

**Data Availability Statement:** The corresponding author may provide study data upon reasonable request.

**Competing Interests:** The authors declare that they have no competing interests.

**Authors' Contributions:** Formal analysis, methodology, writing, correspondence, and revise the manuscript, Y.S.; supervising of the article, B.E.S., P.H. and A.W.; edited the manuscript, F.P.W. All authors have read and agreed to the published version of the manuscript.

## 1. Introduction

The effect of innovation on corporate survival has received much attention from researchers due to the rapid development of technology (Gómez-Prado et al., 2022; Lee, Lee, & Garrett, 2019; Rubera & Kirca, 2012; Tellis, Prabhu, & Chandy, 2009; Zheng et al., 2022). However, companies cannot rely solely on their product innovation to survive due to potential market failure (Chiesa & Frattini, 2011; Wan, Zhao, Liu, Dingçer, &

Yüksel, 2022) and/or rival imitation (Bu & Cuervo-Cazurra, 2020; Naranjo-Valencia, Jiménez-Jiménez, & Sanz-Valle, 2011) for new products. Therefore, several studies have broadened their focus to include other forms of innovation, such as process innovation, and have investigated their impact on improving business performance. As stated by Piening and Salge (2015), organizational competencies that handle various innovation-related activities help businesses increase the possibilities of process innovation activities and their profit margins. Process innovation is an important and inseparable part of every company, especially craft companies. According to Lee et al. (2019), process innovation may boost productivity, improve product quality, and save money and time (Martínez-Ros & Labeaga, 2009; Un & Asakawa, 2015). Hong, Kim, and Cin (2015) and Mercado-Caruso, Segarra-Oña, Ovallos-Gazabon, and Peiró-Signes (2020) have determined that organizations should concentrate more on establishing new business processes or systems in order to enter a competitive market. Process innovation is a sort of innovation that is desperately needed to keep the craft sector competitive (Chirumalla, 2021). Several studies have already been carried out to investigate the impact of process innovation on firm competitiveness or financial performance, as well as the impact of company competitiveness on financial performance; however, there are still gaps in the results. According to a study that looked at the influence of innovation on the competitiveness of manufacturing SMEs in Kenya, Kiveu, Namusonge, and Muathe (2019) prove that process innovation boosts company competitiveness. They highlighted that innovation is an essential activity that supports a company's viability and competitiveness in an increasingly competitive global marketplace. In their study of SMEs in China, Saleem, Li, Ali, and Mehreen (2020) observed that process innovation is favourably associated with business success. They contended that process innovation leads to the adoption of new techniques and strategies for improving the performance of SMEs. Likewise, Rosli and Sidek (2013) observed in their analysis a positive relationship between process innovation and company success. In contrast, Lee et al. (2019) discovered that process innovation has no meaningful influence on company performance, utilizing a sample of high-tech businesses in Korea. But Otero-Neira, Tapio Lindman, and Fernández (2009) support the assertion that process innovation is especially crucial for enterprises facing severe competition since it has an immediate impact on SMEs' productivity performance. Le and Ikram (2022) findings show that a firm's competitiveness affects its financial success in the Vietnamese SME sector. As a result, process innovation as a means of increasing firm competitiveness and advancing the performance of SMEs is an essential subject to investigate.

More excitingly, research on business competitiveness and financial performance, and moreover, the moderating effect of internationalization on SMEs, is still scarce. Internationalization is a challenge in and of itself for SMEs since it necessitates the development of knowledge, skills, and other competencies in order to dominate the intended international market share. Furthermore, uncertainties and constraints relating to the target country's culture, environment, and regulations constitute hurdles (Hill, 2007). Companies that can overcome these constraints and internationalize will gain a competitive edge in their home market (Boehe, 2016). The company's internationalization program intends to strengthen its competitive advantage by developing sales in new fields, and it is expected that new market shares will be developed, boosting the company's performance. This is important because, for craft companies, a large market share will make it easier for them to make a profit. Such research has not previously been carried out on craft SMEs in Indonesia, and this gap, combined with the role of internationalization in moderating corporate competitiveness and financial performance in Craft SMEs in Indonesia, was the motivation for this study. Therefore, this study focuses on investigating the relationship between process innovation (P.I.) and financial performance (F.P.) through firm competitiveness (F.C.) and the effect of internationalization as moderation on this association.

## **2. Literature Review**

### *2.1. Theoretical Underpinning*

This study describes the theory of innovation resource-based theory (RBT). RBT emphasizes that proper and optimal management of resources is necessary for an organization to be efficient and effective in its position (Barney, 1991; Penrose, 1959; Peteraf, 1993; Wernerfelt, 1984). Substantially, RBT believes that when resources are adequately optimized, there is a high probability of sustaining a competitive advantage (Soesetio, Soetjpto, Handayati, Winarno, & Palguna, 2023). RBT emphasizes the importance of resource availability and aggregation for company growth, as well as the advantages of resource diversity for market competitiveness. Developing a competitive advantage is possible when corporate resources are managed effectively. The main benefit of this method for organizations with limited resources, such as Craft, is to use resources that are more measurable and careful to obtain optimal results (Barney, 1991; Yang & Shafi, 2020). Furthermore, the resource-based innovation theory of Wernerfelt (1984) defines the ways that innovation should begin to utilize the company's main resources to gain a competitive advantage (Zefeng, Gang, Xiaorui, Yongmin, & Junjiao, 2018). In addition, this study elaborates the Resource Advantage Theory of Competition (RAToC) by emphasizing resource-based modernization based on motivation to achieve high bottom-line performance and competitive market pressure by analyzing competitors' products, benchmarking, and marketing tests (Varadarajan, 2023). According to RAToC, four fundamental elements compete for resources: competitive advantage, market segmentation, and outstanding financial performance. Kiveu et al. (2019) found that process innovation increases firm competitiveness. Otero-Neira et al. (2009) state that process innovation

is particularly important for firms facing stiff competition since it has an immediate influence on SMEs' productivity. Oke, Prajogo, and Jayaram (2013) highlighted the crucial role of process innovation in manufacturing enterprises for competitive advantage based on their specific skill; therefore, it must be emphasized as a significant competitive component.

### *2.2. Process Innovation*

Process innovation is the creation or improvement of business processes that result in increased efficiency, quality, or customer satisfaction. This might include altering the way activities are carried out, the equipment or technology utilized, the roles or responsibilities of employees, or the results or outputs of processes. Internal production goals drive process innovation, which consists of thriving and applying wholly new or considerably better techniques and procedures, production processes, or technologies (Chirumalla, 2021). Process innovation is commonly seen as a sort of innovation that preserves product features while reducing the cost of producing one product unit (Kiveu et al., 2019). Lower unit costs make it possible to reduce price, increase product demand, or generate higher profit margins (Rammer, 2016). Process innovation in services is often associated with improving service quality rather than merely cutting costs (Snyder, Witell, Gustafsson, Fombelle, & Kristensson, 2016). Process innovation can positively impact business performance, customer satisfaction, and competitive advantage by reducing costs and waste, increasing productivity and efficiency, improving quality and consistency, enhancing customer experience and loyalty, and driving a culture and innovation capability. Internal customers, such as workers or the firm itself, and/or external customers, such as business partners or end users, can benefit from process innovation.

### *2.3. Firm Competitiveness*

Hove, Sibanda, and Poee (2014) define business competitiveness as "a company's ability to surpass its competitors in terms of reducing costs and expanding commercial prospects." As a result, various competitive edge criteria, for example, lower prices, faster product development, higher value, and faster service levels, are used to assess a company's competitiveness. These elements contribute to improving company performance (Hove-Sibanda, Sibanda, & Poee, 2017). Businesses using high-quality consumables can greatly increase their sales and return on investment. In addition, companies that can find goods quickly, bring them to market, and innovate sustainably can become market leaders with large revenues (Canh, Liem, Thu, & Khuong, 2019; Madzimure, 2020). According to (Chikán, Czakó, Kiss-Dobronyi, & Losonci, 2022), firm competitiveness is the outcome of corporate operations (i.e., income and market share) that are under the scrutiny and certification of significant third parties (i.e., customers and investors). The business itself serves as the analytical unit in this context.

### *2.4. Financial Performance*

Financial success was the result of company management's attempts to properly manage company assets effectively over a certain period of time (Rudianto, 2013). Company performance might represent how well company management is executed (Cahyono, Siswanto, Istanti, Soesetio, & Zen, 2021). In order to assess the functionality of their firm and determine which financial operations were successful, businesses need to know the financial results. How well a company does in achieving its financial and market-oriented objectives serves as a measure of its performance (Madzimure, 2020). The better the financial management behavior of MSMEs, the greater the MSMEs' commercial success (Agustina & Istanti, 2022). Many companies often use financial dimensions to assess their success and compare it to the performance of other businesses in the market.

## **3. Method**

### *3.1. Data Collection and Sample*

The object of study is the handicraft SMEs in West Java, Indonesia. To gather the relevant data, questionnaires and semi-structured interviews were used for data collection. 550 individuals have been sent questionnaires; a total of 500 respondents responded to 15 question items, and 389 valid data points were selected. Next, data from 389 respondents was analyzed using the SEM analysis tool (Structural Equation Modelling).

### *3.2. Measurement*

Data measurement uses a Likert scale. Considerations in using the Likert scale are (1) convenience, (2) high reliability in sorting subjects based on perception, (3) flexibility and, (4) applicable. Answers to question items are scored according to a Likert scale, from 1 to 9. A score of 1 is for strongly disagreeing and a score of 9 is for strongly agreeing. Structural Equation Model (SEM) analysis is used to see the relationships between variables that have been built into the research framework model. The data used for SEM analysis must meet SEM assumptions. Goodness of fit (GOF) criteria are used to fulfil SEM assumptions, which have several types of fit indices that measure the degree of conformity between the hypothesized model and the data presented. The following criteria are used to assess goodness-of-fit (GOF): Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), Normed Fit Index (NFI), and Comparative Fit Index (CFI), Tucker

Lewis index (TLI), Incremental Fit Index (IFI), The Root Mean Square Error of Approximation (RMSEA), and Chi-square. The loading factor for all valid indicators is more than 0.5. All constructs are consistent or dependable.

3.3. Data Analysis

GOF is used to fulfil SEM assumptions, which have several types of fit indices that measure the degree of conformity between the hypothesized model and the data presented. Additionally, comparing and contrasting the partial mediation model and the full mediation model can help determine the level of significance of mediator variable (Ferdinand, 2014). Finally, the moderating impact of internationalization on the connection between F.C. and F.P. was studied using a multigroup analysis for international-based and domestic-based enterprises. In the AMOS SEM program, the sole method available for assessing moderator effects is multigroup. Therefore, according to Aiken, West, and Reno (1991), the sample was divided into two groups based on the average value of the moderator variable: 236 international-based firm respondents and 153 domestic-based company respondents. These factors may alter between groups if there is moderator impact (Wagner, 2011).

Table 1. Factors loading ( $\lambda$ ) research variable estimator.

Variables	Indicators	Factors loading ( $\lambda$ )	Conclusion
PI	PI1	0.893	Valid
	PI2	0.883	Valid
	PI3	0.886	Valid
	PI4	0.866	Valid
FC	FC1	0.780	Valid
	FC2	0.804	Valid
	FC3	0.814	Valid
	FC4	0.820	Valid
	FC5	0.859	Valid
	FC6	0.860	Valid
FP	FP1	0.875	Valid
	FP2	0.898	Valid
	FP3	0.853	Valid
	FP4	0.862	Valid

4. Results

4.1. Confirmatory Factor Analysis

Based on Table 1, the Confirmatory Factor Analysis (CFA) test using a standard assessment test or factor loading of 0.50 showed that all variable indicators in this study were valid. This is indicated by the fact that all indicators have a value greater than 0.50.

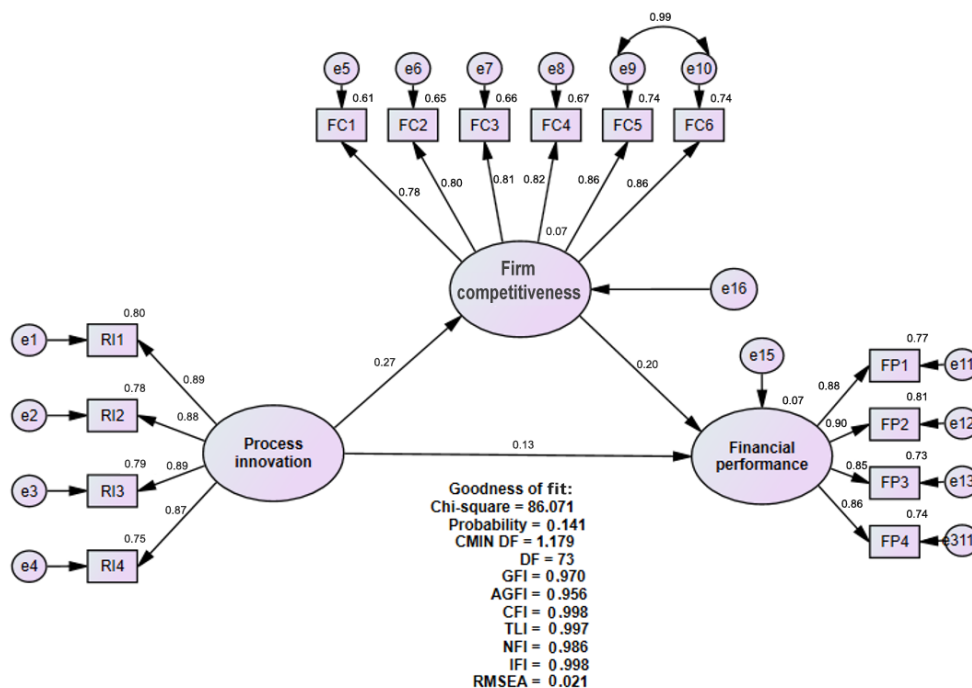


Figure 1. Structural equation modelling.

4.2. Structural Equation Modelling and Goodness of Fit Analysis

Before the model can evaluate the relationship between research variables in SEM, certain prerequisites must be met. Figure 1 shows that, in accordance with the guideline, GOF test results were achieved at a suitable value. GFI: 0.970; AGFI: 0.956; TLI: 0.997, implying that each of them is within the allowed SEM of 0.90. The RMSEA value is 0.02 0.08, and the minimum discrepancy divided by degrees of freedom (CMIN/DF) is 1.179, which is less than 2.00. Table 2 has further information. Thus, hypothesis testing may be performed, and the model merits further investigation.

Table 2. Evaluation of goodness of fit indices overall model SEM criteria.

Criteria	Cut off	Estimates	Decisions
Chi square	Expected small	86.071	Good fit
Probability	≥ 0.05	0.141	Good fit
CMIN DF	≤ 2.00	1.179	Good fit
GFI	≥ 0.90 ≤ 1	0.970	Good fit
AGFI	≥ 0.90 ≤ 1	0.956	Good fit
CFI	≥ 0.95 ≤ 1	0.998	Good fit
TLI	≥ 0.95 ≤ 1	0.997	Good fit
NFI	≥ 0.95 ≤ 1	0.986	Good fit
IFI	Close to 1	0.998	Good fit
RMSEA	≤ 0.08	0.021	Good fit

Table 3. Structural relationship output.

No	Relationship between variables	Standardized estimate	P-value	Label
1	PI → FC	0.282	0.000***	Accepted
2	FC → FP	0.203	0.000***	Accepted
3	PI → FP	0.142	0.017**	Accepted

Note: PI = Process innovation; FC = Firm competitiveness; FP = Financial performance. \*\*\* denotes p-value < 0.01, \*\* denotes p-value < 0.05.

Table 4. Intermediation effect to improve financial performance.

No	Technique to enhancing financial performance			Direct effect value		Intermediation effect
				1	2	
1	PI	→ FP (1)		0.132		
2	PI	→ FC (1)	→ FP (2)	0.267	0.200	0.053

Note: PI = Process innovation; FC = Firm competitiveness; FP = Financial performance

Table 5. Mediation significant test.

Mediation Model	Standardized regression			Chi-square	Df	P-value
	PI → FC	FC → FP	PI → FP			
Model 1 PI → FC → FP	0.229	0.238		91.789	74	0.079
Model 2 PI → FC → FP	0.267	0.200	0.132	86.071	73	0.141
Difference of chi-square and df				5.718	1	0.018

Note: PI = Process innovation; FC = Firm competitiveness; FP = Financial performance.

4.3. Result of Hypotheses Tests

Table 3 reveals that the standard regression weight is 0.282, indicating that P.I. and F.C. are positively associated at 1% (p-value ≤ 0.01). The standard regression weight was 0.203, which suggests that F.C. and F.P. are positively associated at 1% (p-value ≤ 0.01). The standard regression weight was 0.142, which shows that P.I. and F.P. are positively associated at 5% (p-value ≤ 0.05). By focusing on the intermediation effect value in Table 4, which is created by multiplying the direct impact value of the sequence of paths through which it goes, the efficacy of the pathway may be determined. Two pathways can be chosen to achieve F.P. These can be grouped as follows based on the coefficients of the intermediation: (1) P.I. → F.P., (2) P.I. → F.C. → F.P. with respective intermediation impact values of 0.132 and 0.053. F.C. observed to have a lower value of the intermediation effect in the full mediation equation than the direct effect. It implies that strong competition is not a mediating factor in the relationship between process innovation and company success.

Furthermore, the chi-square difference test in Table 5 can be used to determine F.C.'s role. By comparing the partial and complete mediation models, the degree of significance of the mediator variable may be assessed. In both models, F.C. acts as a moderating variable. The partial mediation model (model 1) connects P.I., F.C., and F.P., but the complete mediation model (model 2) ties them in a triangular relationship. The p-value of the difference between chi-square and df is 0.018, indicating that there is no discernible difference among the two models. This test verifies the conclusions of the route analysis, which demonstrated that F.C. could not function as a full mediator.

Table 6. Moderation test.

Hypothesis	International-based firms (n=236) Std. estimates (C.R)	Domestic-based firms (n=153) Std. estimates (C.R)	Conclusion
Internationalization moderates the impact of FC on FP	0.255 (6.774) ***	0.127 (8.056)	International-based further enhance the FC on FP relationship
Internationalization moderates the impact of FC on FP	The unconstrained model (Chi-square = 327.336; D.F. = 148) and the fully constrained model for structural weight (Chi-square = 382.380; D.F. = 162) result difference in chi-square = 54.044; D.F. = 14; P = 0.000		Accepted

Note: PI = Process innovation; FC = Firm competitiveness; FP = Financial performance.  
\*\*\* denotes p-value < 0.01.

The moderating influence of internationalization on both groups was investigated using a multigroup approach. The p-values for all comparison models are shown in Table 6. The structural weights model shows that there is a big difference between the international-based model and the domestic-based model, which is statistically significant. This conclusion is emphasized by the difference in test results between unconstrained and completely confined, which are provided in Table 6. To evaluate the likelihood of significance, the difference between unconstrained and completely restricted chi-square with 2 and degree of freedom values is utilized. In addition, the chi-square test was used to assess differences between the two groups, and the difference between the unconstrained model (chi-square = 327.336; D.F. = 148) and the fully constrained model for structural weight (chi-square = 382.380; D.F. = 162) was chi-square = 54.044; D.F. = 14; P = 0.000. These findings suggest that internationalization moderates the F.C.-F.P. connection. These results prove that internationalization is engaged in the F.C.-F.P. interaction in the context of MSMEs in the Indonesian craft industry.

## 5. Discussion

### 5.1. Impact of P.I. on F.C.

We discovered a substantial positive association between P.I. and F.C. based on hypothesis testing. The process of reengineering and strengthening internal operations and business process capabilities is termed process innovation (Rosli & Sidek, 2013). Procedures, rules, organizational structures, and new information that is incorporated in goods, distribution methods, and consumer demands are all examples of process innovation. In addition to purchasing, accounting, and computing, process innovation encompasses new or considerably enhanced equipment, techniques, and software for additional support tasks. Process innovation seeks to reduce production or delivery unit costs, improve quality, or produce and provide new or significantly improved commodities (Kiveu et al., 2019). As a result, process innovation will considerably boost firm competitiveness. These findings are in line with those of Kiveu et al. (2019) and Pratali (2003), who discovered that process innovations become an important factor in increasing competitiveness. According to Otero-Neira et al. (2009), process innovation is directly associated with organizations that confront a lot of rivalry.

### 5.2. Impact of P.I. on F.P.

Based on the hypothesis testing conducted, we found a significant positive relationship between P.I. and F.P. Benefits of P.I. are broadly classified as increasing productivity, improving product quality, and reducing costs and time (Martínez-Ros & Labeaga, 2009; Un & Asakawa, 2015). Entrepreneurs who have run their own firms recognize the importance of innovation in improving the bottom line of a business (Sunyoto, Pratikto, Sudarmiatin, & Sopiah, 2023). Varis and Littunen (2010) discovered that process innovation is positively connected with firm success in their research of SMEs in Finland. Likewise, Rosli and Sidek (2013) discovered a favourable link between process innovation and firm performance in their study. The ability of process innovation in enhancing financial performance is reliant upon the capacity to optimize processes for efficiency. Craft businesses may enhance their process innovation by reducing costs, increasing flexibility, and increasing capacity (Rammer, 2016). Process innovation usually increases the efficiency of creating or defining a product or service (Akgün, Keskin, & Byrne, 2009). Internal production goals drive process innovation, which consists of thriving and applying wholly new or considerably better techniques and procedures, production processes, or technologies (Chirumalla, 2021). Lower unit costs make it possible to reduce prices, increase product demand, or generate higher profit margins (Rammer, 2016). Lee et al. (2019) found a significant association between the two.

### 5.3. Impact of F.C. on F.P.

Based on the hypothesis testing conducted, we discovered a statistically significant positive association between F.C. and F.P. How well a company does in achieving its financial and market-oriented objectives serves as a measure of its performance (Madzimore, 2020). Numerous organisations frequently evaluate their performance and contrast it with other companies' in the market using financial metrics. Small and medium-sized enterprises (SMEs) and entrepreneurs must learn how to orient their operations in order to adapt to new

internal and external variables driving their competitive edge and perhaps increase their performance (Perdana & Prasasti, 2023). A competitive advantage over rival businesses can be attributed to solid company performance. Previous studies have used financial and market variables to evaluate company success (Daud et al., 2022; Monteiro, Vale, Leite, Lis, & Kurowska-Pysz, 2022). In RAToC, firms seek a competitive edge in the market by gaining comparative resource advantages. As a result of this competitive advantage, improved financial outcomes are achieved. A competitive disadvantage, on the other hand, results in a competitive market disadvantage and lower commercial performance. Finally, balancing resources leads to balancing market presence, which leads to balancing financial performance. According to RAToC, competition is an endeavor to manage resources in such a manner that one gets a competitive edge in the market and thus affects business performance (Hunt, 2000; Varadarajan, 2023). Many studies have been carried out to study the link between corporate competitiveness and financial success. According to new research by Le and Ikram (2022) and Madzimore (2020), corporate competitiveness has a major impact on financial performance.

#### *5.4. F.C. Mediates the Relationship of P.I. and F.P.*

In theory, corporate competitiveness is frequently examined through the lens of competencies, emphasizing the importance of internal resources for a firm's competitive performance, such as the entrepreneurial spirit, corporate strategies, intellectual capital, and physical assets (Bartlett & Ghoshal, 1989; Hunt, 2012). The major goal of RAToC is to achieve great financial performance as a result of holding a competitive position. This competitive advantage is provided by consumers' expectations that they will obtain the anticipated items at a cheaper price than competitors. We must be able to access and manage resources effectively in order to develop these offers. Resource optimization provides a competitive advantage and enhances financial performance (Arnett & Madhavaram, 2012; Varadarajan, 2023). However, our results show that F.C. does not mediate the relationship between P.I. and F.P.

#### *5.5. Internationalization Moderates the Relationship of F.C. and F.P.*

The impact of internationalization on the strong competitiveness relationship created by process innovation on company performance. We split the sample into two groups, international-based and domestic-based, for analysis. The findings indicate that internationalization influences the association between firm competitiveness and financial performance. International-based firms are more able to strengthen the effect of firm competitiveness on increasing financial performance. International companies have several advantages over domestic companies. Some of these advantages include access to new markets for products and services and easier access to local market advantages such as labor, shipping lines, and natural resources. The company's internationalization initiatives attempt to boost the firm's performance by expanding sales in new fields with the objective of creating new market shares (Soesetio, Rudhiningtyas, Sudarmiatin, & Mukhlis, 2021). Thus, the company will be more able to improve its competitiveness so that its performance can be increased.

## **6. Conclusion**

The focus of this study is to determine the elements that determine the financial performance of craft SMEs in Indonesia. This study experimentally examines the connection between process innovation (P.I.) and financial success (F.P.) through business competitiveness (F.C.) and the effect of internationalization as moderation on this association. This study uses the resource-base theory of innovation. First, our findings show that the bottom line for Handicraft SMEs is determined by P.I., which does not have to go through the F.C. Meanwhile, through internationalization moderation, international-based firms are better able to strengthen the influence of corporate competitiveness on improving financial performance compared to domestic-based firms. Therefore, the government must support Craft SMEs through entrepreneurship training and easy access to funding for micro-scale businesses. Thus, companies can increase their process innovation and become international-scale companies to increase their competitiveness.

The management implication of this research is that the F.C. provides an alternative for increasing the process innovation of MSMEs craft. The limitations of this study are as follows: (a) Because this study was carried out in West Java, Indonesia, the results cannot be generalized to other locations. (b) Due to the fact that this study only covered craft SMEs, this conclusion cannot be generalized to other types of SMEs. (c) The researchers have acknowledged no additional breakthroughs. As a result, more research may be conducted.

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