# Interdependence Relationship of Internationalization—Performance in Manufacturing Firms Listed in Indonesia Stock Exchange and Chinese Stock Exchanges

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ABSTRACT: The purpose of this paper is to investigate the interrelationship between performance and internationalization of Indonesian and Chinese manufacturing firms. This paper used a sample of 88 Indonesian firms and 989 Chinese firms from Indonesia stock exchange, Shanghai stock exchange, and Shenzhen stock exchange over the 2014 to 2018 period and applied the methods of panel least squares regression to examine the relationships. The results showed that the firm's internationalization degree has an inverted S-shaped relationship on a firm's performance in Indonesia firms and has a U-shaped relationship in Chinese firms. The firm's overseas expansion speed has an N-shaped relationship on a firm's performance both in Indonesia firms and Chinese firms. In turn, the firm's performance has S-shaped on firm's internationalization degree in Indonesia firms and has inverted U-shaped in Chinese firms. The firm's performance doesn't have a significant relationship on firm's internationalization overseas expansion speed in Indonesia firms and Chinese firms.

*Keywords*: Performance, internationalization, manufacturing firm.

## 1 INTRODUCTION

Regarding the relationship between internationalization and the firm's performance, there is still no consistent conclusion. According to the existing research, there are mainly three types of relationships between internationalization and performance, namely linear relationship (positive linear, negative linear), quadratic relationship (U-shaped, inverted U-shaped), and cubic relationship (S-shaped). Some scholars even believe that there is no relationship between the performance of the firm and internationalization. In previous studies, the data used came from different countries, different industries, different periods, and even different variables made the results varied.

So far, the research on the relationship between internationalization and performance in the existing literature is generally one-way, that is, only the impact of internationalization on performance, and the impact of performance on internationalization is rarely conducted.

The population of China and Indonesia ranks first and fourth respectively in the world population rankings, with a vast consumer market and labor market. According to the 2019 World Investment Report, China and Indonesia ranked second and 18th respectively in attracting foreign investment in 2018. As the countries with a strong attraction for world capital, the relationship between internationalization and performance in these two countries is worth studying.

Therefore, this paper will use the same variables to study the two-way relationship between the internationalization and performance of China and Indonesia's manufacturing industry in 2014-2018.

The objectives of this study are to answer the following questions: (1) Does the degree of internationalization have an impact on the performance of Indonesia/Chinese firms? (2) Does the speed of international expansion have an impact on the performance of Indonesia/Chinese firms? (3) Does the performance have an impact on the degree of internationalization of Indonesia/Chinese firms? and (4) Does the performance have an impact on the speed of international expansion of Indonesia/Chinese firms?

In previous empirical studies, there were different conclusions about the relationship between internationalization and performance. Hsu (2006) and Elango (2006) found a positive linear correlation between internationalization and performance. Jin

(2014) stated a negative linear correlation between internationalization and performance. Yang (2017), Zhou (2018), and Velez-Calle (2018) concluded a U-shaped relationship between internationalization and performance. Grant et al. (1988), Chen et al. (2014), Ganvir & Dwivedi (2017), and Zhang (2013) proposed an inverted U-shaped relationship between internationalization and performance. Contractor (2003), Lu & Beamish (2014), and Wu et al. (2012) scrutinized an S-shaped relationship between internationalization and performance.

According to the international three-stage theory of Contractor et al. (2003), firms begin to learn global operations in the initial stage of internationalization and the learning cost is higher than the profits obtained by overseas operations, so corporate performance declines. In the second stage, the firm adapted to offshore operations, the scale effect increased, and the performance improved. In the third stage, the firm expanded to a broader and deeper market, the cost of coordinating various resources increased, and the performance of the firm declined.

Regarding the relationship between performance and internationalization, although few scholars have studied this topic, Jung & Bansal (2009) found that there is an inverted U-shaped relationship between them. Firms with good performance and those with poor performance are more inclined to choose a low-risk internationalization level.

H1: The degree of internationalization of Indonesian firms has an impact on the performance of firms.

H2: The speed of international expansion of Indonesian firms has an impact on the performance of firms.

H3: The degree of internationalization of Chinese firms has an impact on the performance of firms.

H4: The speed of international expansion of Chinese firms has an impact on the performance of firms.

H5: The performance of Indonesian firms has an impact on the degree of internationalization.

H6: The performance of Indonesian firms has an impact on the speed of international expansion.

H7: The performance of Chinese firms has an impact on the degree of internationalization.

H8: The performance of Chinese firms has an impact on the speed of international expansion.

## 2 RESEARCH METHODS

This research was based on data from Indonesian and Chinese manufacturing listed firms from 2014 to 2018. Indonesia's data was collected from the official website of the Indonesia Stock Exchange (www.idx.co.id) and the official website of each firm. The data of Chinese firms was collected from the Wind database, which is widely used by the Chinese financial circle. After deleting the firm that cannot provide complete data for 2014-2018, this paper took the remaining 88 Indonesian firms and 989 Chinese firms as research objects.

This study used foreign sales to total sales (FSTS) to measure the degree of internationalization and use foreign sales growth (FSG) as the indicator of the speed of expansion. This study used return on assets (ROA) to measure firm performance. The firm's asset-liability ratio (DEBT), the size of the firm (SIZE), the age of listing of the firm (AGE), and the exchange rate of the US dollar against the Indonesian rupiah or the Chinese yuan (FX) are the four control variables used in this study.

The empirical analysis used panel data over the 2014 to 2018 period and based on regression models for testing of these eight hypotheses. Each hypothesis was tested by three models, which are linear model, quadratic model, and cubic model.

This paper used the panel data model to identify the interdependence relationship between internationalization and performance.

Model 1, 2, and 3 tests for the linear, quadratic, and cubic relationship between the degree of internationalization and performance of Indonesian firms. Model 4, 5, and 6 tests for the linear, quadratic, and cubic relationship between speed of internationalization expansion and performance of Indonesian firms. Model 7, 8, and 9 tests for the linear, quadratic, and cubic relationship between the degree of internationalization and performance of Chinese firms. Model 10, 11, and 12 tests for the linear, quadratic, and cubic relationship between the speed of internationalization expansion and performance of Chinese firms.

Model 13, 14, and 15 tests for the linear, quadratic, and cubic relationship between performance and degree of internationalization of Indonesian firms. Model 16, 17, and 18 tests for the linear, quadratic, and cubic relationship between performance and the speed of internationalization expansion of Indonesian firms. Model 19, 10, and 21 tests for the linear, quadratic, and cubic relationship between performance and degree of internationalization of Chinese firms. Model 22, 23, and 24 tests for the linear, quadratic, and cubic relationship between performance and the speed of internationalization expansion of Chinese firms.

# 3 RESULTS AND DISCUSSIONS

Table 1. Relationship FSTS-ROA (Indonesia)

| Variable | ROA Indonesia (n=440) | | |
| | Model 1 | Model 2 | Model 3 |
| --- | --- | --- | --- |
| C | 0.3655 | 0.3727 | 0.3510 |
| FSTS | -0.0334*** | -0.1435*** | -0.2938*** |
| FSTS^2 | | 0.0984** | 0.5026** |
| FSTS^3 | | | -0.2821** |
| DEBT | -0.0432*** | -0.0455*** | -0.0483*** |
| SIZE | -0.0121*** | -0.0115*** | -0.0103*** |
| AGE | 0.0027*** | 0.0023*** | 0.0023*** |
| FX | -0.0627*** | -0.0589*** | -0.0579*** |
| F-Stat | 50.43*** | 51.38*** | 52.02*** |
| Adj R^2 | 0.9120 | 0.9143 | 0.9161 |

*** ($p<0.01$), ** ($0.01<p<0.05$), * ($0.05<p<0.1$)

According to Table 1, Model 1, Model 2, and Model 3 indicate that there is a significant relationship between the degree of internationalization and performance in Indonesia firms. Although the F statistics of these three models are significant, because Model 3 has a larger R square, that means the independent variable can explain the dependent variable more, Model 3 is more suitable for the hypothesis 1. Due to the coefficient of FSTS^3<0, so there is an S-shaped relationship between the degree of internationalization and performance in Indonesia firms.

Table 2. Relationship FSG-ROA (Indonesia)

| Variable | ROA Indonesia (n=440) | | |
| | Model 4 | Model 5 | Model 6 |
| --- | --- | --- | --- |
| C | 0.3574 | 0.3670 | 0.3750 |
| FSG | -0.0014 | 0.0018** | 0.0053*** |
| FSG^2 | | -0.0006*** | -0.0028*** |
| FSG^3 | | | 0.0002*** |
| DEBT | -0.0427*** | -0.0409*** | -0.0361** |
| SIZE | -0.0120*** | -0.0124*** | -0.0127*** |
| AGE | 0.0026*** | 0.0026*** | 0.0025*** |
| FX | -0.0720*** | -0.0724*** | -0.0792*** |
| F-Stat | 48.83*** | 48.91*** | 52.48*** |
| Adj R^2 | 0.9093 | 0.9103 | 0.9168 |

*** ($p<0.01$), ** ($0.01<p<0.05$), * ($0.05<p<0.1$)

The research results are consistent with the Three-Stage Theory of International Expansion from Contractor et al. (2003). According to the theory, at the first stage of internationalization, the firm as the newcomer to enter the international market and has no international operation experience; therefore, the learning cost is higher than the profit from oversea sales, and the firm's performance is declining. At the second stage of internationalization, the firm already has experience in international operations, the cost of overseas study is declining, and the profit of overseas sales is increasing, so the performance of the

firm is improved. When the degree of internationalization of the firm is high enough, it will enter the third stage of internationalization. At this stage, as firms continue to deepen the depth of internationalization, expanding these smaller markets requires more resources, so the cost of expanding the market exceeds the profits of its overseas operations, so the firm's performance begins to decline.

The regression results in Table 3 are consistent with Table 2.

Table 3. Relationship FSG-ROA (China)

| Variable | ROA China (n=989) | | |
| | Model 10 | Model 11 | Model 12 |
| --- | --- | --- | --- |
| C | -0.2037 | -0.2059 | -0.2004 |
| FSG | 0.0001*** | 0.0003*** | 0.0009*** |
| FSG^2 | | -0.0001*** | 0.0001*** |
| FSG^3 | | | 0.0001*** |
| DEBT | -0.1585*** | -0.1586*** | -0.1602*** |
| SIZE | 0.0153*** | 0.0154*** | 0.0151*** |
| AGE | -0.0028*** | -0.0028*** | -0.0027*** |
| FX | -0.0436*** | -0.0430*** | -0.0428*** |
| F-Stat | 27.87*** | 27.95*** | 28.04*** |
| Adj R^2 | 0.8437 | 0.8442 | 0.8448 |

*** ($p<0.01$), ** ($0.01<p<0.05$), * ($0.05<p<0.1$)

Table 4. Relationship FSTS-ROA (China)

| Variable | ROA China (n=989) | | |
| | Model 7 | Model 8 | Model 9 |
| --- | --- | --- | --- |
| C | -0.2154 | -0.1743 | -0.1739 |
| FSTS | -0.0280*** | -0.0838*** | -0.0889*** |
| FSTS^2 | | 0.0594*** | 0.0751 |
| FSTS^3 | | | -0.0098 |
| DEBT | -0.1660*** | -0.1547*** | -0.1541*** |
| SIZE | 0.0165*** | 0.0145*** | 0.0145*** |
| AGE | -0.0032*** | -0.0028*** | -0.0028*** |
| FX | -0.0470*** | -0.0461*** | -0.0458*** |
| F-Stat | 28.44*** | 29.12*** | 28.70*** |
| Adj R^2 | 0.8464 | 0.8497 | 0.8479 |

*** ($p<0.01$), ** ($0.01<p<0.05$), * ($0.05<p<0.1$)

Table 2 and Table 3 present the regression results about the relationship between the speed of internationalization and performance in Indonesia and Chinese firms. According to the result of research, the independent variables both in Table 2 and Table 3 are significant to the variable dependent. Besides, the F statistic is significant in each model. However, in Table 2, the R square of Model 6 is the largest, and the R square of Model 12 in Table 3 is the largest; therefore, Model 6 is accepted by hypothesis 2, and Model 12 is accepted by hypothesis 4. The independent variables FSG^3 are greater than 0 in Tables 2 and 3, so the international expansion speed of

Indonesian and Chinese firms has an N-shaped relationship.

The N-shaped means that with the acceleration of the firm's external expansion, the firm's performance has three stages of change. Generally speaking, the speed of international expansion of a firm is positively related to its performance, which means that the faster the firm expands, the better its performance. However, when the firm's international expansion is too fast, the firm's performance is not always rising, it will first decline and then rise.

According to Table 4, Model 7, Model 8, and Model 9 indicate that there is a significant relationship between the degree of internationalization and performance in Chinese firms. Although the F statistics of these three models are significant, because Model 8 has a larger R square, that means the independent variable can explain the dependent variable more, Model 8 is more suitable for the hypothesis 3. Furthermore, because of the coefficient of FSTS^2>0, so there is a U-shaped relationship between the degree of internationalization and performance in Chinese firms. The research results are consistent with the Three-Stage Theory of International Expansion from Contractor et al. (2003) for the first two stages.

Table 5. Relationship ROA-FSTS (Indonesia)

| Variable | FSTS | | |
| | Indonesia (n=440) | | |
| | Model 13 | Model 14 | Model 15 |
| --- | --- | --- | --- |
| C | 0.2887 | 0.2761 | 0.2919 |
| ROA | -0.0632*** | -0.1048*** | -0.1333*** |
| ROA^2 | | 0.1030** | 0.6344*** |
| ROA^3 | | | -0.6984*** |
| DEBT | -0.0365*** | -0.0253*** | -0.0303*** |
| SIZE | -0.0008*** | -0.0005* | -0.0007* |
| AGE | 0.0013*** | 0.0012*** | 0.0008*** |
| FX | 0.0010 | -0.0022 | -0.0013 |
| F-Stat | 3729.21*** | 2512.95*** | 4088.18*** |
| Adj R^2 | 0.9987 | 0.9981 | 0.9989 |

*** ($p<0.01$), ** ($0.01<p<0.05$), * ($0.05<p<0.1$)

According to Table 5, all independent variables ROA and the F statistic are significant in all three models. However, the adjusted R square at the Model 15 is larger than others; thus, the Model 15 is the best choice to the relationship between the firm's performance and degree of internationalization for the hypothesis 5. Also, the coefficient of ROA^3<0, so there is an S-shaped relationship between performance and the degree of internationalization in Chinese firms.

The S-shaped relationship between a firm's performance and internationalization indicates that as the performance improves the level of internationalization first declines and then rises and then de-

clines. In the first stage, the firm's performance is low, and the firm's ability to withstand risks is weak, so it is more focused on the domestic market. As the firm's performance improved, when the performance reached a medium level, the firm began to seek a broader international market, so the degree of internationalization increased. In the third stage, when the firm's performance reached a high level, to reduce the risk of cross-border operations, the firm turned its attention back to the domestic market.

Table 6. Relationship ROA-FSTS (China)

| Variable | FSTS | | |
| | China (n=989) | | |
| | Model 19 | Model 20 | Model 21 |
| --- | --- | --- | --- |
| C | 0.3209 | 0.3229 | 0.3236 |
| ROA | -0.0632*** | -0.0711*** | -0.0709*** |
| ROA^2 | | -0.0774*** | -0.0813*** |
| ROA^3 | | | -0.0103 |
| DEBT | -0.0145*** | -0.0099** | -0.0094** |
| SIZE | -0.0034*** | -0.0036*** | -0.0036*** |
| AGE | -0.0009*** | -0.0008*** | -0.0008*** |
| FX | 0.0074*** | 0.0064*** | 0.0064*** |
| F-Stat | 614.80*** | 583.07*** | 585.87*** |
| Adj R^2 | 0.9920 | 0.9915 | 0.9916 |

*** ($p<0.01$), ** ($0.01<p<0.05$), * ($0.05<p<0.1$)

According to Table 6, Model 19 and Model 20 indicate that there is a significant relationship between the firm's performance and degree of internationalization in Chinese firms. Although the F statistics of these three models are significant, because the firm's performance in Model19 and Model 20 are both significant on internationalization, and the R square of the two models are almost the same, so Model 20 is more suitable for the hypothesis 6 and because of the coefficient of ROA^2<0, so there is an inverted U-shaped between the performance and degree of internationalization. The results of this study are consistent with Jung & Bansal (2009).

Table 7. Relationship ROA-FSG (Indonesia)

| Variable | FSG | | |
| | Indonesia (n=440) | | |
| | Model 16 | Model 17 | Model 18 |
| --- | --- | --- | --- |
| C | 0.1265 | 0.1149 | 0.1158 |
| ROA | 0.1778* | 0.4848*** | 0.5001*** |
| ROA^2 | | -0.9792 | -0.4848 |
| ROA^3 | | | -1.3087 |
| DEBT | -0.0179 | -0.0061 | -0.0077 |
| SIZE | 0.0012 | 0.0007 | 0.0005 |
| AGE | -0.0029*** | -0.0024*** | -0.0023*** |
| FX | -0.0194 | -0.0112 | -0.0107 |
| F-Stat | 1.21 | 1.52 | 1.35 |
| Adj R^2 | 0.0023 | 0.0071 | 0.0056 |

*** ($p<0.01$), ** ($0.01<p<0.05$), * ($0.05<p<0.1$)

The regression results in Table 8 are consistent with Table 7.

Table 8. Relationship ROA-FSG (China)

| Variable | FSG China (n=989) | | |
|---|---|---|---|
| | Model 22 | Model 23 | Model 24 |
| C | -16.9666 | -17.8223 | -17.2887 |
| ROA | 2.6010*** | 2.4239*** | 2.2667*** |
| ROA^2 | | 3.0185** | 1.0553 |
| ROA^3 | | | -1.1657 |
| DEBT | 0.3695*** | 0.4346*** | 0.4428*** |
| SIZE | 0.8424*** | 0.8814*** | 0.8576*** |
| AGE | -0.0860*** | -0.0905*** | -0.0895*** |
| FX | -0.9216*** | -0.9819*** | -0.9705*** |
| F-Stat | 1.66*** | 0.13*** | 1.71*** |
| Adj R^2 | 0.1163 | 0.1345 | 0.1245 |

*** ($p<0.01$), ** ($0.01<p<0.05$), * ($0.05<p<0.1$)

According to Table 7 and Table 8, the fact that the R square is too small means that the degree of interpretation of the dependent variable is deficient, so there is no significant correlation between the performance of the firm and the speed of internationalization, the larger the size of the Indonesian firm, the lower its performance and internationalization.

According to the data in Table 1-6, both Indonesian firms or Chinese firms have a similar tendency of the higher the firm's asset-liability ratio, the lower the performance and internationalization. The larger the size of the firm in China, the higher the performance and the lower the degree of internationalization. The smaller the size of the firm in Indonesia, the higher the performance and the lower the degree of internationalization. For Indonesian firms, the older the firms, the better the performance and the higher the degree of internationalization. In contrast to Chinese firms, the older the firm, the lower the performance, and the lower the degree of internationalization. The worse the depreciation of the local currency, the worse the performance of the firm, but the depreciation of the local currency is conducive to the high level of internationalization of Chinese firms, but has no significant impact on Indonesian firms.

## 4 CONCLUSION

The results of this study have implications for investors, managers, public policymakers, and researchers. The empirical results of this study prove that in different countries, since each country's national conditions are different, so even using the data from the same period, the same industry, and using the same variables, there is no consistent conclusion can be drawn. The average value of the variables obtained from the manufacturing industries in Indonesia and China shows that the overseas expansion of Chinese manufacturing firms is about five times faster than that of Indonesian firms in 2014-2018, but the average internationalization level of firm is not as high as that of Indonesia, and the performance of firm is also not as good as Indonesia.

The relationship between the degree of internationalization and performance has S-shaped in Indonesia firms and U-shaped in Chinese firms. According to the Three-Stage Theory of International Expansion from Contractor et al. (2003), at the learning stage firm's performance declines, after this stage, the performance rises. In the third stage, the firm continues to expand to the further market, the cost for cooperation all kinds of the resource are increased and exceed the profits from the oversea operation. In China, firms with a high degree of internationalization are generally younger, while older firms are more focused on the domestic market. Besides, in recent years, the Chinese government has strongly supported firms to carry out independent innovation and form their own core competitiveness. Therefore, the performance of Chinese firms has shown an upward trend after the first phase of internationalization. In Indonesia, firms with a high degree of internationalization are generally older firms. They have been operating for a long time in the international market and have reached the third stage of internationalization. Therefore, the performance of the firm decreases first and then rises and then decreases with the increase of internationalization.

Therefore, firms need to carry out independent innovation and form their core competitiveness. It helps firms to maintain their vitality in international competitors and improve their operational efficiency.

In terms of the impact of the firm's speed of expansion on performance, whether in China or Indonesia, the faster the firm expands, the better its performance. Nevertheless, this speed of expansion is relatively fast, which will reduce the performance of the firms because the firm will face a sudden increase in the risk of more costs. Moreover, when the firm truly grasps the core competitiveness of a particular field, even if the firm expands rapidly, the performance of the firm is still growing.

In terms of the impact of performance on the degree of internationalization of firms, Indonesia's low-performance and high-performance firms are more focused on the domestic market, and China's high-performance firms are more focused on the domestic market. In general, as corporate performance improves, firms are less willing to take risks and focus more on the domestic market. This condition is also related to China and Indonesia as

the world's first and fourth-largest population countries because the development potential of the local market of these two countries is tremendous.

R&D plays a crucial role in strengthening the core competitiveness of firms. However, because the sample data of Indonesian listed firms is small, the R&D expenses are rarely reflected in the annual report. Therefore, using R&D expenses as variables or control variables will reduce the number of observations and, thus, the results. So, the author hopes that future researchers can use R&D expenses as variables to study the relationship between internationalization and performance or the impact of R&D on performance.

According to Jung & Bansal (2009), based on the experience of previous scholars, the results of using actual data on performance in terms of the impact of performance on internationalization indicate that there is no significant relationship. However, this study uses real data to study the relationship, and the results show that both in China and Indonesia, there is a significant relationship. Therefore, the authors suggest that the next researcher conduct more research on the impact of performance on the internationalization of firms.

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