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Internationalization and accounting-based risk in the restaurant industry

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ABSTRACT

The restaurant industry has expanded into international markets remarkably well due to various benefits. However, there are also high risks involved in internationalization and it is important to consider the internationalization strategy from the risk perspective for the restaurant industry. The current study attempts to examine the relationship between restaurant firms' internationalization and accounting-based risk. This study analyzes data from U.S. restaurant firms by estimating accounting-based risk measured by the standard deviation of return on assets (ROA), and performing a Two-Way Fixed-Effects Model. The findings of this study reveal that although internationalization shows a curvilinear relationship (i.e., concave downward) with ROA risk, the major shape of the relationship may be more linear rather than curvilinear, partially explained by organizational learning theory. Restaurant firms might initially face challenges caused by inexperience in international operations in conjunction with an unfamiliar culture and may not immediately realize the risk-reduction effects. Thus restaurant executives involved in new international operations need to be very informed on risk management. This allows them to gain more confidence in pursuing internationalization strategies and ultimately enjoy the risk-reduction effects, acknowledging that more international operations can reduce restaurant firms' ROA risk in the long run. This finding provides important insights for international restaurant companies to better understand how their implementation of internationalization strategy may contribute to their firms' accounting risks.

1. Introduction

The pursuit of international markets and resources has grown remarkably, not only in the general economy, but also witnessed in the U.S. restaurant industry. For instance, KFC operates in 131 countries and territories and 81% of its units are located outside the U.S. as of 2017, while Pizza Hut operates in 106 countries and territories and 55% of its units are located outside the U.S. as of 2017 (Yum! Brands, Inc., 2018). Major benefits from internationalization include rapid growth, risk-reduction from geographic diversification, and access to resources and capabilities in different countries (Cochrane, 2001; Eng, 2005). However, internationalization may also produce new challenges to firms (Hitt, Tihanyi, Miller, & Connelly, 2006) due to exposures to additional sources of risk (Kim, Hwang, & Burgers, 1993; Saudagaran, 2002).

Therefore, in the mainstream financial and strategy literature, numerous researchers have investigated internationalization pertaining to risk; however, a consensus concerning the effects of internationalization on risk has not yet been reached (Krapl, 2015). The decidedly inconclusive results of previous studies on the internationalization-risk relationship may stem from the lack of considering industry effect. That is, the impact of internationalization on risk could be contingent on industry characteristics (Elango, 2010) and further analysis appears warranted to reveal more about existing complexities and to achieve a better understanding of the relationship between internationalization and risk, especially in an industry-specific context. However, few studies have specifically focused on risk associated with internationalization in the restaurant industry even though substantial attention in the hospitality literature has been devoted to the strategic implications of risk, using diverse risk measures such as systematic risk, unsystematic risk, earnings variability, debt ratio, and bankruptcy risk (e.g., Lee, 2008).

Given that internationalization can modify business strategies and influence a firm's risk features (Lubatkin & Chatterjee, 1994),

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examining the restaurant firms' internationalization strategies from the risk perspective is especially critical since the restaurant industry has markedly expanded into international markets and played a leading role in globalization. For instance, U.S. restaurant firms take the top four positions among the top five global franchises: McDonald's, Burger King, Pizza Hut, and KFC (Franchise Direct, 2019). More importantly, the industry has been known as a high-risk business caused by high sensitivity to consumer discretionary expenditures and volatile economic conditions as well as low entry barriers (Parsa, Self, Njite, & King, 2005; Singal, 2012). Therefore, it is essential to investigate the relationship between internationalization and risk for the restaurant industry. Internationalization is not only a critical strategy for the high risk restaurant industry, but the effect of internationalization on risk can influence significant factors for firms such as the cost of financing and the underlying required rate of returns by investors (Kim, Kim, & Pantzalis, 2001).

The purpose of this study is to provide added clarity and detail to the relationship between internationalization and risk by focusing on the restaurant industry. This study specifically intends to examine the impact of restaurant firms' internationalization strategies on accounting-based risk (i.e., standard deviation of return on assets (ROA)). Previous research focused more on the effects of internationalization on market-based risk such as systematic, unsystematic, and total risk. However, investigating accounting-based risk is likewise significant to multiple stakeholders including restaurant executives, investors, and creditors. Accounting-based risk measures capture historic values, whereas market-based risk measures are based on future values (Krapl, 2015). More specifically, accounting-based risk measures are connected to fundamental changes to corporate risk directly related to its actual operations, whereas market-based risk is subject to investor perceptions as well as market reaction and thus is forward looking. Subsequently, accounting-related risk measures can represent operations more directly than market-related risk measures and as a result are generally considered to be more relevant to management (Bettis & Hall, 1982; Fiegenbaum & Thomas, 1988; Krapl, 2015). By focusing on accounting-based risk, this study better reflects the realities of internationalization strategies from the operational point of view and contributes to a more comprehensive understanding of the uncertainty pertinent to internationalization for the restaurant industry.

The focus of the current study on the risk features pertaining to internationalization advances the understanding of internationalization mechanisms in the restaurant industry, but also assists in supporting existing studies in other business contexts. Furthermore, this study provides practical recommendations for restaurant executives to make better-informed decisions regarding implementation of internationalization strategies in terms of risk, as well as for investors to better analyze investment options based on the risk levels of internationalization. Following a literature review is a discussion of research methods including data and econometrics techniques, and results. Discussions and suggested future studies conclude the study.

2. Literature review

2.1. Internationalization and risk

Researchers have found contradictory results on the effects of internationalization on risk: negative, positive, non-significant, and nonlinear (e.g., Krapl, 2015). The risk-reduction effect of internationalization can be explained by modern portfolio theory, which postulates that investors can mitigate their exposure to risk by owning portfolios of multiple assets rather than a single asset (Lintner, 1965; Markowitz, 1952). This theory can be applied to the international diversification strategy in that firms can attenuate risk by including foreign markets in their well-diversified portfolios, rather than depending on a single market's distress or cyclicality (Kang, Lee, Choi, & Lee, 2012). Further, revenues from international markets can stabilize overall cash flow volatility at the corporate level, reducing default risk (Pantzalis, 2001). Thus, proponents of internationalization's risk-alleviating effects found that a higher degree of internationalization can lower the degree of risk as a result of diversification benefits (e.g., Elango, 2010).

Further evidence on the risk-reduction effect of internationalization is provided by a study investigating the risk-return relationship of 125 large U.S. multinational corporations (MNCs, hereafter) by Kim et al. (1993). The study found that global market diversification reduces risk for MNCs, as diversification endows MNCs with several market bases. This supports the notion that internationalization can lead to a favorable risk-return performance, namely high returns and low risk. Other studies by Allen and Pantzalis (1996) and Tang and Tikoo (1999) suggested that the operational flexibility from internationalization enables firms to profitably manage the changes in the international market and thus increase firms' market value. Kim et al. (2001) further found that if MNCs increase their diversification in geographic and corporate dimensions, then earnings volatility, on average, is lower. Elango (2010) examined strategic risk, measured by variance in return on assets, which is consistent with the present study, and found a negative relationship between internationalization and risk with a sample of 367 global and multi-domestic manufacturing firms. Overall, the studies above suggest that a higher degree of international involvement lowers risk.

On the other hand, other researchers have argued for the risk-aggravation effect of internationalization. That is, internationalization may escalate risk because firms are exposed to increased uncertainty, possibly induced by agency problems, the fluctuation of exchange rates, institutional risk, etc. (Reeb, Kwok, & Baek, 1998). According to the agency models of Jensen (1986), conflicts between managers and shareholders may exist because managers' self-interests are not well aligned with shareholders' interests, which leads shareholders to devising systems to monitor managers' activities. As corporate structure becomes more complex, it would be more difficult for shareholders to monitor managers' activities to assure alignment with shareholders' interest. A firm may also overlook problems caused by internationalization and undertake unnecessary risk (Chong, 1991). Hence, internationalization may increase agency costs caused by higher monitoring costs and auditing costs, and further create other risks in conjunction with factors such as dissimilar languages, asset structures, and legal systems in imperfect capital markets (Lee & Kwok, 1988). Considering that both operating and financing risk affect a firm, internationalization can increase operational risk due to augmented complexities in operation of dispersed organizations (Liang & Rhoades, 1988). Thus, investing in a diversified firm might not be a suitable option in terms of portfolio diversification (Jacquillat & Solnik, 1978).

There is more empirical support for this risk-aggravating effect of internationalization in the literature. For example, Reeb et al. (1998) found higher discount rates in evaluating international operations and argued that MNCs may increase risk as a result of diverse risk factors including agency issues, exchange rate risk, political risk, etc., thereby offsetting the diversification benefits. In addition, Cheng and Roulac (2007) revealed that as the degree of internationalization increased, marginal risk reduction decreased, and suggested that the negative effect of internationalization on risk should not be overestimated. Olibe, Michello, and Thorne (2008) also found the risk-aggravating effect of internationalization and suggested that the costs of internationalization exceed the benefits, as firms need to deal with unfamiliar markets in their early stage of internationalization.

However, other researchers have also found a non-significant relationship between internationalization and risk. For instance, a limited impact of foreign operations on the risk measures of U.S. MNCs was found by Jacquillat and Solnik (1978). This study argued that if a MNC share is indeed like an international portfolio, the stock price should be affected by factors to the extent of its activity abroad. In a study of monthly returns and the value-weighted NYSE Index of 151 MNCs and

137 domestic companies (DCs), Brewer (1981) also found no significant difference in risk, measured by the intercept and slope of the security market line. Interestingly, there were attempts to examine a non-linear relationship between the degree of internationalization and risk. For example, Fatemi (1984) investigated such a non-linear relationship, but found insufficient evidence to conclude that the relationship is non-linear while Sledge (2000) attempted to examine a U-shaped curved relationship between international diversification and risk; however, the curve was not observed. Different from these two previous studies, Song, Park and Lee (2017) found a significant non-linear relationship between international geographic diversification and operational risk. However, due to several differences between Song et al. (2017) and the current study, such as the measurement of internationalization, the examination of the relationship in a lagged vs. a concurrent manner, and the main findings, the current study makes valuable contributions to the literature and the industry.

2.2. Accounting-based risk

As discussed in the previous section, prior empirical studies have focused on financial and operating implications of internationalization in terms of market-based risk measures such as systematic risk, unsystematic risk, and total risk. Nevertheless, an examination of earnings volatility is also essential to financial managers, investors, and creditors (Krapl, 2015). Unlike market-based risk measures, which are based on future values, accounting-based risk measures capture historic values, thus can exhibit fundamental differences in corporate risk (Krapl, 2015) and represent operations more directly than market-related risk measures (Bettis & Hall, 1982). In other words, accounting-related risk measures are, in general, considered more relevant to management (Krapl, 2015). Profits allow managers to meet multiple stakeholders' needs by implementing diverse corporate strategies, while reduced profits may cause unfavorable managerial decisions, such as layoffs, reduced investments, or intensified cost controls (Bromiley, 1986). Hence, earnings volatility may cause higher stock price volatility (El Mehdi & Seboui, 2011) and can be a good predictor of the systematic risk of firms' securities (Beaver, Kettler, & Scholes, 1970). Consequently, accounting-based risk measures, in conjunction with market-based risk measures, are among the most common risk measures employed in strategic management research (Miller & Bromiley, 1990).

The literature on earnings volatility associated with internationalization suggests the following two opposite views (El Mehdi & Seboui, 2011). On the one hand, internationalization tends to alleviate earnings volatility since earnings generated from firms' diversified markets are less than perfectly correlated (Amihud & Lev, 1981) and accruals from various units tend to cancel out; thus, the total accruals at the corporate level are less volatile (El Mehdi & Seboui, 2011). In that regard, Rugman (1976) found that internationalization attenuates earnings volatility primarily due to firms' sales generated from imperfectly correlated economies. On the other hand, firms' organization complexity engendered by internationalization may induce managers to manipulate earnings information. In a recent study (Krapl, 2015), an examination of all firms traded on Nasdaq, Amex, and the New York Stock Exchanges (NYSE) between 1980 and 2011 suggested that internationalization increases earnings volatility as well as systematic risk, idiosyncratic risk, and total risk of equity.

2.3. Hypothesis development

The aforementioned literature clearly articulates the notion that internationalization is a double-edged sword, implying that internationalization can lead to either risk-reducing effects or risk-aggravating effects. Undoubtedly, risk-reduction can be one of the benefits of internationalization (Cochrane, 2001). According to modern portfolio theory (Lintner, 1965; Markowitz, 1952), diversification enables firms to lessen overall risk by generating a stable return resulting from uncorrelated goods (Kim et al., 1989), uncorrelated economic conditions (Rugman, 1976), and uncorrelated regulations (Caves, 1996). In that regard, MNCs can reduce their risk by diversifying their investments across different countries (Kim et al., 2001). Nevertheless, the benefits and costs associated with internationalization could vary with the extent of internationalization, and the impact of internationalization on risk is likely to be contingent on the firm's stage in the internationalization process.

Internationalization is a process through which firms incrementally need to accumulate knowledge and experience over time (Johanson & Vahlne, 1977). With respect to organizational learning theory, Levitt and March (1988) state that "organizations are seen as learning by encoding inferences from history into routines that guide behavior" (p. 320) and this will impact corporate strategies, cultures, knowledge, etc. Huber (1991) also assumes that "an organization learns if any of its units acquires knowledge that it recognizes as potentially useful to the organization" (p. 89). Internationalization requires extensive operational efforts such as human and facilities resources across geographically and culturally various countries (Lee, Tang, & Tikoo, 2006). In the early stage of internationalization, in particular, firms are likely to have limited experience and information with regard to their new foreign markets, thereby causing increased risk (Krapl, 2015). Therefore, organizational learning can influence the internationalization process of multinational corporations and can be pivotal for successful internationalization.

This argument based on organizational learning theory could be valid especially for the restaurant industry. Restaurant firms may initially encounter a number of differences or difficulties such as various cultures and religions, different tax codes and accounting structures, and political systems when expanding into foreign markets. Given that food consumption is a fundamental need and behavior of humans (Tian & Tian, 2011), providing and serving food can be highly intertwined with cultural factors. Due to the characteristics of their deliverables and higher levels of human involvement (Zeithaml, Parasuraman, & Berry, 1985), service firms, in general, should adjust their products and services to conform to cultures, tastes and living habits, which differ from country to country (Capar & Kotabe, 2003). Considering this idiosyncratic feature of the restaurant business in the international markets, the risk-increasing effect may outweigh the risk-reducing effect from firms' international operations in the initial stage of internationalization. Moreover, the restaurant business is, in fact, known to be highly risky due to heavy reliance on consumers' discretionary income, high volatility to economic conditions, and high bankruptcy rates (Parsa et al., 2005; Singal, 2012). Considering various potential risk factors and the industry-specific factor of being highly risky, the current study first argues that internationalization would aggravate a firm's operational risk.

However, restaurant firms are not expected to continuously suffer from those new challenges in their international operations, but more likely to accumulate learning experiences from their international operations and develop their expertise based on organizational learning theory (Kobrin, 1991; Thomas, 2006). Hence, despite the risk-aggravating effect, engendered by heavy initial costs in the beginning stage of internationalization, restaurant firms' accumulated learning experiences through more internationalization can possibly decelerate and ultimately discontinue the risk-aggravating effect, suggesting a quadratic relationship, in specific, a concave downward relationship, not an inverted U-shaped relationship. In this relationship, the risk-aggravating effect disappears after a certain level of internationalization. Consequently, this study proposes the following research hypothesis.

Research Hypothesis: The relationship between the degree of U.S. restaurant firms' internationalization and accounting risk is curvilinear, in specific, concave downward. In other words, as U.S. restaurant firms increase their internationalization, their accounting risk initially increases. However, after a certain degree of internationalization, such risk-aggravating effect will decelerate and eventually disappear.

3. Methodology

3.1. Sample and data collection

The current study identifies publicly traded U.S. restaurant firms using the standard industrial classification (SIC) code of 5812 (eating places) and utilizes three resources to retrieve data: 1) Compustat for annual financial data such as total assets and total revenues, 2) annual financial reports (10-Ks) for the number of international and total units, hand-collected, and 3) the Center for Research in Security Prices (CRSP) for stock price related data. Only restaurant firms with international operations are included and examined in the study, as the primary purpose of the current study is to investigate how the degree of restaurant firms' internationalization affects firms' accounting risk. Many zero values for internationalization (i.e., domestic restaurant firms) will cause too much noise in the analysis. The number of observations from 44 U.S.-based restaurant firms with international operations is 331 for the 2000–2013 period.

3.2. Independent variable

This study utilizes the degree of internationalization (DOI) as a proxy for internationalization as an independent variable in this study. Since the purpose of this study is to explore a strategic risk perspective of internationalization, this study employs the structural attribute, or the ratio of the number of foreign properties to the number of total properties to measure restaurant firms' DOI. Similarly, restaurant literature has utilized the same measurement for firms' internationalization (e.g., Rhou & Koh, 2014; Sun & Lee, 2013). More specifically, this study employs a lagged value of DOI (i.e., lagDOI, a lag by one year) as the main independent variable to avoid a potential endogeneity issue and (includes) a squared term of lagDOI (i.e., lagDOI^2) to test a concave downward relationship. It is expected that the effect of internationalization on a firm's operating outcomes would occur after some time, thus making our approach more realistic and appropriate for an examination of such effect. Further analysis using a concurrent value of DOI (i.e., DOI and DOI^2) is also conducted to highlight differences in findings between the two measures.

3.3. Dependent variable

This study employs an accounting-based risk measure that is the standard deviation of return on assets (ROA). ROA has been widely utilized as an accounting measure of firm success in the management literature (Thanos & Papadakis, 2012) since it can control for different financial structures across firms and focuses on the relative efficiency with which the resources available have been utilized (Amit & Livnat, 1988). Moreover, ROA can capture a return more directly under the control of management and is extensively utilized by researchers, managers, and analysts (Bettis & Hall, 1982). Accounting-based risk has been estimated by the standard deviation of returns (e.g., Fiegenbaum & Thomas, 1988), as the standard deviation or its square, the variance, is a standard measure of dispersion and hence risk (Bettis & Hall, 1982). Following accepted practices, this study measures the standard deviation of ROA, estimated by dividing net income by total assets, using data from the last 5 years as proxies for variations of returns (e.g., Dichev & Tang, 2009).

3.4. Control variables

The extant literature has found a number of financial variables that can affect a firm's risk (e.g., Gu & Kim, 2003; Kim, Gu, & Mattila, 2002; Lee & Jang, 2007; Lee, Moon, Lee, & Kerstetter, 2015). For control variables, this study employs six variables: (1) firm size, (2) leverage, (3) liquidity, (4) profitability, (5) operating efficiency, and (6) growth to control for confounding effects on the relationship between internationalization and risk based on the previous studies on risk (e.g., Elango, 2010; Krapl, 2015).

First, firm size (SIZE) is employed, as larger firms are expected to decrease their risk by diversifying their operations, customers, and services or by mitigating the impact of economic, social, and political changes on their firms (Deng & Elyasiani, 2008; Liang & Rhoades, 1988; Rugman, 1976). Empirical studies have confirmed the negative relationship of firm size to risk (Gu & Kim, 2003; Kim et al., 2002; Lee et al., 2015). Log of total revenues is utilized as a proxy for a firm's size. Second, financial leverage (LEV) is employed to control for capital structure. A firm's financial leverage is a measure of bankruptcy risk (Shapiro & Titman, 1986). High financial leverage generally renders firms more susceptible to risk; hence, a firm's financial leverage is known to relate positively to risk (Amit & Livnat, 1988; Borde, 1998; Kim et al., 2002; Logue & Merville, 1972; Moyer & Chatfield, 1983). Likewise, hospitality studies have empirically verified a positive relationship between financial leverage and risk (Gu & Kim, 2003; Lee & Jang, 2007). Debt ratio (total debt/total assets) is utilized to measure financial leverage (Krapl, 2015; Lee & Jang, 2007).

Third, liquidity (LIQ) is employed as it is associated with risk. Liquidity can be positively related to risk because high liquidity could increase agency costs of free cash flow and thus induce unreasonable investments (Jensen, 1986). On the contrary, other researchers have found a negative relationship between liquidity and risk because high liquidity satisfies short-term cash needs and mitigates financial risk (Moyer & Chatfield, 1983). Hospitality literature similarly considers liquidity as one of the significant determinants of risk (e.g., Borde, 1998; Gu & Kim, 2002; Lee et al., 2015). Current ratio (current assets/current liabilities) is utilized as a proxy for liquidity (Lee et al., 2015). Fourth, profitability (PRO) is employed as it can have a relationship with risk (Barton, 1988). Profitable firms can often employ strategies aggressively and thus aggravate risk, as demonstrated in the restaurant context (Borde, 1998), whereas profitability can improve firms' financial stability and attenuate risk (Logue & Merville, 1972). The return on assets (ROA: net income to total assets) is utilized as a proxy for profitability (Lee & Jang, 2007).

Fifth, operating efficiency (EF) is employed as it can have a negative impact on risk (Gu & Kim, 2002). Firms are likely to generate higher profits and to have a negative relationship with risk when efficiently utilizing their assets in generating revenues (Borde, 1998; Gu & Kim, 2002; Logue & Merville, 1972). Asset turnover ratio (total revenues/total assets) is utilized as a proxy for operating efficiency (Lee & Jang, 2007). Finally, growth (GW) is employed as it can induce firms' risk. Higher growth may require more of a firm's resources (Roh, 2002), leading to excessive financing and high leverage. In this regard, growth is positively related to risk. Nevertheless, firms with high growth rates in earnings before interest and taxes (EBIT) can usually keep high stock prices due to the anticipated high earnings, whereas the stock prices of companies with low growth rates may be much more volatile (Borde, 1998). EBIT growth (annual percentage change in EBIT) is utilized as a proxy for growth (Lee & Jang, 2007).

3.5. Data analysis

This study performs a panel analysis to test the main curvilinear relationship between internationalization and accounting-based risk in the restaurant industry. The panel analysis is conducted to effectively accommodate unobserved firm and year effects (Wooldridge, 2010). Based on the Hausman test (p-value = 0.0000; Chi^2 = 688.77), the current study rejects the null hypothesis and thus selects a Two-Way Fixed-Effects Model (TWOFEM) as the main econometrics model. The main model is presented below with all study variables:

$$AR = \alpha_0 + \alpha_1 LagDOI_{t-1} + \alpha_2 LagDOI^2_{t-1} + \alpha_3 SIZE_t + \alpha_4 LEV_t + \alpha_5 LIQ_t + \alpha_6 PRO_t + \alpha_7 EF_t + \alpha_8 GW_t + \varepsilon_i$$

- AR = a firm's accounting-based risk, measured by the standard deviation of return on assets (ROA = net income/total assets) for the last five years, respectively;
- LagDOI = the degree of internationalization, measured by total number of foreign units/total number of units at t-1;
- $LagDOI^2$ = the squared term of LagDOI;
- SIZE = a firm size, measured by log of total revenues;
- LEV = a firm's capital structure, measured by total debt/total assets;
- LIQ = a firm's liquidity, measured by current ratio (current assets/current liabilities);
- PRO = a firm's profitability, measured by return on assets (net income/total assets);
- EF = a firm's operating efficiency, measured by asset turnover ratio (total revenues/total assets);
- GW = a firm's growth, measured by annual percentage change in earnings before interest and taxes (EBIT); and
- ε_i = the error terms.

4. Results

4.1. Descriptive statistics

Table 1 summarizes descriptive statistics of each variable for U.S. restaurant firms with international operations. The average value of standard deviation of return on assets (SROA) for the sampled restaurant companies is 0.06 with a range of 0.00–1.12. The degree of internationalization (DOI) variable shows a mean value of 0.21, ranging from 0.00 to 0.97. It should be noted that originally, the minimum value of DOI is 0.001947; however, due to the rounding, it shows the minimum value of 0. Thus, the sample includes only firms with international operations as previously explained. Total assets (TA) show a mean value of $2,624 million, ranging from $14 million to $36,626 million, whereas Total revenues (TR) show a mean value of $2,811 million, ranging from $28 million to $28,105 million.

Table 2 presents the Pearson's correlation analysis for the sampled restaurant firms. SROA does not have a significant correlation with any variable. DOI shows a significant and positive correlation with SIZE (r = 0.00), LEV (r = 0.00), and PRO (r = 0.00). SIZE positively correlates with LIQ (r = 0.00), PRO (r = 0.00), and GW (r = 0.00), whereas LEV positively correlates with EF (r = 0.00) at the significance level of 0.01. LIQ shows a positive correlation with PRO (r = 0.00), whereas PRO shows a positive correlation with GW (r = 0.00) at the significance level of 0.01.

Table 1
Descriptive statistics.

Variable	Obs	Mean	S.D.	Minimum	Maximum
SROA	331	0.06	0.09	0.00	1.12
DOI	331	0.21	0.25	0.00[a]	0.97
SIZE	331	2.97	0.67	1.45	4.45
LEV	331	0.69	0.57	0.00	4.07
LIQ	331	1.11	0.90	0.10	6.12
PRO	331	0.06	0.14	−0.60	1.65
EF	331	1.54	0.71	0.08	4.62
GW	331	−0.08	2.62	−35.50	14.76
TA	331	2624.83	5975.11	13.94	36626.30
TR	331	2811.42	4933.88	28.20	28105.70

Note. SROA = standard deviation of return on assets (net income/total assets); DOI = degree of internationalization, measured by the number of foreign units/total units; SIZE = a firm size, measured by log of total revenues; LEV = a firm's capital structure, measured by total debt/total assets; LIQ = a firm's liquidity, measured by current ratio (current assets/current liabilities); PRO = a firm's profitability, measured by return on assets (net income/total assets); EF = a firm's operating efficiency, measured by asset turnover ratio (total revenues/total assets); GW = a firm's growth, measured by annual percentage change in before interest and taxes (EBIT); TA = total assets; and TR = total revenues.

[a] Originally, the minimum value of DOI is 0.001947; however, due to the rounding, it shows the minimum value of 0.00.

4.2. Main results

The study performs a Two-Way Fixed-Effects model by firm and year to test the main research hypothesis: a concave downward relationship between a restaurant firm's internationalization and accounting-based risk, measured by the standard deviation of ROA (SROA). Panel 1 of Table 3 presents the results of the main analysis, using the lagged variables of DOI, lagDOI and $lagDOI^2$. Results show that the coefficient of $lagDOI^2$ is statistically significant (z-value = −2.42; p-value = 0.02) at 0.05 significance level, suggesting that SROA has a curvilinear relationship with the degree of internationalization in a lagged manner for the sampled restaurant firms. However, this coefficient does not tell us whether the relationship is concave downward or inverted U-shaped. Therefore, this study presents a graph of this relationship (Fig. 1), which supports the research hypothesis of this study.

Often, the interpretation of the coefficient of lagDOI is misunderstood as the main effect of the independent variable (i.e., lagDOI in the current study) on the dependent variable (i.e., SROA in the current study) when included in the model with a squared term (i.e., $lagDOI^2$ represents the effect of lagDOI on SROA specifically at the point of lagDOI being zero (Friedrich, 1982)). However, it does not have a practical meaning, considering that the zero value of lagDOI means no internationalization (i.e., domestic restaurant firms) and this study does not include any domestic firms in the analysis.

In addition, the current study examines the concurrent effects of DOI on SROA to illustrate the difference between the current study and Song et al. (2017) (Panel 2 of Table 3). According to the results, the concurrent degree of internationalization (i.e., DOI) appears to have a significant curvilinear relationship with SROA (z-value = −2.14; p-value = 0.04 for the coefficient of DOI^2) at the 0.05 significance level. To further dissect the exact relationship, this study graphs the relationship, which appears to be inverted U-shaped.

Furthermore, this study investigates a potential linear relationship between restaurant firms' internationalization and SROA (Table 4). This sensitivity analysis can confirm the difference between a concave downward relationship found in the current study and an inverted U-shaped relationship found in Song et al.'s study (Song, Park & Lee, 2017). It indicates that the concave downward relationship would resemble a linear relationship more than the inverted U-shaped relationship. Accordingly, this study would expect to find a significant linear relationship with the linear lagged model (that found the concave downward relationship in the non-linear model) while expecting to find a non-significant linear relationship with the linear concurrent model (that found the inverted U-shaped relationship in the non-linear model). Panel 1 of Table 4 presents the results of the main analysis, using the lagged DOI variable (LagDOI). Results show that the coefficient of lagDOI is statistically significant (z-value = 2.06; p-value = 0.04) at the 0.05 significance level, suggesting that SROA has a linear relationship with the degree of internationalization in a lagged manner for the sampled restaurant firms while the concurrent degree of internationalization (i.e., DOI) does not appear to have a significant linear effect on firms' ROA risk (z-value = −0.02; p-value = 0.98 for the coefficient of DOI) at the 0.05 significance level (Panel 2 of Table 4). These findings confirm our expectations.

5. Discussion

Triggered by the significance of internationalization phenomenon in today's economy and its uncertainty to firms, the literature of the internationalization-risk relationship is replete with references (e.g., Krapl, 2015). Previous studies, however, have found seemingly contradictory results, which motivated this study. In accordance with

Table 2
Pearson's correlation.

V	DOI	DOI^2	LagDOI	$LagDOI^2$	SIZE	LEV	LIQ	PRO	EF	GW
SROA	0.26	0.46	0.26	0.47	0.06	0.79	0.74	0.88	0.30	0.84
DOI		0.00**	0.00**	0.00**	0.00**	0.00**	0.20	0.00**	0.33	0.73
DOI^2			0.00**	0.00**	0.00**	0.07	0.39	0.00**	0.94	0.65
LagDOI				0.00**	0.00**	0.00**	0.12	0.00**	0.52	0.45
$LagDOI^2$					0.00**	0.12	0.35	0.00**	0.71	0.48
SIZE						0.14	0.00**	0.00**	0.57	0.00**
LEV							0.04*	0.01*	0.00**	0.88
LIQ								0.00**	0.01*	0.93
PRO									0.01*	0.00**
EF										0.77

Note. SROA = standard deviation of return on assets (net income/total assets); DOI = degree of internationalization, measured by the number of foreign units/total units; DOI^2 = the squared form of DOI; LagDOI = degree of internationalization, measured by the number of foreign units/total units at t-1; $LagDOI^2$ = the squared form of LagDOI; SIZE = a firm size, measured by log of total revenues; LEV = a firm's capital structure, measured by total debt/total assets; LIQ = a firm's liquidity, measured by current ratio (current assets/current liabilities); PRO = a firm's profitability, measured by return on assets (net income/total assets); EF = a firm's operating efficiency, measured by asset turnover ratio (total revenues/total assets); and GW = a firm's growth, measured by annual percentage change in before interest and taxes (EBIT).
*p < 0.05; **p < 0.01.

Table 3
Main Results of Lagged vs. Concurrent Non-Linear Effects.

	Panel I. Lagged Effect		Panel II. Concurrent Effect
	SROA		SROA
LagDOI	3.14**[a]	DOI	2.02*
$LagDOI^2$	−2.42*	DOI2	−2.14*
SIZE	−5.09**	SIZE	−5.92**
LEV	0.91	LEV	1.07
LIQ	−3.86**	LIQ	−2.16*
PRO	9.61**	PRO	9.73**
EF	1.37	EF	1.61
GW	0.41	GW	0.72
N (Sample size)	326	N (Sample size)	331

Note. SROA = standard deviation of return on assets (net income/total assets); DOI = degree of internationalization, measured by the number of foreign units/total units; DOI^2 = the squared form of DOI; LagDOI = degree of internationalization, measured by the number of foreign units/total units at t-1; $LagDOI^2$ = the squared form of LagDOI; SIZE = a firm size, measured by log of total revenues; LEV = a firm's capital structure, measured by total debt/total assets; LIQ = a firm's liquidity, measured by current ratio (current assets/current liabilities); PRO = a firm's profitability, measured by return on assets (net income/total assets); EF = a firm's operating efficiency, measured by asset turnover ratio (total revenues/total assets); and GW = a firm's growth, measured by annual percentage change in before interest and taxes (EBIT).
*p < 0.05; **p < 0.01.
[a] Z-values are reported.

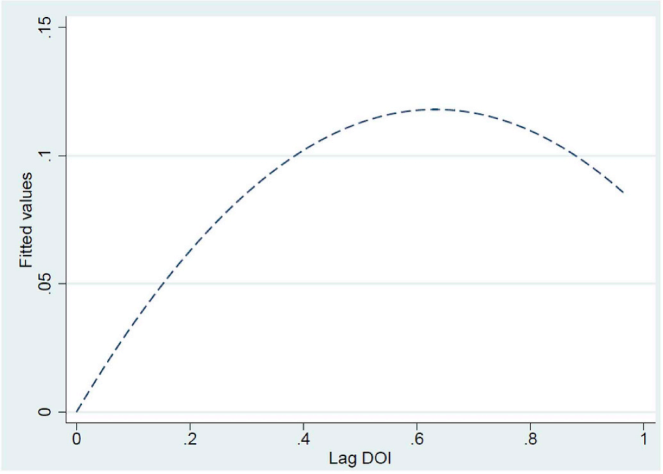

Fig. 1. The Lagged Effect of Internationalization on Accounting-based risk.

Table 4
Main Results of Lagged vs. Concurrent Linear Effects.

	Panel I. Lagged Effect	Panel II. Concurrent Effect	
	SROA		SROA
LagDOIrowhead	2.06*[a]	DOI	−0.02
SIZE	−4.82**	SIZE	−5.61**
LEV	1.01	LEV	1.33
LIQ	−3.49**	LIQ	−2.05*
PRO	9.42**	PRO	9.55**
EF	1.53	EF	1.92
GW	0.53	GW	0.72
N (Sample size)	326	N (Sample size)	331

Note. SROA = standard deviation of return on assets (net income/total assets); DOI = degree of internationalization, measured by the number of foreign units/total units; LagDOI = degree of internationalization, measured by the number of foreign units/total units at t-1; SIZE = a firm size, measured by log of total revenues; LEV = a firm's capital structure, measured by total debt/total assets; LIQ = a firm's liquidity, measured by current ratio (current assets/current liabilities); PRO = a firm's profitability, measured by return on assets (net income/total assets); EF = a firm's operating efficiency, measured by asset turnover ratio (total revenues/total assets); and GW = a firm's growth, measured by annual percentage change in before interest and taxes (EBIT).
*p < 0.05; **p < 0.01.
[a] Z-values are reported.

organizational learning theory, the current study found that the relationship between internationalization and restaurant firms' risk is not a linear one, as not assumed by most previous research.

More specifically, the significant and concave downward relationship found in this study implies that as a restaurant firm initially implements internationalization, the restaurant firm's risk tends to increase, while as the restaurant firm keeps increasing its level of internationalization, the risk-aggravating effect from internationalization becomes marginalized and eventually insignificant. This phenomenon of a downward concave relationship between internationalization and risk provides empirical evidence of the notion that the benefits and costs associated with internationalization could vary with the extent of internationalization and may be explained by heavy initial costs and the benefits realized in the long term through organizational learning.

When opening new stores in the international market, restaurant firms are confronted with various challenges and need to make a significant initial investment. In its annual report in 2017, Shake Shack

explicitly articulates its difficulties with opening new stores. In addition to pre-opening costs, they not only experience great operating and labor costs associated with a newly opened store, but also undergo a substantial amount of time to attain their target operating levels due to operating inefficiencies such as new market learning curves, inability to hire and train new personnel, and other factors (Shake Shack Inc., 2018). When initiating international expansion, they face additional challenges such as changes in foreign currency exchange rates or currency restructurings that affect operations and investment, thereby inducing risk to their business operations. For instance, Shake Shack has suffered from currency devaluation in Russia as well as depressed oil prices in the Middle East (Shake Shack Inc., 2018). As a result, they are subject to the risk of internationalization, which could adversely affect their profitability.

Furthermore, in the nascent stage of internationalization, restaurant firms' challenge can become even more severe as they need to consider the addition of different cultures. Cultural factors can be critical especially for the restaurant industry because patterns and behaviors of food consumption is closely connected with cultural factors. Service firms, which restaurant firms belong to, face a higher need for customizing their products and services to the local culture (Capar & Kotabe, 2003) due to the unique characteristics of their deliverables and higher levels of contact with patrons (Zeithaml, Parasuraman, & Berry, 1985). It can become more pronounced in markets that are culturally and geographically more distant. For instance, by examining the effect of culture on patrons' evaluation of restaurant service, Mattila (2000) found that Asian patrons rated service encounters significantly lower than the Western patrons, due to Asian cultures' orientation toward service. The key component of service in Asia appears to emphasize customization or personal attention, rather than efficiency or time savings that Western counterparts highly value (Schmitt & Pan, 1994). Thus, internationalization requires substantial time and efforts for restaurant firms to learn about culture and adjust themselves accordingly (Cavusgil, Knight, & Riesenberger, 2012), and managing cultural diversity can increase the cost of operations (Capar & Kotabe, 2003). These heavy initial costs incurred by inexperience of international operations and an unfamiliar culture in foreign markets could have a dampening impact on restaurant firms and thus elevate their risk.

Nevertheless, organizational learning is likely to accompany the internationalization process of multinational restaurant firms and can play a crucial role in managing foreignness. As a firm gradually accumulates more experiences and knowledge from its international operations and continually shares the firm's core competencies in diversified markets in the long run, internationalization tends to alleviate the firm's risk, supporting organizational learning theory in the restaurant industry. Learning foreign markets' characteristics is essential for MNCs' success (Johanson & Vahlne, 1977), and multinational restaurant firms have comprehensively modified their foreign operations to coincide with local environments (Elmont, 1995). More specifically, U.S. restaurant firms have been successful in expanding their flexibility in developing menus, delivering food, and managing a diverse workforce (Elmont, 1995). For instance, McDonald's has invested in its delivery model and adopted an enormous delivery system in global markets such as China, South Korea, and Singapore with annual delivery sales of approximately $1 billion (McDonald's Corporation, 2017). Consequently, the organizational theory supports the findings of this study that restaurant firms can eventually manage their risk better even though internationalization can be challenging at its initial stage.

For researchers, this study expands the realm of internationalization-risk link research, which has heavily focused on market-based risk, into accounting-based risk (i.e., ROA risk). As mentioned previously, it is of significant importance to examine accounting-based risk since it can reflect a more operational-related aspect of a firm, and thus be considered as essential information to the management although accounting-based risk measures have received relatively little attention in the international business literature (Krapl, 2015). Providing empirical evidence of the significant and downward concave relationship between internationalization and risk and supporting the organization learning theory for the theoretical argument of the previous studies, the present study serves to enhance the understanding of internationalization and risk in the restaurant context. The findings of this study can additionally be applicable to other industries that are sensitive to discretionary consumption expenditures, such as the hotel and tourism industries. Therefore, the results of this study enrich the international business, risk management, and restaurant literature by delivering significant implications for sharpening the internationalization-risk relation field.

For practitioners, this paper highlights the importance of risk management for multinational firms. Investigating the risk perspective of internationalization specifically in the restaurant industry, this study provides more details and adds clarity to restaurant executives and managers for managerial decision-making. Different industries may exhibit different levels of risk (Borde, 1998) due to several factors, such as idiosyncratic entry barrier conditions. In this respect, this industry-specific examination can guide them when understanding, developing, and evaluating their internationalization strategies from the risk perspective and provide practical suggestions for restaurant executives deciding whether to expand internationally or to increase the extent of internationalization. Even though restaurant firms might initially face challenges caused by inexperience in the international operations in conjunction with unfamiliar culture and may not immediately realize the risk-reduction effects, restaurant executives can gradually be more informed on risk management. This allows them to gain more confidence in pursuing internationalization strategies and ultimately enjoy the risk-reduction effects, acknowledging that more international operations can somewhat mitigate restaurant firms' ROA risk in the long run. However, restaurant executives and managers still need to be aware of a limited ability of internationalization for its risk-reduction effect beyond the degree of internationalization that maximizes the firm's risk as represented by the downward concave relationship. As can be seen in Fig. 1, risk-reduction effect cannot fully reverse the amount of risk induced before the (negatively) optimum point.

Certainly, risks accompany expansion into international markets; however, when actively searching for opportunities in the international markets and carefully weighing the strategic value of international markets against the cost from internationalization, restaurant firms can achieve the risk-reduction benefits afterwards. Simply put, reaching out to the later stage of internationalization could be multinational restaurants' strategic target in terms of risk-reduction effect. In order to achieve the target level, organizational learning and experiential knowledge are among the key strategic tools that are likely to differentiate the risk level of multinational firms. Accordingly, it is imperative that restaurant managers actively engage in organizational learning activities during their international expansion and take full advantage of their local partnerships in foreign markets because their learning experience may not readily be accumulated on its own.

6. Limitations and recommendations for future research

The findings of this study come with some limitations. The stage of internationalization was not examined in this study even though the stage of internationalization could affect the internationalization and risk relationship. Thus, future studies which consider the stage of internationalization would provide a better understanding of the relationship between internationalization and risk. Moreover, the level of culture and macro economy in each region was not controlled due to the variation across the region. Therefore, taking into consideration different cultures and macro economies could enhance the internationalization and risk relationship found in this study. Furthermore, this study solely investigates the main relationship between internationalization and accounting-based risk. Future studies can further investigate this topic with consideration of various moderators such as

the restaurant type (i.e., limited-service vs full-service restaurants) to better understand this topic, as those moderators could affect the relationship between internationalization and accounting-based risk.

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