
Export Propensity of Canadian SMEs: A Gender Based Study

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Abstract

SME exporters constitute a critical economic force that contributes significantly to national productivity and job creation in the Canadian economy. However, the academic literature suggests that female-owned SMEs are less likely to export. With lower export propensity, the potential of female-owned SMEs for organic growth, economic self-sufficiency and wealth creation could be comprised.

This paper applies logistic regression to study factors that influence SME owners' export propensity with particular reference to the moderating effect of gender in the context of the Ajzen and Fishbein's (2005) theory of Reasoned Action and Planned Behavior. We improve the methodology of prevailing research by redefining "gender" in a more appropriate way and by computing gender interaction effects more accurately.

Based on this analysis, we found that, although male- and female-owned SMEs show different likelihoods of exporting, gender does not have a direct residual impact. Instead, systemic gender differences account for most differences in the export propensity between male-owned and female-owned SMEs. Specifically, female-owned SMEs may be systemically disadvantaged because their firms are smaller, more limited in management capacity with younger and less-experienced managers. The lack of resources and market knowledge become constraining factors for them with respect to becoming "export-ready". Additionally, female SME owners show a higher perception of risk and financing difficulty (although they do not encounter higher rejection rates of financing applications). Their subjective perceptions of potential barriers may contribute to their reluctance to export.

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1. Introduction

Female-owned Small- and Medium-sized Enterprises (SMEs¹) are less likely to export than male-owned SMEs, even after controlling for systemic differences such as firm age, firm size, and sector (Orser, Spence, Riding, & Carrington, 2008b). This thesis seeks to add to our understanding of why this is so.

This question is important because 11, 000 jobs in Canada are created or sustained with every billion dollars of exports and one job out of three in Canada depends on exports (Orser & Carrington, 2006). Export, for many SMEs, is a means of accomplishing owners' growth objectives (Orser, Riding, & Townsend, 2004) such that export among SMEs is significantly associated with job creation (Lefebvre & Lefebvre, 2000). The growth of young SMEs contributes disproportionately to job creation, and SMEs involved in export activities are reported to be more likely to grow compared to those that do not export (Halabisky, 2005). According to Halabisky (2005: 16):

“Firms that exported in 2002 accounted for 6 percent of continuing businesses over the 1993–2002 period, but were responsible for 47 percent of all jobs created by continuing businesses over this period” (Halabisky, 2005).

While many exporter firms are large enterprises, the importance of SMEs as exporters should not be overlooked. SMEs make a significant contribution to the Canadian export market, accounting for 97 percent of exporters (Orser & Carrington, 2006; Parsley, 2005). This is especially so for young firms, a subset of SMEs that accounts disproportionately for job creation.²

¹ According to Industry Canada (2011b), SME is defined as “a business with fewer than 500 employees and less than \$50 million in annual revenues”, excluding non-profit and government organizations.

² Birch's (1981) empirical studies challenged the historical view that large firms were the source of job creation and showed that SMEs made significant contributions to job creation despite the risk of high exit rates. Using more reliable data, Haltiwanger, Jarmin, and Miranda (2013) extended Birch's work, finding that the negative

In addition, export brings numerous benefits to SMEs themselves, including increase in revenue, better exploitation of economies of scale, and complements of limited or declining domestic market demands. The development of the Internet and digital technology has decreased the costs of international communication, transportation, and information processing, enabling SMEs to be more engaged in international trade and to realize growth objectives by expanding their relatively small domestic market beyond the confines of country (Parsley, 2004; Industry Canada, 2011b). However, high return comes with high risk. Except for potential growth in sales and revenue, selling to export markets also brings greater uncertainty and risk to the firm (Sapienza et al., 2006). Hence, SMEs' intention to export is a trade-off between potential gains and losses.

According to the Survey on Financing and Growth of Small and Medium Enterprises (Industry Canada, 2011a), SMEs with majority female ownership exported less frequently than male-owned SMEs³. This is consistent with the previous Canadian evidence that female-owned businesses were less likely to export compared to male-owned businesses (Orser et al., 2008b). Even after controlling for systemic gender differences in firm size, firm age, and sector, majority female-owned SMEs are still less likely to export than majority male-owned SMEs, which means systemic gender differences in owner- and firm-level attributes cannot fully explain the gap in the export propensity between female SME owners and their male counterparts (Orser et al., 2008b). Perceptions about gender-related barriers that limit the development of female-owned SMEs are widely documented (Bardasi et al., 2011; Coleman & Robb, 2009; Orser, Riding, & Manley, 2006). Orser (2009) has reported that female SME owners in Canada face such barriers as lack of investors, fewer chances to

relationship between firm size and employment growth disappeared once firm age was controlled. However, Haltiwanger and his colleagues further showed that start-ups and young firms contribute disproportionately to job creation. It is this subset of firms that account for the high employment growth previously attributed to SMEs (Haltiwanger et al., 2013).

³ According to the survey, in 2011, 11.2% of SMEs that have 0% female ownership exported, 14.4% of SMEs that have 1%~49% female ownership exported, 10.0% of SMEs that have 50% female ownership exported, while only 4.0% of SMEs that have 51%~99% female ownership and 5.1% of SMEs that have 100% female ownership exported.

participate in networks with high net worth individuals, and social expectations of being a good mother/wife. These barriers may partially explain why women are underrepresented in export-related activities (Orser et al., 2008b). According to Bardasi, Sabarwal, and Terrell (2011: 417):

“A performance gap between female and male entrepreneurs ... would imply that countries are not fully utilizing their human and physical capital and that the repercussions on their (and their country’s) growth potential are negative.”

With lower export propensity, the potential of female-owned SMEs for organic growth, economic self-sufficiency and wealth creation might be comprised. An increase of female participation in export activities would generate considerable economic welfare to the benefit of the Canadian economy. Therefore, it is in the nation’s best interest to address any barriers that would limit female-owned SMEs from engaging in international trade.

Canada has been an active supporter of female advancement and is at the forefront of the movement to address gender barriers (Guergis, 2006). Recognizing the significant contribution of female-owned SMEs, this thesis seeks to develop a better understanding of the reasons behind the disproportionate gender distribution in exporting. Because women have been reported to be less likely than men to export, this thesis focuses on the rationale behind their export intention and on gender-related behavior of exporting. Comparing to the existing research of Canadian SMEs’ export propensity, this thesis adds to our understanding in two ways: Firstly, this paper focuses on the roles of SME owners’ attitudes and perceived feasibility in export propensity, in the context of Ajzen and Fishbein’s (2005) theory of Reasoned Action and Planned Behavior; Secondly, existing research of the gender impact on export behavior is based on the interpretation of the coefficients of the interaction effects among the independent variables which, according to Ai and Norton (2003), is problematic in the context of logistic regression. This work corrects for this potential issue.

This paper continues with a review of literature on internationalization theories, SME exports, and the relationship between gender and export. This is followed by the development of a conceptual framework, and the introduction of research hypotheses and methods. Next, data analysis and empirical findings are presented. The paper closes with a discussion of study implications, limitations, and future research.

2. Literature Review

International business is at the forefront of the growing Canadian economy. As a key activity of international business and a driver to raise national productivity, the value of exports in Canada increased 15 percent (\$48 billion) between 2010 and 2011 to a total value of \$374 billion as of that year (Industry Canada, 2013). According to Industry Canada (2013), export is positively correlated with Gross Domestic Product (GDP) and has accounted for up to 30 percent of the Canada's GDP since 2008. Additional benefits of exports include greater utilization of capacity, better exploitation of economic scale, a more efficient allocation of resources, the encouragement of specialization and efficiency, and an increased speed of technological and marketing innovation (Cavusgil, 1984; Parsley, 2004). Moreover, the decrease of the CAD/USD exchange rate since 2013 has provided an opportunity for domestic firms to break down national boundaries and explore international markets with more competitive prices.

Guergis (2006) claimed that with a 200 percent increase in the number of female-owned businesses over the last 20 years, females played an increasingly important role in Canada's economic growth. However, in Orser et al.'s (2008b) report, majority female-owned businesses comprise 17 percent of Canadian SMEs yet only 12 percent of Canadian SME exporters. To the extent that female-owned SMEs with sufficient qualifications and resources stay out of export markets, their potential contributions to the Canadian economy will be compromised.

2.1 Internationalization & Export

The study of internationalization has grown in prominence in business and organizational studies over the past 30 years. This body of academic research has grown alongside the internationalization of firms and industries. Internationalization can take on several forms, including: export, direct foreign investment, establishment of cross-country subsidiaries, international joint ventures or licensing, and other international actions (Fahy, 2002; Johanson & Vahlne, 1990).

2.1.1 International Trade and Export

Export, widely accepted as a form of international trade, includes four modes: (1) selling goods or services across country borders, (2) establishing foreign branches to serve new markets, (3) selling goods that are part of the export value chain, and (4) selling to foreigners such as foreign tourists within country boundaries. The first two modes are direct exports, while the other two modes are indirect exports where firms themselves are not involved in the cross-border transaction.

As a multidimensional concept, the term “international” has raised a discussion of what constitutes to a satisfactory definition (Oviatt & McDougall, 1997). The boundary of “international” is questionable under certain circumstances. The distinction between domestic commodity exchange and international trade adopted by most researchers is whether or not the exchange of capital, goods, and services cross the boundary of national frontiers. As pointed out by Oviatt and McDougall (1997), a key defining dimension of international trade is the existence of foreign sales, since it is more difficult to obtain sales from foreign countries with such boundaries as tariffs, exchange of currency, and higher uncertainty in the market environment. However, this is not always the case. A problem arises adopting this operational definition when exporting is easier and more convenient than selling products or services to some inland cities.

For example, Canada is the second largest country in the world by area, but its population is highly concentrated and more than 80 percent of its geography remains sparsely populated. Once a colony of Great Britain and France, Canada has two official languages: English and French. Consequently, for Toronto, one of the biggest cities in Canada, it is more efficient and profitable to sell products or services 400 kilometers southeast to New York (United States), the largest economic center in the world with the same language (English) system, than 450 kilometers northeast to Quebec Province (Canada), where people speak a different language (French). Similarly, in Maastricht, a southern city in Netherlands sandwiched between Belgium and Germany, it is more convenient and cost-effective for local business to sell goods across national frontiers to Belgium or Germany with the unification of EU than to The Hague and Rotterdam, northern but distant cities within Netherlands. In the case of Toronto and Maastricht, international trade defined as the boundary of national frontiers seems to be problematic, while so far no scholar has addressed this issue. Future research on export should be more careful in defining the “boundary” of international trade and pay more attention to the export/import city that located in special geographic areas.

2.1.2 Patterns of Internationalization

Ricardo’s (1817) classical model of comparative advantage provides a theoretical explanation for much of international trade. Although traditional internationalization pattern prior to 1990s was established based on Multinational Enterprises (MNEs) that developed from large and mature domestic firms (Oviatt & McDougall, 1994), it also applies to SMEs that follow this traditional path to export either prior to or after 1990s.

❑ *Traditional Internationalization of SMEs*

The underlying theories in Traditional Internationalization include stage theory, process theory (McDougall, 1989; McDougall et al., 1994; Oviatt & McDougall, 1997; Sapienza, Autio, George, & Zahra, 2006), growth life cycle, and behavioral theory (Calof, 1994;

Johanson & Vahlne, 1990). One of the common features these theories share is that firms progress to internationalization in a relatively orderly manner in accordance with the accumulation of market knowledge and experience (McDougall et al., 1994). One assumption in traditional internationalization is that the fundamental goal for a firm is long-term survival. Thus, firms are risk-averse (Oviatt & McDougall, 1994; Sapienza et al., 2006). This may explain why smaller exporters - constrained by limited resources – are more constantly involved in international businesses as a reaction to market competition, unsolicited requests from foreign buyers, or adjustments to changes in firm or market environments, while larger exporters tend to actively seek their first export order, (Czinkota & Johnson, 1983; Johanson & Vahlne, 1990; McDougall, 1989; McDougall et al., 1994).

Another underlying assumption is that international market conditions are stable and homogeneous with moderate dynamics. In other words, to reduce uncertainty, firms could generate knowledge learned from the domestic market to specific foreign markets (Johanson & Vahlne, 1990). The assumption of stable market conditions, together with the ultimate goal of survival, also explains why firms under traditional internationalization progress in foreign markets tend to move cautiously (Autio, 2005; Oviatt & McDougall, 1994; Sapienza et al., 2006). Such a sequential, path-dependent, and self-reinforcing pattern also implies that value creation is concentrated in the domestic market for firms proceeding along the traditional internationalization. In other words, the resources and experiential knowledge of the firm are shaped by domestic experience (Autio, 2005). Additionally, in the light of growth life cycle theory, firms will choose to grow within domestic market first until the point when domestic growth becomes limited and management must fuel the growth with export sales (Calof, 1994). Since market knowledge and resources are constraining factors in international business, motivation and confidence will tend to grow (along with the probability of success in international markets) as a firm grows domestically and acquires greater knowledge and experience (McDougall, 1989; McDougall et al., 1994). On the other hand, proactive attitudes from management, such as strategic planning and the willingness to systemically

explore export opportunities, have been verified as another significant factor for successful export (Calof & Beamish, 1994; Czinkota & Johnson, 1983; Malekzadeh & Rabino, 1986). Calof and Beamish, (1994) also reported that the attitudes of firms' executives were associated with their selection of marketing strategies and actual performance in exporting.

In addition to the belief that firms internationalize sequentially, size in accordance with the market power and the capability to manage international transaction appears to be another defining feature in traditional internationalization (Oviatt & McDougall, 1994). As stated by Oviatt & McDougall (1994), high level of asset investment allows the firm to reach economies of scale, creating competitive advantages vis-à-vis indigenous firms that enjoy local superiority in culture, language, and business practices. Under this context, internationalization often occurs when a firm becomes mature with sufficient resources to compete in foreign markets (McDougall, 1989). This process often involves the interplay between the development of firm size and the increase of commitment (Johanson & Vahlne, 1990). Nonetheless, it does not necessarily mean that smaller firms are unable to export. SMEs following a traditional internationalization pattern are faced with the same challenges as larger firms, only incrementally more serious due to the limited resources they possess. Furthermore, the vertical structure of traditional internationalization indicates that firms access and control resources through home-based internalization, from which products or services are generated before being distributed to international customers (Autio, 2005).

❑ ***International New Ventures (INVs)***

The rapid development of new technology since the last decade of the 20th century has decreased the costs of information flow, international communication and travelling, enhancing firms' cross-border knowledge recruitment, business coordination, and resource endowment (Autio, 2005). As a result, more firms are driven to pursue international opportunities regardless of size and age, contributing to the emergence of International New

Ventures (INVs) (Oviatt & McDougall, 1994, 1997). Increasing evidence suggests that traditional views of incremental internationalization are no longer valid empirically in the face of INVs (Brush, 1992; Ganitsky, 1989; McDougall, Shane, & Oviatt, 1994). Oviatt and McDougall's (1994) seminal study raised a direct challenge to traditional internationalization and highlighted the prevalence of INVs (Autio, 2005). They defined INVs as business organizations that seek to "derive significant competitive advantage from the use of resources and the sale of outputs in multiple countries" from inception (1994: 49). The comparison between traditional internationalization and INVs is summarized in Table 1.

The underlying theories behind INVs are international entrepreneurship and resource-based theory (Autio, 2005; McDougall, 1989). Distinguishing features of INVs lie in the international commitment a firm presents at the inception stage and the limited resources a firm possesses to expand to foreign markets (McDougall, 1989; McDougall et al., 1994). Fan and Phan (2007) further proved that a new venture's propensity to expand internationally at the inception stage can be influenced by a firm's inaugural production capacity and by the size of its home market: international propensity was positively associated with the firm's inaugural capacity and negatively associated with the size of the home market.

In contrast to SMEs in traditional internationalization who are cautious in international expansions, INVs adopt a proactive attitude towards international opportunities (Autio, 2005; Oviatt & McDougall, 1994; Sapienza et al., 2006). This is because INVs are more willing to take risks, and because their fundamental goal is to identify and seize growth opportunities in the constantly changed market environment (McDougall, 1989; Sapienza et al., 2006). Under highly dynamic market conditions, opportunities come and go quickly. Hesitation in the face of an opportunity means falling behind (Sapienza et al., 2006). In order to earn the first-mover advantages in the competitive international market, INVs have to expand quickly and aggressively. Additionally, advanced technologies in communication and transportation have shortened the process of internationalization. Thus, it is not uncommon for INVs to skip

multiple stages formerly deemed necessary during their international expansion (Autio, 2005; Oviatt & McDougall, 1994). This change also indicates that organizational learning occurs along with the process of internationalization, which means that instead of transferring knowledge from the domestic market to foreign markets, the experiential knowledge of INVs is rather co-created with foreign market experience (Oviatt & McDougall, 1994).

With the development of a globalized economy and diversified channels to access market information, sustainable advantages in international markets are increasingly identified as unique, high quality, but unnecessarily large assets that create distinctiveness (Autio, 2005; Oviatt & McDougall, 1994). In contrast to the SMEs in traditional internationalization that compete on high levels of investment with low degrees of substitutability, INVs usually acquire competitive advantages through firm-specific assets (e.g. superior organizational know-how, management techniques), special knowledge (e.g. patented technology, production process), and other unique resources (e.g. differentiated products), showing relatively higher degree of substitutability (McDougall, 1989; Oviatt & McDougall, 1994).

Additionally, while the resources of INVs are constrained by their small size and young age, mobility and transferability of knowledge enable the combination of intangible knowledge in foreign markets. Thus, instead of internalizing resources, as it is the case of SMEs in traditional internationalization, INVs tend to rely on hybrid structures or alternative transaction governance structures such as strategic alliances to acquire and control resources (Autio, 2005; Oviatt & McDougall, 1994). Consequently, compared to SMEs in traditional internationalization whose value-creating assets are centered on the domestic market, INVs' value creation is based on cross-border-resource combinations (Autio, 2005).

Since international strategic partnerships enable INVs to acquire resources, cross-border networks appear to be particularly important. This also explains why many founding teams of INVs include individuals with experience in international business (Oviatt & McDougall,

1994). INVs acknowledge individuals' skills, experience, and entrepreneurial visions as key drivers of opportunity recognition and early internationalization (Autio, 2005; Sapienza et al., 2006). Since men are more likely to gain access to formal business networks and more likely to exhibit management and international experience (Brush, Anne, & Welter, 2009; Coleman & Robb, 2009), they may show a higher propensity to become owners of INVs.

Nevertheless, the emergence of INVs does not mean that traditional internationalization is less applicable (Oviatt & McDougall, 1994). In industries where the market environment is relatively stable and high fix-assets are required, traditional internationalization is still practicable. These two internationalization patterns are complementary covering both "general" sequential internationalization and aggressive INVs' internationalization (Sapienza et al., 2006). SME firms may follow either of these two paths to export, depending on their product features, management styles, and business sectors among other distinguishing factors.

Table 1 Comparison between Traditional Internationalization and INVs

	Traditional Internationalization	INVs
Underlying theories	Stage theory, process theory, growth life cycle theory (Bilkey & Tesar, 1977; Calof, 1994; Johanson & Vahlne, 1990; McDougall, 1989)	Entrepreneurship theory, resource-based theory (Autio, 2005; McDougall, 1989)
Fundamental goals	Survival (Sapienza et al., 2006)	Growth (Sapienza et al., 2006)
International motivation	Reacting to market competition or unsolicited foreign order (McDougall, 1989; Oviatt & McDougall, 1994)	Proactive, opportunity-seeking (Autio, 2005; Sapienza et al., 2006); influenced by inaugural capacity (Fan & Phan, 2007)
Market environment	Stable and homogeneous with moderate dynamism (Johanson & Vahlne, 1990)	Highly dynamic (Autio, 2005)
Stage of the firm when internationalization occur	Mature firms with sufficient market knowledge and experience in the domestic market (McDougall, 1989)	Start-ups at the inception stage with limited experience and resources (McDougall, 1989)
Process of internationalization	Incremental, slow, and cautious (Autio, 2005; Oviatt & McDougall, 1994; Sapienza et al., 2006)	Quick and aggressive (Autio, 2005; Oviatt & McDougall, 1994)
Value creation	Value-creating assets are concentrated in domestic country (Autio, 2005)	Value creation based on cross-border resource combinations (Autio, 2005)
Competitive advantage	Accumulated knowledge and experience (McDougall, 1989), asset investment, economies of scale (Oviatt & McDougall, 1994)	Firm specific assets, special knowledge or unique resources (McDougall, 1989; Oviatt & McDougall, 1994)
Resources required	Large resources accommodated with resource-consuming move of internationalization (Autio, 2005)	Sustainable, high quality resources that create distinctiveness (Autio, 2005)
Resource endowment	Resources and experiential knowledge have been shaped by domestic experience (Autio, 2005)	Experiential knowledge is co-created with foreign market experience (Autio, 2005)
Resource access and control	Internalization (Autio, 2005; Oviatt & McDougall, 1994)	Hybrid structure, government mechanisms, networks and strategic alliance (Oviatt & McDougall, 1994)
Risk tolerance	Risk averse (Oviatt & McDougall, 1994; Sapienza et al., 2006)	Risk lover (Autio, 2005; Oviatt & McDougall, 1994)

2.2 SMEs & Export

The rapid development of information technology enables the smallest firms to refrain from physical presence and compete in foreign markets (Etemad, 2004). The new knowledge-driven economy enhances export as a strategic mechanism for SMEs to grow and expand into international markets.

2.2.1 Export Propensity

Factors associated with export propensity have been documented worldwide. They could be divided into two categories: (1) owner-level attributes and (2) firm-level attributes.

Table 2 Attributes Associated with Export Propensity

Factors	Impact on Export Propensity	References
Owner-level Attributes		
Motivation	+	Crick & Spence (2005), Carpenter et al. (2003)
Growth intention	+	Orser & Carrington (2006), Orser et al. (2008a)
Risk aversion	-	Oviatt & McDougall (1994)
Knowledge/ Experience	+	Reuber & Fischer (1997) Spence et al. (2011)
Firm-level Attributes		
Firm size/	+	Halabisky et al. (2005)
Inaugural capacity	Moderated by other factors	Fan and Phan (2007), Julien et al. (1993)
Firm age	+	Johanson & Vahlne (1990)
	-	Sapienza et al. (2006)
Networking	+	Crick & Spence (2005), Orser et al. (2008a)
Innovation	+	Dimitratos & Plakoyiannaki (2003) Orser et al. (2008a)
Sector	/	Halabisky et al. (2005), Spence et al. (2011)
Location - Rural	-	Dunning (2001), Orser et al. (2008a)

❑ *Owner-level Attributes*

For firms of relatively smaller size, the characteristics and attitudes of SME owners play a critical role in driving exporting strategy (Crick & Spence, 2005; Reid, 1981). As noted by Crick and Spence (2005), the fundamental reason explaining why some SMEs choose to export while others do not is attitudinal differences, a major determinant of subsequent export behavior (Reid, 1981). Owner-level attributes associated with export propensity include international motivation, growth intention, and risk tolerance.

- **International motivation**

Business owners' proactive international motivations towards foreign markets may lead to a higher propensity to export (Halabisky, Lee, & Parsley, 2005). In Bilkey and Tesar's (1977) study of export behavior, whether the management team planned for exporting, or had international motivation, was the most significant factor correlated with export propensity. Business owners' international motivations are closely related to: 1) their recognition and interest in opportunities in export markets, such as systematic exploration of foreign market potential or response to unsolicited foreign orders; 2) confidence and commitment in exporting business, i.e., whether the firm possesses unique competences, adequate resources, sufficient market information, and is willing to allocate resources to export-related activities; and last but not least, 3) business owners' personal experience, for instance, whether they have studied foreign languages, lived abroad and whether their international experience is attractive (Bilkey & Tesar, 1977; Bilkey, 1978; Reid, 1981; Cavusgil, 1984). When comparing firms' motivation to export, Czinkota and Johnson (1983) found that exporters are more likely to be motivated by tax advantages, unique products, managerial urges, and competitive pressures than non-exporters. Education level also has an impact on SME owners' international motivations (Reid, 1981). Evidence shows that college and university education is positively associated with the export propensity by increasing SME owners'

perceptions of profit, by decreasing their perceptions of risk, and by generating a positive response to unsolicited orders from foreign customers (Crick & Spence, 2005; Dimitratos & Plakoyiannaki, 2003; Reid, 1981; Simpson & Kujawa, 1974). Furthermore, immigrant-owned firms are found to have a higher tendency to export as a result of their international acumen in immigrant networks, foreign language competencies, and cultural familiarity (Spence, Orser, & Riding, 2011). Challenges in the domestic market such as limited brand awareness, as well as language and cultural barriers may also motivate immigrant-owned firms to avoid direct domestic competition and to take advantage of their countries of origin in export markets (Orser et al., 2008a).

- **Growth Intention**

Business owners' growth intentions are closely related to their attitudes towards exporting. According to Orser and Carrington's report (2006) on Canadian SMEs, 65 percent of growth-oriented SMEs were exporters in 2004, almost twice the percentage (37 percent) of the SMEs that were not growth-oriented. As noted by the report, Canadian SME exporters and non-exporters differed significantly in growth intentions. Even after controlling for firm size and sector, owners with growth intentions were still twice as likely to export as those who did not intend to grow (Orser et al., 2008a). Cavusgil's (1984) created a complete profile of active exporters, where high aspirations for market development and profits ranked the top. Thus, it is possible that export offers a means for growth-oriented SMEs to capitalize on competitive advantages and economies of scale.

- **Risk Tolerance**

INVs are indicated as risk-takers that recognize and exploit opportunities to grow beyond national boundaries (Dimitratos & Plakoyiannaki, 2003; Oviatt & McDougall, 1994). As cited by Dimitratos & Plakoyiannaki (2003: 200), "International risk attitude refers to the extent to which the firm is prepared to undertake significant and risky resource commitments

in foreign markets (Miller & Friesen, 1978)”. Selling products in foreign markets means exposing one’s firm to an unfamiliar environment with greater uncertainty and risk (Sapienza et al., 2006). Currency exchange rates, trade barriers, tariffs and different customer preferences in foreign countries increase the risk to export and the possibility of failure in international trade, forcing an exporter to reconfigure resources to adapt to the new environment. There is evidence that active exporters tend to be more optimistic in their evaluation of risk, profits, and costs than marginal exporters and non-exporters (Cavusgil, 1984; Simpson & Kujawa, 1974). Thus, a higher degree of risk-tolerance may lead to more positive attitudes towards exporting and higher willingness to commit resources in export-related business (Cavusgil, 1984). Additionally, George, Wiklund, and Zahra’s (2005) study on 889 Swedish SMEs has demonstrated that internal owners (e.g., CEOs and other senior executives) were more risk-averse than external owners (venture capitalists and institutional investors), especially when internal owners have a high proportion of ownership. In general, CEOs and senior management teams seem to be reluctant to add the risk associated with internationalization to the risk already inherent in early-stage enterprises (Carpenter, Pollock, & Leary, 2003; George et al., 2005). Thus, external ownership may mitigate the risk aversion of internal owners and increase the firm’s export propensity.

- **Accumulated Knowledge**

Accumulated experiential knowledge in management and in international markets was reported to have a positive association with the propensity to obtain foreign sales (Reuber & Fischer, 1997; Spence et al., 2011). Engaging in international trade means SMEs have to cope with foreign preferences and long-distance transportations that require particular resources, market knowledge, and management skills (Orser & Carrington, 2006; Riding, Orser, Spence, & Belanger, 2012). According to the resource-based theory, an accumulation of human capitals is crucial to overcome cross-border barriers and to initiate internationalization (Orser et al., 2008a). SMEs’ management experience (including owners’

pre-firm experience) and international acumen have been suggested as factors that explaining firms' differences in export propensity (Wiedersheim-Paul, Olson & Welch, 1978; Orser & Carrington, 2006; Orser et al., 2008a). In other words, firms whose founding team members have international experience are more likely to undertake the first move to foreign markets, because their knowledge may allow access to the host country's market environment, consumer preferences, and distribution channels. This access reduces relevant costs in the first international entry while enhancing firms' opportunities to survive and to grow (Sapienza et al., 2006). Bilkey (1978) suggested that firms tend to start their exporting businesses in countries that are psychologically closer to their own before expanding into countries that are psychologically more distant. This also explains why international experience may be a significant factor in initiating exporting business. On the other hand, negative experiences and feedback from past export operations may also deter SME owners' perceived feasibility in export, causing them to withdraw from export markets.

❑ *Firm-level Attributes*

Positive attitude and motivation to export is significant but not sufficient conditions to initiate an exporting business, and whether or not the firm is physically export-ready (i.e. whether the firm has sufficient resources that allow exporting to be achievable) may well account for differences in the export propensity. Assessment of firm-level enablers and deterrents determines business owners' perceptions of the feasibility of exporting activities to a large extent (Etemad, 2004). In this respect, firm-level attributes play a crucial role in SMEs' export propensity (Reid, 1981). These attributes include firm size, firm age, firm-level knowledge/ experience, business networking, and innovation.

- **Firm Size**

While traditional stage theory and process theory assume a positive relationship between firm size and international growth, the emergence of INVs suggests that small size is not

necessarily a constraint in global expansion: firms without employees at the inception stage are, just like larger firms, able to internationalize (McDougall, 1989, Spence et al., 2011). Additionally, Fan and Phan (2007: 1116) proposed that an INV's propensity to internationalize is influenced by its "inaugural capacity" mirrored by its size:

"If this inaugural capacity is significantly larger than the profit-maximizing demand in the home country market (i.e., minimum efficient scale translated into excess capacity), it makes sense for the firm to venture internationally at inception. (McKinsey & Co., 1993; Rennie, 1993)"

Empirical research has found mixed evidence with respect to the relationship between firm size and export propensity, which may be influenced by the sample frame: it is possible that the broader the sample frame of firm size, the greater the likelihood of finding a significant relationship (Calof, 1994). Cavusgil's (1984) research on organizational characteristics associated with export activities showed no significant relationship between firm size and export propensity. Yet, many studies still demonstrate that firm size, both in terms of employee number and financial measures such as total revenues and assets, is, to some extent, positively correlated with, or represents a threshold of, available resources in exporting (Halabisky et al., 2005; Industry Canada, 2011b; Lefebvre & Lefebvre, 2000; Orser & Carrington, 2006). In Simpson and Kujawa's (1974) early study of export propensity, the break-even of annual export sale is \$500,000. Similarly, Calof (1994) found that differences between firm size and export activities were only significant when comparing sales lower than \$1 million or when the number of employees was less than fifty. On the other hand, Julien, Joyal, and Deshaies's (1993) study on manufacture firms found that a size of forty employees appeared to be a threshold beyond which the impact of firm size seemed to diminish. Calof (1994: 368) explained the positively relationship between firm size and export behavior with three theoretical reasons:

“Smaller firms are at a resource disadvantage when compared to larger firms and may therefore not be able to invest in the hiring and training of international personnel... Smaller firms may be more risk averse due to a lack of information, and, the relatively greater impact of an international mistake versus what it would be for larger firms...Finally, a third explanation regarding the impact of size on export behavior lies with the firms' growth life cycle...most firms will undertake growth within their domestic market first.”

However, Oviatt, McDougall, Simon, and Shrader (2004) argued that increased homogenization in international markets and enhanced efficiency in communication had weakened the physical constraints preventing internationalization, in which case even the smallest firms are able to export. This argument is verified in Spence et al.'s (2011) research of Canadian INVs, where nearly three quarters of INVs had no employees.

- **Firm Age**

Similar to firm size, firm age is suggested as being positively correlated with international expansion in traditional internationalization. Conversely, INVs tend to pursue growth opportunities through early internationalization at the inception stage (Oviatt & McDougall, 1994). As Sapienza et al. (2006: 922) suggested:

“A young firm is likely to possess some structural advantages when pursuing opportunities in international markets. As the firm matures, managerial roles become increasingly differentiated and may reduce shared knowledge content and the intensity of communication across roles. The propensity of managers to seek new knowledge also becomes hampered over time, as the knowledge becomes calcified and stored in increasingly specialized bins (Autio et al., 2000).”

Empirical findings with respect to firm age and export propensity are inconclusive. Orser et al.'s (2008a) study on 8112 Canadian SMEs showed no significant statistical differences in firm age between exporters and non-exporters.

- **Networking**

As one of the key resources in export, a valuable network obtained through prior international experience also plays a critical role in the initial entry into international markets. Many export activities start with unsolicited foreign orders based on reputation and mutual trust (Johanson & Vahlne, 1990; McDougall, 1989). These orders are constantly obtained from SME owners' networks or personal relationships. According to the network theory, networking smoothens and speeds up the process of internationalization, through which firms may gain experience and value-added output. This is one of the constant strategic moves utilized by exporters to cope with impediments and uncertainty in foreign markets (Dimitratos & Plakoyiannaki, 2003). As a bridge that facilitates the acquisition of knowledge and the circulation of value chain, SME owners' networks and social capitals complement firms' shortage in financial and labor assets, serving as a communication infrastructure where common interests are shared (Crick & Spence, 2005). Thus, strategic alliances and partnerships built on business networks are common ways employed by SMEs to complement insufficient resources. Correspondingly, it is expected that business owners' networking has a positive impact on SMEs' export propensity and international expansion, which is also confirmed in Crick and Spence's (2005) empirical study on twelve UK SMEs.

- **Innovation**

Lumpkin and Dess (1996) defined international innovation as a firm's openness to espouse creative ideas, products, or new ways to serve international markets (as cited by Dimitratos & Plakoyiannaki, 2003). Innovation is a characteristic embedded in a firm's culture that may be strongly influenced by the CEO. In the global context, innovative SMEs with positive attitudes towards novelty are more likely to adopt new markets and creative practices to serve foreign customers. Innovation propensity also enhances SMEs' capability to adapt to the changing market, complex international environment, and diversified preferences of

foreign customers, increasing their chances to survive. R&D expense is widely adopted as a key indicator of firms' innovativeness in empirical studies (Dimitratos and Plakoyiannaki, 2003). In Orser et al.'s (2008a) study, SMEs with R&D investments were more than twice as likely to export as firms that did not report investment in R&D. Spence et al. (2011) also reported that Canadian INVs are more likely than non-exporters to be R&D intensive. Thus, innovation is positively associated with SMEs' export propensity.

- **Sector**

SMEs' export propensity is also related to the sectors in which they operate. According to Orser and Carrington's (2006) research, across all industries, firms in manufacturing sector, whether SMEs or large enterprises, are most likely to export. Knowledge-based industry is reported to be the second most likely sector that involves SME exporting. This observation may result from the fact that technology-intensive industry is less constrained by physical distance, less dependent on fixed assets, and more homogeneous with regards to industry standards (Orser et al., 2008a; Spence et al., 2011). Thus, the entry barrier is lower, and it is easier for SMEs to export in these sectors. Likewise, SME exporters are more likely to center on wholesales, retails, and service sectors due to the lower initial investment required (Halabisky et al., 2005; Industry Canada, 2011b).

- **Locations**

As noted earlier, export propensity is also impacted by geographic location. For firms located close to the country border, it is more cost efficient and profitable to export to another country (Dunning, 2001). Wiedersheim-Paul et al. (1978) also suggested that the location of the firm is important in relation to information flows: large cities are information centers with good communications thus create favorable export environment, and firms in these information centers are more likely to be exposed to export stimuli. Furthermore, government supports, business incubations, and other supportive programs that help SMEs in

exporting are more available in cities where industrial and governmental resources are centralized. This is also examined in Orser et al.'s (2008a) study, which reported that SMEs in urban locations were more likely to export.

2.2.2 Barriers to Export

While the advancement of information technology and the decrease in transaction costs has motivated SMEs to export, barriers that may deter SMEs' perceived feasibility in exporting persist. These barriers are summarized into four categories (see Table 3) according to the framework proposed by the OECD report (Secretariat A.P.E.C., 2008).

Limited access to external financing is the most frequently cited difficulty that SME exporters face in the process of internationalization. Orser and Carrington (2006) reported that SME exporters were more likely than SME non-exporters to apply for external financing, including government grants, trade credits, commercial debts, and equity financing. Yet the approval rate of debt financing for exporting SMEs was lower than non-exporting ones. This may result from the potential risk associated with export. It may be for this reason that more documents such as personal assets, business plans, or proofs of collateral were requested in SME exporters' application process (Orser & Carrington, 2006). Capital is a key resource to initiate international trade; to the extent that SME exporters are disadvantaged in obtaining adequate financing, their potential to realize international growth might be compromised (Riding, 2007; Riding et al., 2012).

Additionally, exporting requires firms to devote management attention, as well as financial and human resources in the construction of exporting infrastructure, such as the assessment of foreign market potential, the formulation of basic policies regarding exports, the training of new staff, and the development of production and marketing strategies (Cavusgil, 1984). However, their limited size usually deters SMEs in their efforts to access the necessary resources, networks, hence knowledge of overseas markets. This tends to raise doubts among

foreign customers about SME exporters' trustworthiness, credibility, and potential viability (Zahra, 2005). It also increases risk and barriers in export markets as perceived by SMEs themselves. These barriers are mostly associated with firms' capability and capacity to respond to foreign markets, such as product adjustment, human capital, international marketing, global competition, increased costs and cross-country resource management (Industry Canada, 2011b; Orser et al., 2008a; Secretariat A.P.E.C., 2008).

For a firm, entering international markets means facing external challenges in unfamiliar foreign markets and business environments, including limited information in the market analysis, inability to contact potential overseas customers, high costs of establishing and maintaining foreign distribution, difficulties enforcing contracts and resolving disputes, the slow collection of payments from abroad, differences in language and culture, instability of the economy and of market demands, fluctuations of currency exchange rates, as well as diversified regulations in industrial, customs, and environmental standards (Orser & Carrington, 2006; Industry Canada, 2011b; Secretariat A.P.E.C., 2008). "SMEs wishing to compete effectively in their international markets must learn to operate outside of their 'comfort zone' " (Secretariat A.P.E.C., 2008: 22); otherwise, barriers with respect to finance, capability, business environment and market access could deter SMEs' potential to export.

Table 3 Summary of Barriers in SME Exporting

General Barriers in SME Exporting		References
Finance	• Lack of capital stocks to finance export	Cavusgil (1984)
	• Rising business costs	Orser & Carrington (2006)
	• Limited access to external finance	Orser et al. (2008a)
	• Slow collection of payments	Riding et al. (2012)
	• Excessive transportation costs	
Capabilities	• Inadequate human resource capacity for export	Bilkey& Tesar (1977)
	• Limited management experience/capacity	Bilkey (1978)
	• Ability to meet export product quality/standards	Industry Canada (2011b)
	• Ability to develop new products for foreign markets	Orser & Carrington (2006)
	• Ability to adapt export product to foreign preferences	Orser et al. (2008a)
	• Ability to adjust promotion to export markets	Rabino (1980)
	• Difficulty matching competitors' prices	Secretariat A.P.E.C. (OECD Report, 2008)
	• Difficulty offering technical/after-sales service	Thierry (2007)
	• Difficulty enforcing contracts or resolving disputes	Wiedersheim-Paul et al. (1978)
	• Difficulty managing complex foreign distribution	Zahra (2005)
	• Difficulty supplying inventory abroad	
	• Difficulty granting credit facilities to customers	
	• Difficulty maintaining control over middlemen	
	• Difficulty obtaining reliable foreign representation	
Market Access	• Identifying foreign opportunities	Industry Canada (2011b)
	• Limited knowledge about new customers and markets	Orser & Carrington (2006)
	• Inability to contact potential overseas customers	Orser et al. (2008a)
	• Unreliable data about international markets	Secretariat A.P.E.C. (OECD Report, 2008)
	• Access to information/ networks/ resources	Thierry (2007)
	• Access to skilled labor/ production capacity	Zahra (2005)
	• Access to distribution channels	
	• Unavailability of warehousing facilities	
	• Difficulty in communicating with overseas customers	
Business Environment	• Taxation/ customs regulations	Bilkey& Tesar (1977)
	• Fluctuating currency exchange rates	Cavusgil (1984)
	• Restrictive health/safety/technical/environmental standards and government regulations	Industry Canada (2011b)
	• Inadequate property protection and infrastructure	Orser & Carrington (2006)
	• Border security issues/ political instability abroad	Rabino (1980)
	• Unfamiliar exporting procedures/paperwork/ practices	Secretariat A.P.E.C. (OECD Report, 2008)
	• Keen competition in overseas markets	Thierry (2007)
	• Cultural, language and social differences	
	• Lack of support from host and foreign governments	

2.3 Gender & Export

On one hand, internationalization is a strategic move that adds incremental risk to already-risky SMEs (Carpenter et al., 2003); on the other hand, gender has been widely perceived as a negative factor when associated with female-owned SMEs, which may further magnify the risk and challenges to expand internationally. In Orser's (1999) report of Canadian exporters, although 14 percent of women business owners perceived gender as an advantage (i.e. better communication and understanding, taking advantage on the novelty of women), 57 percent of the women respondents still perceived gender as a negative factor that may cause family conflicts or interpersonal issues in the growth of the firm.

2.3.1 "Liberal Feminism" & "Social Feminism"

Most research on entrepreneurship and export has been built on male-dominated samples, which may be inadequate to explain the experience of female-owned SME exporters (Grondin & Schaefer, 1995). In response, some researchers have applied feminist theory to call attention to this special group (Orser, Spence, Riding, & Carrington, 2010).

In Orser et al.'s (2010) study, feminist theories were presented as a rationale to explain gender differences in export propensity. While "liberal feminism" assumes that men and women are essentially the same, "social feminism" suggests that women have unique needs, experience, and competencies vis-à-vis their counterparts. In "liberal feminism", gender differences in the organization are attributed to different distributions of men and women in age, education, and sector, such that organizational performances are primarily consequences of systemic differences in structural factors. Following "liberal feminism" theory, SMEs that demonstrate equivalent management acumen and comparable levels of resources should be equally likely to export. In other words, gender differences in export propensity are associated with systemic gender differences in owner- and firm-level attributes.

Conversely, in “social feminism”, gender differences in organization are not only attributed to gender-neutral characteristics, but also concerned with essential gender differences in power, social structure, and class structure. Drawing on this rationale, Orser et al. (2008b: 11) described that in social feminism, “the concept of ‘gender’ is socially constructed and reflected in the social practices, organizational structures and hence, owners’ perceptions”. In other words, organizational performance is a consequence of interactions between gender and owner-level (or firm-level) attributes. According to this paradigm, gender differences in export propensity should remain after controlling for systemic differences; a finding that has been confirmed in Orser et al.’s large-scale empirical study on Canadian SMEs (2008b, 2010). As she noted, systemic differences suggested by “liberal feminism” cannot fully explain the gender differences in export propensity, which could be complemented by socially constructed gender differences in “social feminism”. To the extent that this is true, female-owned SMEs may face unique challenges and entry barriers that deter their motivations to export (Spence et al., 2011), as discussed in the next section.

Table 4 Feminism Theories in the Study of Gender and Export Propensity

	Liberal Feminism	Social Feminism
Assumption	Men and women are essentially equal	Men and women are essentially different; women have unique needs, experience and competencies
Rationale	Gender differences in organization are attributed to individual ability, actions, and decisions	Gender differences in organization not only are attributed to gender-neutral differences, but result from gender-differential powers, social structure, and class structure
Gender & Performance	Differences in organizational performance are primarily consequences of systemic differences in structural factors	Organizational performance is a consequence of interactions between gender and owner-level (or firm-level) attributes
Gender & Export Propensity	Gender differences in export propensity are associated with systemic gender differences in owner- and firm-level attributes	Gender differences in export propensity remain after controlling for systemic differences in owner- and firm-level attributes

Sources: Summarized from Orser et al. (2010)

2.3.2 Female-owned SMEs & Export

Female SME exporters, in most cases, face the same challenges that male SME exporters encounter, such as obtaining accurate information, dealing with increasing costs, and complying with customs regulations in export markets. However, they also cited gender-specific obstacles as presented in Table 5 (Guergis, 2006; Industry Canada, 2005). Although women's acumen in some specific areas (such as the fashion and beauty industries) could bring them advantages, overall, gender is more widely recognized as an obstructive factor that impedes women's integration into organizational growth and export markets (Welch et al., 2008; Thierry, 2007).

Specifically, men are more likely to invest their time in the workforce and to start businesses to pursuit monetary benefit, while women tend to invest in roles within the household and to be motivated by work-life flexibility, personal fulfillment, and the sense of having control over their destinies (Carter, Gartner, Shaver, & Gatewood, 2003, as cited by Coleman & Robb, 2009). It has been argued that running a business offers flexible work arrangements and effective combination of work/family responsibilities, thus motivating women to start their own businesses (Bardasi et al., 2011). Female SME owners' motivations of personal fulfillment and internal satisfaction (instead of profits) also explain their relative lack of ambition to grow their businesses (Harrison & Mason, 2007). The fact that most female-owned SMEs enter international markets by responding to unsolicited orders while other female non-exporters show a lack of interest in such arrangements (Grondin & Grondin, 1994) may reflect their lower intention to adopt export as a growth strategy. Female SME owners are also considered to be more risk-averse on average (Orser et al., 2006), consistent with Welch et al.'s (2008) research where women exporters were reluctant to describe themselves as risk-takers and preferred cautious plans and controllable development of their firms.

Table 5 Factors Associated with Gender-Specific Obstacles in Export

Factors	References
Internal	
❑ Owner-level Attributes	
• Family responsibility (Work/family conflicts) deters international motivation	Bardasi et al. (2011) Orser et al. (2012)
• Lack of growth intention	Harrison & Mason (2007)
• Higher level of risk aversion	Welch et al. (2008)
• Lower stock of human capital (experience)	Brush et al. (2009)
❑ Firm-level Attributes	
• Lack of access to valuable networks	Coleman & Robb (2009)
• Lack of access to financial resources; Discouraged borrowers	Orser et al. (2000) Singh (2014)
• Less likely to be situated in sectors with higher likelihoods of exporting	Jung (2010) Orser et al. (2010)
External	
❑ Perceived Barriers	
• Perceived lack of respect/ not being taken seriously by (foreign) male business owners	Orser et al. (2004) Orser et al. (2006)
• Perceived gender discrimination in seeking finance	

❑ **Internal Factors: Owner-level Attributes**

Various theories have been put forward to explain the heterogeneity between male's and female's attitudes towards work/family balance. According to the Role Investment Theory suggested by Orser, Riding, and Stanley (2012: 76):

“Role investment is manifest in childbearing decisions, time allocations to commercial tasks, concerns about work/life balance and perceptions about demands on time. Role investment is one explanation why women, in general, are less likely to participate in business ownership. The rationale also helps to explain why, compared to men, women in technology sectors are significantly less likely: to be married and to have children while being more likely to work part-time; to consider family in career decision”

Women have historically invested more time and energy than their life partners in family roles such as parenting and homemaking. Such family embeddedness results in conflict between being a “mother” and a “CEO”, impeding women’s sensitivity to external opportunities and dampening their aspirations to export. Social expectations of women also explain why the supports of family and life partners are acknowledged to be extremely important in female SME owners’ commitment to export (Welch et al., 2008). The fact that women’s roles are framed by social, cultural, and institutional arrangements not only influences their perceptions of international opportunities, but also impacts their strategic decisions on business growth.

To sum up, female SME owners suffer from individual-level obstacles, such as social expectations of family responsibilities, personal conflicts of work/family balance, lack of growth intention, or risk aversion, to a greater extent than their male counterparts. These barriers may discourage female SME owners from taking aggressive steps towards international expansion. On the other hand, perceived advantages associated with women are also connected with owner-level attributes. In Welch et al.’s (2008) study of gender and export behavior, respondents who regarded being female as an advantage usually reported that females are more intuitive and sensitive in handling personal relationships than their male counterparts. However, a study by Coleman and Robb (2009) found that although male and female SME owners were both well educated on average, female had lower levels of human capital than male business owners. The lack of knowledge and related experience is perceived as a significant deterrent in the early stage of exporting by female SME exporters (Orser et al., 2004).

❑ ***Internal Factors: Firm-level Attributes***

Evidence indicates that female-owned firms tend to be smaller, less profitable, and less likely to survive (Bardasi et al., 2011), which could be partially explained by female SME

owners' lower stock of human resources and financial capital (Harrison & Mason, 2007). Furthermore, women's lower average stock of management and international experience also impedes their opportunities to participate in business networks with high net-worth individuals (Harrison & Mason, 2007). Most SME exporters rely on direct sales through personal contacts (Industry Canada, 2005). While Men are more likely to gain access to formal business networks (Brush et al., 2009), women business owners have frequently cited difficulties finding networking opportunities (Coleman & Robb, 2009).

Apart from human capital, access to financial capital is another concern of female SME owners (Orser, Hogarth-Scott, Riding, 2000). According to Owen (2010), in 2007, fewer female SME owners in Canada reported difficulty in obtaining capital (21%) compared with data in 2004 (26%). However, these proportions are still higher than those reported by SMEs with majority male ownership (16%). Studies have confirmed that female SME owners tend to raise smaller amounts of start-up capital from internal sources (e.g. personal saving, love money from families and friends) than from external sources (Coleman & Robb, 2009). In fact, women are more likely to be "discouraged borrowers" because they have a less satisfied relationship with banks and are more likely to anticipate denial (Coleman & Robb, 2009; Orser & Riding, 2006; Singh, 2014). In Orser et al.'s (2006) study of 2,844 Canadian SMEs, female SME owners were found to be significantly less likely to seek equity capital even after controlling for systemic factors. The fact that fewer women are involved in the equity financing market, either as managers in venture capital or as business angels, may constrain female-owned SMEs from searching for or getting access to capital, a supposition that may explain the relatively limited use of equity financing as a capital source by female-owned SMEs (Harrison & Mason, 2007). Barriers to human and financial capital are also mirrored by female SME exporters' limited access to networks, lower stock of experience, and lack of export readiness (Grondin & Grondin, 1994; Orser et al., 2004).

Female-owned SMEs are more likely to center on tourism, professional services, wholesale, and retail industries (Jung, 2010). Orser et al. (2010) also confirmed that female-owned SMEs are less likely to operate in sectors with higher likelihoods of exporting. Social norms and values lead to the under-representation of female players in such male-dominated industries as manufacturing, construction, ICT, and other knowledge-based sectors (Bardasi et al., 2011; Brush et al., 2009). Although knowledge- and technology- based industries are more likely to involve exports, it has been constantly described as male dominated. For instance, Simard, Henderson, Gilmartin, Schiebinger and Whitney (2008: 10) described technology sectors as “masculine, white, and heterosexual, associated with hard programming, obsessive behavior, and extensive working hours”; Cukier (2009) cited technology industries as “an old boy’s club” that are identified as barriers to women (as cited by Orser et al., 2012). A 70-percent male and 30-percent female gender distribution in technology sectors fails to either encourage female SME owners to seek organizational growth or provide enough female mentors to help them capture international opportunities (Orser et al., 2012).

❑ *External Factors*

In addition to female SME owners’ conservatism in international growth, perceived discrimination on gender from external environments also deters their aspiration to export. In Orser et al.’s (2004) study on female exporters and export planners in Canada, female business owners reported perceiving discriminations in export business such as lack of respect by (foreign) male business owners; not being taken seriously in masculine culture (e.g. India, South Africa, Middle East.); bravado, physical gestures and chauvinism; assumptions that the business was owned by men; and businessmen who explicitly refused to do business with women. Female SME owners in this study further cited perceptions of gender bias in seeking finance, specifically, perceived gender discrimination by Canadian lending institutions. Since capital is the fuel that drives the development of a firm, “if

women cannot, or do not, employ risk capital to facilitate growth and survival, goals of prosperity and the ability of women to attain economic self-sufficiency may be compromised. To the extent that female-owned firms are systematically disadvantaged with respect to access to capital, the potential of such firms—and their owners—may not be realized” (Orser et al., 2006: 644).

In Orser et al.’s (2012) study of female-owned SMEs’ response strategies to overcome gender-related challenges, respondents appeared to be more likely to resolve obstacles through passive, personal, or “do-it-yourself” solutions instead of seeking external assistance. For instance, with respect to export barriers, female SME owners reported to deal with gender-specific obstacles through: ignoring perceived slights, avoiding certain social events, using e-mail (only) with certain customers, having a male employee handle selected firms, avoiding personal or phone contact in certain countries, sending children to boarding school or diminishing international travelling (Orser et al., 2004). Orser et al. (2012) further pointed out that given the industry projections, a reliance on personal-level response strategies was unlikely to attract or retain women in the industry.

❑ *Summary*

To summarize, the factors that influenced female-owned SMEs’ export propensity could be distributed into systemic factors that are gender neutral and gender-specific factors (see Table 6). As noted by liberal feminism, gender differences in export propensity are associated with systemic differences in structural factors, including SME owners’ education, firm size and firm age, sectors, external barriers concerned with business environments and market access. Apart from systemic factors that are neutrally associated with both male- and female- owned SMEs, gender-specific factors also contribute to female-owned SMEs’ lower propensity to export. Based on the “social feminism”, female SME owners’ lower stock of human capital, lack of international motivation (results from work/family conflicts) and

growth intention, relatively high level of risk aversion, short of networking and financial resources, perceived gender discrimination in fundraising and lack of respect from male business partners are on account of gender differences in power, social, and cultural structures. In conclusion, gender brings more disadvantages than advantages to female-owned SMEs, such that female-owned SMEs are more vulnerable in international markets and cannot compete with their male counterparts on the same scratch line. Both systemic and gender-specific barriers have hindered female-owned SMEs' ability to seek business opportunities, economically self-sufficiencies, networking, and financing resources, impeding their aspiration and capability to export.

Table 6 Summary of Systemic & Gender-Specific Factors that Influence Female-Owned SMEs' Export Propensity

Factors	Impact on Export Propensity	Key References	Key Arguments
Systemic Factors (Gender Neutral/ Liberal Feminism)			
Internal			
❑ Owner-level Attributes			
• Education	+	Simpson & Kujawa (1974)	▫ High level of education lead to greater openness to foreign markets
• Immigration	+	Spence et al. (2011)	▫ Immigrant-owned firms have higher tendency to export
❑ Firm-level Attributes			
• Firm size	+	Lefebvre & Lefebvre (2000)	▫ Stage/Process theory
	Interaction	Fan & Phan (2007)	▫ “Inaugural capacity”
• Firm age	+	Johanson & Vahlne (1990)	▫ Stage/Process theory
	-	Oviatt & McDougall (1994)	▫ International New Ventures
• Innovation	+	Dimitratos & Plakoyiannaki (2003)	▫ Innovative SMEs are more likely to adopt new markets and serve foreign customers.
• Sector			
- Agriculture	-		
- Manufacturing	+	Halabisky et al. (2005)	▫ Statistics showed that SMEs are more likely to center on tourism, professional services, manufacturing, wholesale/ retail, and knowledge-based industries
- Wholesale/Retail	+	Jung (2010)	
- Professional service	+	Orser & Carrington (2006)	
- Knowledge-base	+	Spence et al. (2011)	
- Tourism	+	Industry Canada (2011b)	
• Location			
- Urban	+		▫ Exporting supports are more available in urban locations where industrial and governmental resources are more centralized
- Rural	-	Orser et al. (2006, 2008a)	

Table 6 Summaries of Systemic & Gender-specific factors that influence female-owned SMEs' Export Propensity (Continued)

Factors	Impact on Export Propensity	Key References	Key Arguments
Systemic Factors (Gender Neutral/ Liberal Feminism)			
External			
☐ Perceived Barriers • Market access • Business environment	- -	Orser & Carrington (2006) Industry Canada (2011b) Secretariat A.P.E.C. (2008)	☐ External barriers from international environment and market access increase the perceived risk of exporting
Gender-Specific Factors (Social Feminism)			
Internal			
☐ Owner-level Attributes • Family responsibility (Work/family conflict) • Growth intention • Risk aversion • Related experience	- + - +	Carter et al. (2003) Coleman & Robb (2009) Harrison & Mason (2007) Orser et al. (2006) Coleman & Robb (2009)	☐ Female SME owners emphasizing family responsibility may be less likely to take risks and more hesitant to grow firms, thus more reluctant to export. Women also show lower stock of management and international experience.
☐ Firm-level Attributes • Networking • Financing	+ +	Harrison & Mason (2007) Orser et al. (2000)	☐ Lack of access to high-value business networks blocks female SME owners from getting financial resources
External			
☐ Perceived gender barriers • Perceived gender bias in business • Perceived gender discrimination in fundraising	- -	Orser et al. (2004, 2012) Orser et al. (2004, 2006)	☐ Perceived gender bias from business environment deters female SME owners' aspiration to export ☐ Perceived gender discrimination from lending institutions

2.3.3 Research Question

The advancement of the knowledge-based economy has enabled more SMEs to participate in international trade. Female SME owners' comparatively high percentage in Canadian INVs⁴ suggests a new breed of high-qualified, globally orientated female-owned SMEs (Orser et al., 2008b), which should be of great interest to scholars and policy makers. However, studies on female-owned SMEs have not matched their increased involvement in export, resulting in insufficient knowledge that might hinder policy makers who seek to encourage SME exporters (Welch et al., 2008). Failure to consider the role of gender on international trade and export propensity may result in biased understanding of SME exporters' behaviors (Orser et al., 2008b). Furthermore, prevailing research of SME exporters has been criticized of being based on non-random, qualitative, and small samples limited to manufacturers and technology-based sectors (Riding et al., 2012; Spence et al., 2011). Knowledge about export in service sectors (which is historically populated with female-owned SMEs) and cross-sectors is limited (Orser et al., 2008b, 2010). More research is called for to create a comprehensive picture of factors correlated with SMEs' export behavior, considering both internal (e.g., networking, financing, international experience, owner age and education) and external (e.g., tax incentives, government supports, exchange rate policies, and intermediary institutions) determinants (Cavusgil, 1984)

Canada is at the forefront on studies of gender, entrepreneurship, and SME exporters. Orser et al.'s (2004) study on 165 women exporters and 89 women export planners is the first research to develop a profile of Canadian female-owned SMEs with respect to motives, challenges, export strategies and gender-related issues faced by female-owned SME exporters. Her later empirical research (2008b) on 8112 SMEs contributed to the first representative, cross-sectors Canadian study that presents a representative profile. However,

⁴ In Orser et al.'s (2008b) study on 8112 Canadian SMEs suggests that one-quarter of all INVs report a 100-percentage women ownership.

Orser et al.'s (2008b) study of gender and export propensity is based on the interpretation of coefficients among the independent variables in a nonlinear regression model, which, according to Ai and Norton (2003), is problematic. Greater understandings of female SME exporters and the correct way to interpret gender's moderating effect are required to explore whether gender is still an obstacle that deters the potential growth of SMEs and national economy.

One of the challenges for studies on export lies in the intricate reasons behind SME owners' export intention, which is influenced by multiple attributes of both SME firms and business owners (Welch et al., 2008). Recognizing the disproportionate gender distribution in export, this thesis aims to understand factors that lead to SME owners' different export propensities based on Ajzen and Fishbein's (2005) theory of Reasoned Action and Planned Behavior:

- 1) What factors affect Canadian SMEs' export propensity?
- 2) What role does gender play in the export propensity?
- 3) What policy implications could be drawn from this thesis to encourage more participation of female-owned SMEs in the export markets?

3. Conceptual Development

Overall, this thesis seeks to understand the factors that contribute to SME owners' export propensity. Specially, the paper tries to draw a picture to describe how a series of factors and as well as "gender" contribute to SMEs' intention to export. To accomplish this goal, this thesis draws on Ajzen and Fishbein's (2005) theories of reasoned action and planned behavior, a framework that has been widely used in studies of prediction of individual's behavior. Ajzen and Fishbein's theories have been examined and frequently cited as theoretical foundation in a variety of studies (e.g. Chatzidakis, Hibbert, & Smith, 2007; Sandberg & Conner, 2008; Zhang & Zhang, 2007). Thus, applying their theories will strengthen the theoretical framework for this thesis, especially, providing a scientific

approach to explore how gender and a number of other factors influence SMEs' export propensity.

3.1 Theories of Reasoned Action and Planned Behavior

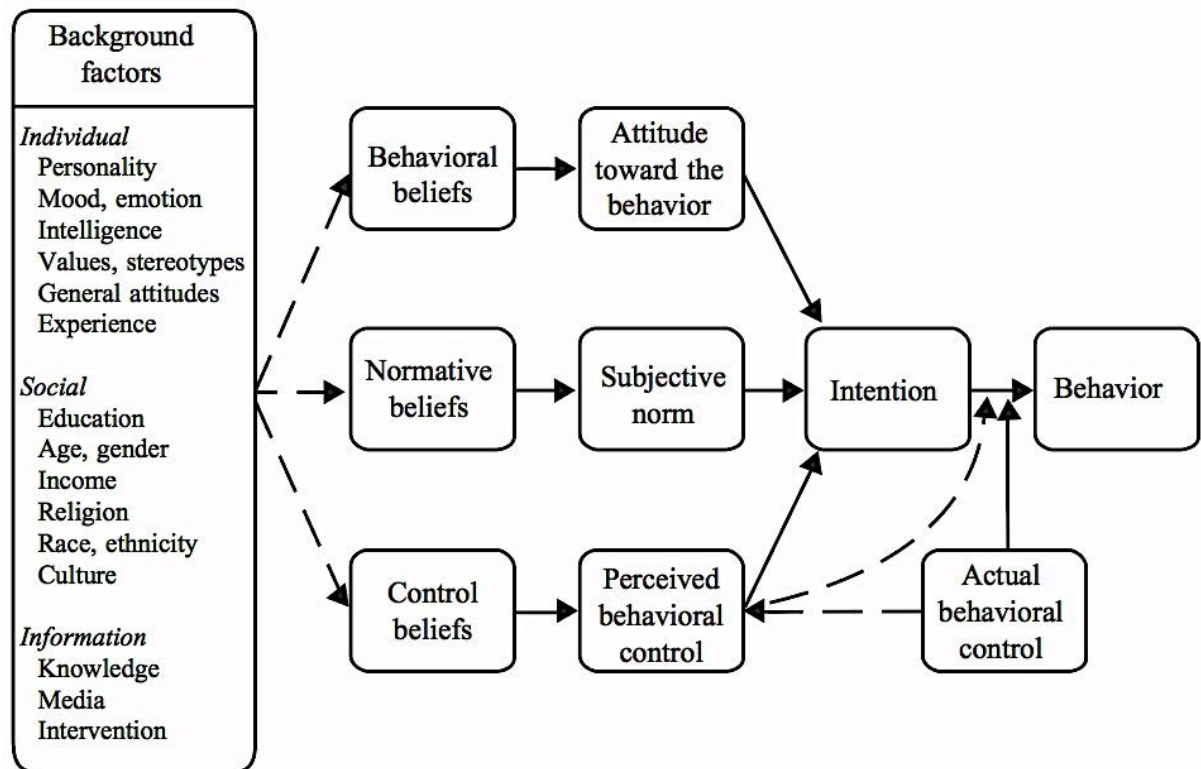


Figure 1 Ajzen and Fishbein's (2005) Theories of Reasoned Action and Planned Behavior

Ajzen and Fishbein's (2005) theories of reasoned action and planned behavior are used to predict social behavior by explaining how people follow their intentions that are affected by attitudes, subjective norms, and perceived behavioral control. According to Ajzen & Fishbein (2005: 193-194):

“The process described whereby people arrive at their intentions represents a reasoned action approach to the explanation and prediction of social behavior in the sense that people’s behavioral intentions are assumed to follow reasonably from their beliefs about performing the behavior. These beliefs need not be veridical; they may be inaccurate,

biased, or even irrational. However, once a set of beliefs is formed, it provides the cognitive foundation from which attitudes, perceived social norms, and perceptions of control—and ultimately intentions—are assumed to follow in a reasonable and consistent fashion.”

Attitude is identified as a key determinant in the individuals' behavioral intention and subsequent behavior (Billari, Philipov, & Testa, 2009). In Ajzen and Fishbein's study (1973: 42), attitudes towards behavior are proposed to be a person's evaluations "of the act's perceived consequences and of their values to the person". **Subjective norms** refer to individuals' "perceived normative expectations from reference groups" and "motivation to comply with the reference group's perceived expectations" (Ajzen & Fishbein, 1973: 43). **Perceived behavioral control** is defined as individuals' perceptions of their capability to perform a given behavior (Billari et al., 2009). According to Ajzen and Fishbein (2005), the three predictors represent individual's underlying behavioral, normative, and control beliefs, which are suggested to follow a number of background factors, including individual factors (e.g. personality, intelligence, experience, capabilities), social factors (e.g. age, gender, education, culture, ethnicity), and information factors (e.g. knowledge, media). Specifically, as noted by Ajzen and Fishbein (2005), attitudes, subjective norms, and perceived control could correlate to each other. For instance, perceived expectations from families and friends (subjective norms) might have a certain impact on a person's attitudes. Likewise, a perceived lack of control to successfully perform a given behavior may result in negative attitudes, an indirect impact on behavioral intention.

3.2 Framework of Export Propensity

Researchers have called for attention to the understanding of export propensity through variables such as management's attitudes and experiential knowledge (Calof, 1994). In response, we adopted Ajzen and Fishbein's (2005) theories of reasoned action and planned behavior in our framework of export propensity (as is shown in Figure 2).

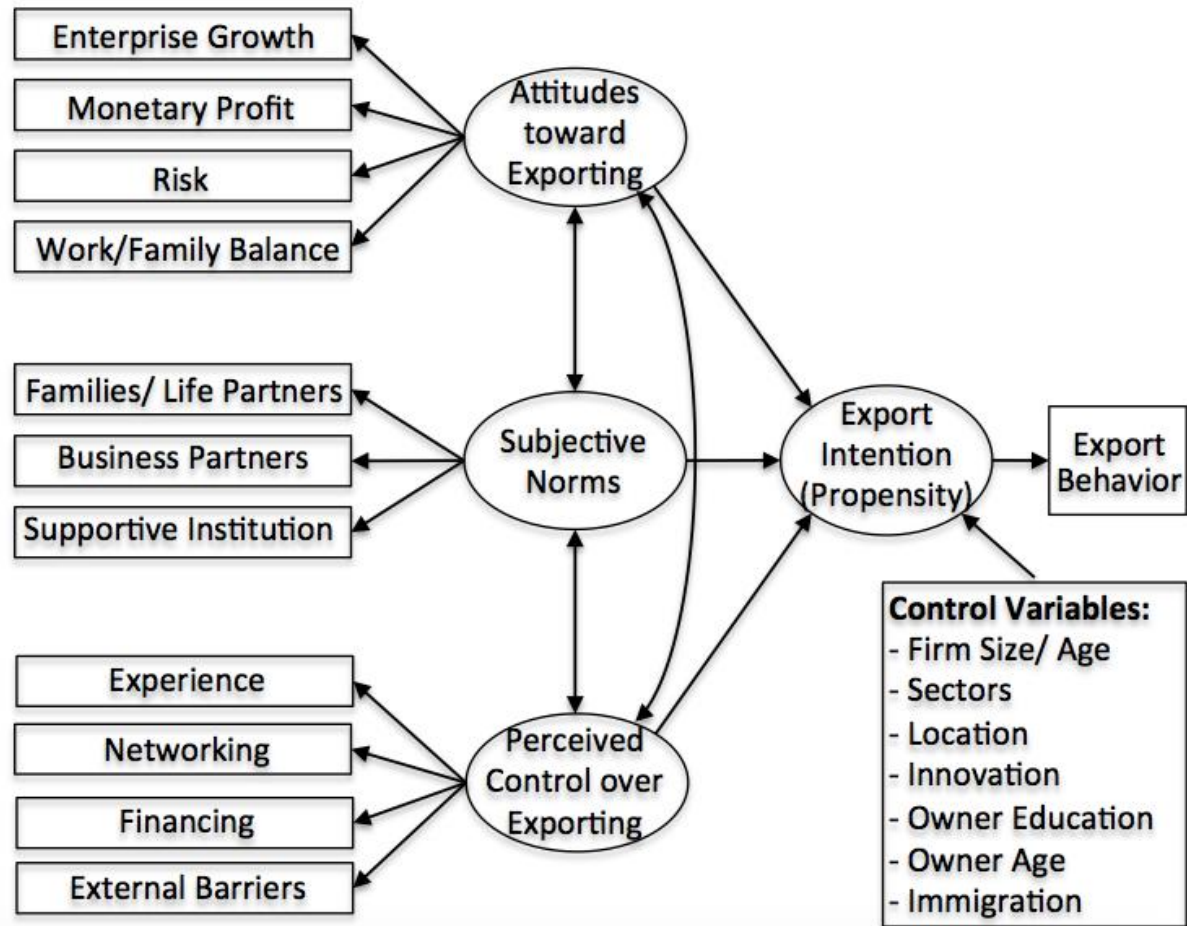


Figure 2 Framework of Export Propensity (General)

SME owners' export behavior is proposed to follow their intentions affected by attitudes (A), subjective norms (SN), and perceived control (PC) of exporting. Since the three determinants of behavior intention are latent factors, manifest variables were added to measure each of them. Specifically, attitudes towards export are measured by SME owners' perceived outcome (of export) in enterprise growth, monetary profits, risk, and work/life balance; subjective norms are measured by SME owners' perceptions of expectation from families/life partners, business partners, and supportive institution; and perceived controls are measured by SME owners' experience, available networking and financing resources as well as perceived external barriers. Additionally, according to the literature, export propensity is affected by firm size, age, sector, geographical location, innovation, and also by business

owners' education, age, and immigrant status (Crick & Spence, 2005; Dimitratos & Plakoyiannaki, 2003; Lefebvre & Lefebvre, 2000; Orser & Carrington, 2006; Orser et al., 2006, 2008a). These factors are presented as the control variables in the framework.

3.2.1 Attitudes towards Export (A)

Ajzen and Fishbein (1970) used "A-act" to describe attitudes towards "an act" instead of "an objective", which emphasizes the subjective evaluation about the consequence of performing a given behavior. Evidence showed that active exporters have higher expectations concerning the contribution of export to the firms' growth, market development, and profits, while passive exporters or non-exporters tended to show concerns on secure investments, i.e., a higher degree of risk-averse (Axinn, 1988; Cavusgil, 1984; Keng & Juan, 1989). Accordingly, SME owners' attitudes towards export could be measured by their perceived outcomes of export, which include enterprise growth, monetary profits, risk, and work/family balance.

- **Enterprise Growth:** Export provides growth opportunities for SMEs to expand the domestic market beyond country confines (Industry Canada, 2011b; Parsley, 2004), which not only expands customer base, but also helps to establish brand awareness and reputation in international markets. Thus, successfully exporting products or services abroad would offer a strategic growth for SMEs. In turn, SME owners with growth orientation are more likely to adopt export as a favorable strategy to grow their firms, which has been reported in Orser and Carrington's investigation (2006) on Canadian SMEs. Thus, enterprise growth could be an indicator of SME owners' attitudes towards export.
- **Monetary Profits:** Selling products or services to another country could bring monetary profits if the increase in sales revenue surpasses the increase in costs (Industry Canada, 2011b). In Rabino's (1980) study of small manufacturing firms, firms that had

high-profit aspirations were most likely to export and explored the feasibility of exporting. Similarly, Cavusgil (1984) also demonstrated that firms with more favorable perceptions of export profitability tended to show higher export intensity⁵. Furthermore, an expanded market could be more beneficial if it allows the capitalization of efficient economic scale and maximization of profits (Fan & Phan, 2007).

- **Risk:** Being involved in international trade means exposing the firm to an unfamiliar environment with high uncertainty and risk (Sapienza et al., 2006). Selling products to another country is similar to launching a new product: there is a risk that customers might not accept the product as expected. Consumers from other cultures may have different understandings and perceptions towards a product with respect to brand name (text), brand logo (graphic), and product package (color, e.g., white is a symbol of purity in most western cultures, but represents death in some Eastern cultures), thus they may react to the same product differently from domestic customers. Limited access to local customers and distribution channel, together with uncertainties in foreign economic conditions, government regulations, and business operations, put SMEs in a risky position to export. Additionally, several studies have found that CEOs and top management teams of SMEs show higher degrees of risk-aversion with respect to internationalization, because internationalization adds risks to the already-risky early-stage enterprises (Carpenter et al., 2003; Fernhaber, McDougall & Covin, 2009; George et al., 2005). This is also verified in the case of Canadian SMEs. In Nitani and Riding's (2015) recent qualitative study, CEOs of the interviewed SMEs showed concerns about the risk in the international market. As one participant reported, "It absolutely is risky...IP issues, cultural issues, partnership issues. It is a massive time distraction – you can't just fly to China once and get a deal done". Thus, whether SMEs can tolerate the risk brought by exporting business could be another indicator of their

⁵ As defined by Orser et al. (2008a, p: 3), export intensity "reflects the degree to which firms internationalize their operations and is measured as the ratio of export revenue to total sales".

attitudes towards export.

- **Work/Family Balance:** With limited labor force and resources, SME owners involved in exporting business usually travel a lot to get to know their customers, to negotiate with local distributors, to form strategic alliance/partnership, and to deal with local authority/government, meaning they have to spend less time with their families (Orser et al., 2004). This is not an easy decision to make, especially for young parents whose children require more company. Consequently, one important perspective that may influence SMEs' export propensity is the balance between work and family.

❑ *Possible Gender Effect*

Gender may moderate SME owners' attitudes towards export. Specifically, many indicators discussed above, such as work/family balance, risk tolerance, and monetary profits are gender sensitive.

- **Work/Family Balance:** Women have historically invested more time and energy in family roles. Compared to men, women are more likely to put priority on family when making career decisions (Myers, 1990). Thus, female SME owners might be more reluctant to potential work/family conflicts brought by exporting business. Hence, gender may moderate perceived consequences of export in work/family balance, such that female SME owners tend to show more concerns on the break of balance.
- **Risk:** The consideration of work/life balance explains women's high level of risk-aversion (Orser et al., 2006). In other words, female SME owners might be less likely to take risks in export markets. Additionally, concerns on family stability and safety drive women to operate their firms under controllable conditions, which means they may perceive it riskier to expose the firm to the unpredictable international market. In Welch et al.'s (2008) qualitative study, most women interviewed were cautious and

conservative in taking risks in the export market. Running business under controllable and manageable condition was reported as an important criterion for the women participants; even those who were already involved in export markets were reluctant to describe themselves as risk-takers. Thus, gender may moderate perceived risk of exporting, such that female SME owners are more sensitive to potential risk and less likely to take risks in international markets.

- **Monetary Profits:** Compared to men, who are more likely to be driven by monetary profits, women tend to be motivated by work-life flexibility and personal fulfillment (Carter et al., 2003, as cited by Coleman & Robb, 2009). It is not uncommon for women to become self-employed due to the consideration of flexible working hours. Thus, gender may moderate perceived consequences of export, such that female SME owners are less likely to be motivated by monetary profits.

3.2.2 Subjective Norms (SN)

People are emotional and may act as expected or desired by others (Ajzen & Fishbein, 1972). Similarly, SMEs' export propensity could be influenced by others' expectations and attitudes. Important reference groups that could impact SME owners' intention to export include families/life partners, business partners, and advisors from supportive institutions such as business incubation and professional consulting (Orser, 1998; Orser et al., 2012).

- **Families/ Life Partners:** Families and life partners are one of the most important reference groups of people's decisions on critical events. With respect to this thesis, for SME owners who run family businesses or co-operate businesses with their life partners, family members as part of the management team may offer professional suggestions on the pros and cons of export; for SME owners whose families or life partners stay out of the business, whether family members are supportive and willing to takeover family responsibility could also influence SME owners' intention to export. Thus, families and

spouses' expectations may partly reflect SME owners' normative belief on export.

- **Business Partners:** As peers of SME owners, business partners could be another source of references that possess business knowhow in the same or relevant industries. Specially, business partners might share or even try to convince SME owners of relevance of their opinions or attitudes towards international trades. Thus how they view export may, to some extent, reflect SME owners' subjective norms on export.
- **Supportive Institution:** There are many supportive institutions in the market, either in the form of profitable professional consulting, or of non-profitable agencies such as government-sponsored program or business incubation (e.g. Invest Ottawa, Start-up Canada). With rich experience and knowledge in business, advisors from these supportive institutions are the most authoritative and trustworthy reference for SMEs. SME owners usually approach them with questions about existing problems or future development in the firm. Thus, they may show high willingness to take advisors' opinions and suggestions into consideration, and advisors' knowledge and evaluation of the firm should contribute significantly to SME owners' subjective norms in export.

❑ *Possible Gender Effect*

It is noteworthy that what SME owners perceived from reference groups might not be the real ones, but biased expectations that endowed with their own (SME owners) subjective perceptions. Especially, gender may play a significant role in SME owners' subjective norms.

- **Families/ Life Partners:** Social expectations of woman being a good "wife" or a good "mother" are still embedded in most families. Compared to men, women are expected by their families or spouses to stay in a safe job and contribute more time to parenting and housekeeping. Being involved in exporting business leads to increased overseas travelling and decreased family time, which would be less expected on women. It is

possible that female SME owners will come across more resistance (than male SME owners do) from their families with respect to the intention to export. Thus, gender may moderate business owners' perceived expectation from families/ life partners, such that female SME owners tend to perceive negative signals with respect to export.

- **Business Partners:** Similarly, socially constructed roles of women might lead to a misperception among men that women are less competitive or resourceful in business, thus less capable of operating international businesses. Furthermore, not being taken seriously by male business partners may increase female SME owners' perceived risks in international markets. In such masculine culture as Islam, women are even prohibited from speaking to men in public, not to mention doing business with men. Hence, it would be unrealistic for a foreign female to negotiate with male business partner from these cultures. Accordingly, gender may moderate SME owners' perceived expectations from business partners, such that female SME owners tend to be discouraged from making progress in export.
- **Supportive Institution:** Women are relatively underrepresented in financing and consulting industries, thus female SME owners might need to consult from male advisors. On one hand, combining both genders could bring benefits since men and women have different specialties. On the other hand, gender differences may create misunderstandings. For instance, male advisors might subconsciously underestimate female's capability to manage export businesses, thus provide more conservative suggestions to female-owned SMEs. Even when male advisors treat male and female equally, female SME owners may be over-sensitive to gender issues and perceived negative messages from male advisors. Thus, gender may moderate SME owners' perceived expectations from supportive institutions, such that female SME owners are less likely to be motivated to export.

3.2.3 Perceived Control over Export (PC)

Evidence showed that exporters perceived significantly fewer obstacles to exporting than non-exporters (Bilkey, 1978). In other words, the extent that SME owners perceive they are capable of controlling over the exporting business could be a significant determinant in their intention to export, which could be measured by owners' experience, networking, financing, and perceived barriers in exporting.

- **Experience:** Selling products/services abroad means SMEs should be equipped with certain capability to cater new markets. In other words, exporters should understand their target market and have enough human capacity to manage international businesses. (Industry Canada, 2011b; Secretariat A.P.E.C., 2008). Experience in international business not only raises SME owners' interest and awareness of opportunities in foreign markets, but stocks valuable knowledge and experience that enhance their ability to manage export activities. Consequently, experience could be an indicator of business owners' perceived control over export.
- **Networking:** Many export activities start with unsolicited foreign orders obtained through previous contacts (McDougall, 1989; Oviatt & McDougall, 1994). With limited resources, SMEs frequently utilize strategic alliance or partnership to complement insufficient capacity, which are closely associated with SMEs' access to international networks. Thus, networking may be an important indicator of SME owners' perceived control over export.
- **Financing:** Export could be costly with the increased expense of travelling, tariff, product development/ adaptation, overseas promotion, and marketing campaign, which requires SMEs to acquire extra capital. Additionally, slower collection of payments in overseas markets raises the demand for operating cash flow. Therefore, sufficient stock of capital or access to external funding is critical to the development of exporting

business. Thus, financing could be an essential indicator of SME owners' perceived control over export.

Compared with firm-level attributes (experience, networking and financing), external barriers in international market access and business environment are less controllable. Hence these barriers could negative indicators that reflect SME owners' lack of control over export.

- **External Barriers:** Access to foreign markets includes approach to potential customers, distribution channel, competitive information, and other local resources (Industry Canada, 2011b). With geographical distance and potential cultural differences, it is more difficult for foreign traders to obtain sufficient and correct information about local markets. While market access reflects exporting conditions from micro perspective, business environment indicates whether macro environment is suitable for exporting. Barriers such as custom regulations, restricted industrial standards, poor infrastructures, instable economic and political conditions (Secretariat, A. P. E. C., 2008) may decrease the perceived control over exporting. Thus, SME owners' perceived control over exporting could be partially mirrored by their assessment of external barriers in export markets.

❑ *Possible Gender Effect*

- **Experience:** Gender discrimination could deter female SME owners' perceived control by establishing hindrances in knowledge acquisition. As noted earlier, although male and female SME owners are both well-educated on average, women are reported to stock less management and international experience, which might result from the unequal treatment they get in the workplace (Coleman & Robb, 2009; Orser et al., 2012). Thus, gender may moderate SME owners' capability and experience, such that female SME owners are less capable of exporting.

-
- **Networking:** Female SME owners have reported gender-related obstacles about being excluded from business networks due to gender discrimination (Coleman & Robb, 2009). Traditional ways of networking and socializing in a male-dominant business world may inherently exclude women. For instance, playing golf has been constantly used for informal business networking, but women appear as “outsiders” of this man’s club. Thus, gender may moderate SME owners’ access to business network, such that female SME owners perceive higher difficulty in networking.
 - **Financing:** Financing is another obstacle widely cited by female SME owners (Owen, 2010). The fact that few women are involved in the equity financing market may constrain businesswomen from searching for or getting access to capital (Harrison & Mason, 2007). Perception of gender discrimination is also mirrored by the significant gender differences in discouraged borrowers, i.e., women are less likely to apply for bank loans because they perceive higher rejection rates (Orser & Riding, 2006; Singh, 2014). Thus, gender may moderate SME owners’ financing resources, such that female SME owners perceive higher restriction in fundraising.

3.2.4 Gender Effects

As discussed above, gender may play a significant role in SMEs’ export propensity. To capture the role of gender, it is added as a moderating factor to the framework (see Figure 3).

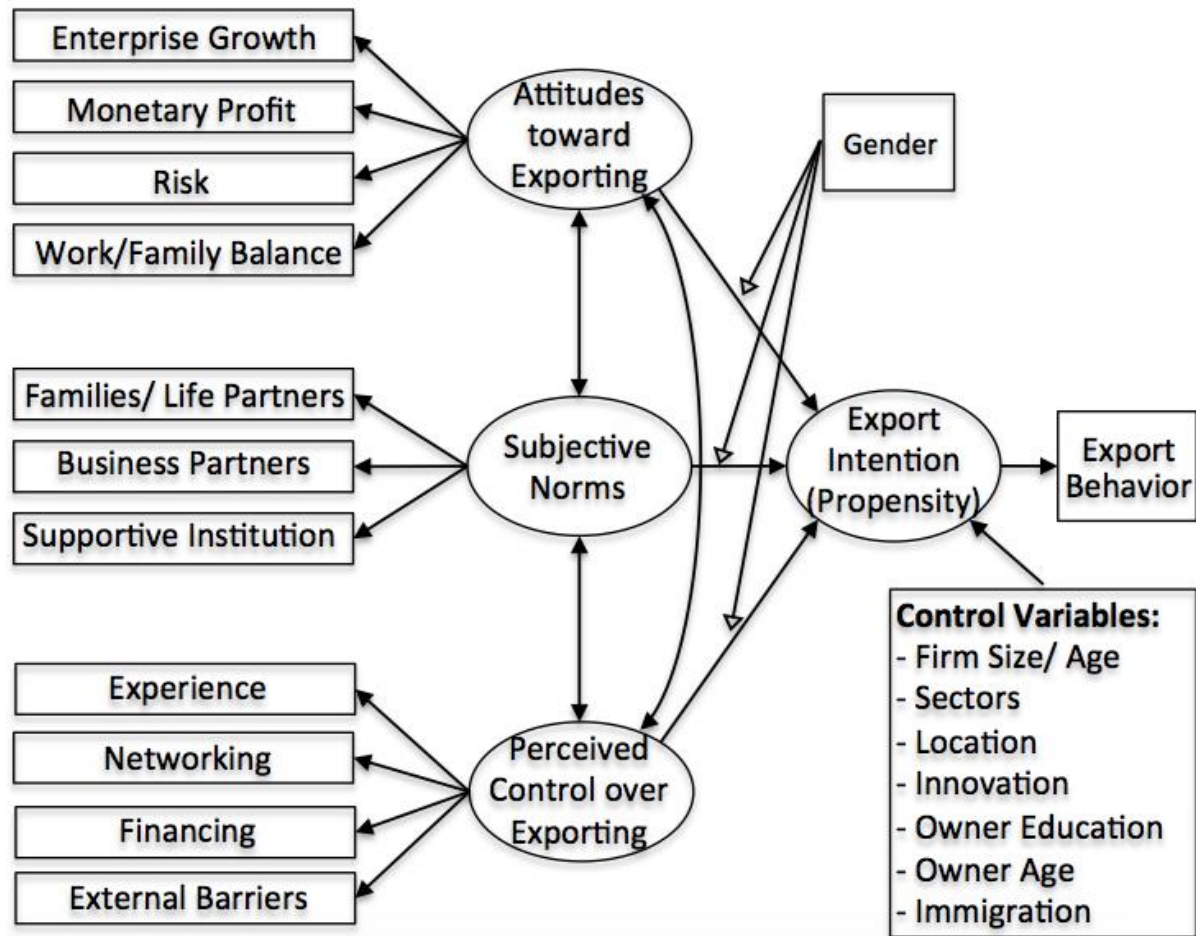


Figure 3 Framework of Export Propensity (Gender Applied)

Firstly, gender moderates SME owners' attitudes towards export. Women's concerns on work/family conflicts, hence a lower degree of risk tolerance and a lack of motivation in wealth creation might contribute to a relatively negative attitude towards export. In other words, attitudes towards export may be moderated by gender, such that female SME owners exhibit less positive attitudes towards export compared with male SME owners.

Secondly, gender moderates SME owners' subjective norms. Women's socially constructed role may result in gender-biased expectations from families/life partners, business partners, and supportive institutions, such that husbands would expect their wives to spend more time on family; male business partners might assume females as weak players; business advisors may be skeptical on female SME owners' capability and provide more conservative advice

on export. Accordingly, subjective norms could be moderated by gender, such that female SME owners perceived lower expectations to export as compared to male SME owners.

Thirdly, gender moderates SME owners' perceived control over export. Potential gender discrimination may put female-owned SMEs in a relatively weaker position to acquire management experience, networking, and financing resources. Thus, perceived control over export may be moderated by gender, such that female SME owners perceived lower control to export their businesses compared with male SME owners in the same industry.

Overall, gender moderates SME owners' intention to export through attitudes, subject norms, and perceived control, such that female SME owners are less likely to export.

3.2.5 Control Variables

To better understand the factors that contribute to SME owners' intention to export and the moderating effect of gender, it is important to control for other variables that may also affect export propensity (Reid, 1981). These control variables are discussed as below:

- **Firm Size/Age:** In condition that inaugural capacity is not larger than domestic demands (Fan & Phan, 2007)⁶, as a firm gets older (age) and bigger (size), its accumulation of knowledge and resources may lead to a higher export propensity (Orser et al., 2010). On the other hand, the development of information technology enables a new trend of INVs that internationalize at the inception stage (McDougall, 1989; McDougall et al., 1994). In both cases, firm size and firm age appear to impact export propensity, thus these two factors should be considered as control variables.

⁶ As argued by Fan and Phan (2007: 1116), "If this inaugural capacity is significantly larger than the profit-maximizing demand in the home country market (i.e., minimum efficient scale translated into excess capacity), it makes sense for the firm to venture internationally at inception (McKinsey and Co., 1993; Rennie, 1993)". However, since SMEs usually have limited resources, this thesis assumes that their inaugural capacity cannot reach profit-maximizing domestic demand.

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- **Sector:** SMEs in different sectors show different propensities to export: sectors with higher likelihoods of exporting include manufacturing, tourism, professional services, wholesale/retail, and knowledge-based industries (Bardasi et al., 2011; Brush et al., 2009; Jung, 2010; Orser et al., 2010).
 - **Location:** As noted earlier, geographic location to a great extent determines SMEs' transactional costs, international market access, and available supports from government or other institutions (Dunning, 2001). Thus, location could affect SMEs' export propensity and should be taken into consideration.
 - **Innovation:** Innovative SMEs are more likely to adopt creative ideas and practices to serve foreign customers, such that these firms may better respond to different customer preferences in foreign markets (Lumpkin & Dess, 1996). Thus, higher innovative propensity may increase SME owners' propensity to export.
 - **Owner Education:** SME owners' Education level is associated with their perceptions of profits and risk in the export markets, leading to different export propensities (Reid, 1981). Additionally, education could expand people's horizon, leading to greater openness towards external opportunities in the foreign markets (Crick & Spence, 2005). Education provides a platform for people to get in touch with different cultures, from which deeper understanding and higher interest in international markets as well as potential international business partnerships could be cultivated. Hence, people with higher level of educational degree may exhibit higher export propensity.
 - **Owner Age:** Age is connected to people's aspiration, creativity, and openness. Elderly people may prefer a peaceful life and be more conservative in taking risk in international markets. SME owners with younger age might be more internationally minded, but young parents may come across more work/family conflicts to manage exporting business. Thus, it could be expected that the relationship between owner age

and export propensity looks like an inverted U-shape curve: before a certain age (e.g. 60), age is positively associated with export propensity because the older business owners are, the less time they are expected to spend with their family (children); but when people start considering retiring, they are less likely to accept new challenges or to expect enterprise growth, thus they may be less likely export.

- **Immigration:** In Orser et al.'s (2008a) report of SME exporters in Canada, immigrant-owned SMEs are twice more likely (approximately 15 percent) to export compare to non-immigrant owned firms (7.5 percent), which could be explained by the network theory: in face of the unfamiliar domestic market, immigrant-owned SMEs may find it easier to export to their countries of origin drawing on international networks, cultural, and language advantages.

To summarize, it is important to control for systemic differences of SMEs (in firm size, age, location, innovation, and owner's education, age and immigrant status) in the test our framework so as to avoid exogenous influences.

3.2.6 Correlation among Factors

Factors affecting export intention are not completely independent. Instead, they might be correlated to each other. For instance, SME owners' growth orientation may be positively associated with innovation, since growth-oriented SMEs tend to be unsatisfied with the status quo, and to be more open to creative ideas/practices that enable market expansions (Dimitratos & Plakoyiannaki, 2003). Business owners motivated by monetary profits may show higher tolerance to risk and more aggressiveness in enterprise growth, since business expansion accompanied with higher risk is the most common way to accumulate wealth. Perception of risk in exports could also be positively associated with perceived barriers in market access and business environment. Moreover, it is possible that the relationship between firm size and export propensity is mediated by sector. In sectors that require certain

levels of initial investments such as manufacturing, firm size may appear to be positively correlated to export propensity, while in services and knowledge-based industries where less cash and fixed asset are required in initial investments, firm size may no longer be associated with export propensity.

From a gender perspective, desire for work/family balance and expectations from families /life partners may deter women' motivation in enterprise growth and wealth creation (Orser et al., 2012). Smaller size and younger age of female-owned SMEs may result in their relative disadvantages in business networking and lower eligibility for financial application (e.g. bank loan, angel investment, venture capital). Moreover, lower stock of related knowledge and experience may put female SME owners in a disadvantaged position in fundraising (Orser et al., 2000). Lack of access to valuable networking could also deter female SME owners from getting equal financing opportunities (Harrison & Mason, 2007).

Last but not the least, three determinants, attitudes, subjective norms, and perceived behavioral control might correlate to each other. For instance, perceived expectations (subjective norms) from business partners and supportive institutions (that women are less capable of exporting) may directly impact female SME owners' attitudes towards export, or account for their perceived lack of control on networking and financing, which again, influence their attitudes towards export. Similarly, negative attitudes towards export due to socially constructed female roles in the family may result in female SME owners' biased perceptions of expectations from families and supportive institutions (subjective norms), or biased perceptions of access to related resources in export (perceived control).

3.3 Summary of Study Propositions

Table 7 Summary of Study Propositions

Measures	Reported Impact on Export Propensity	Key References	Key Arguments	Potential Gender Effects
Attitudes (A)		Ajzen & Fishbein (1973)		
☐ Enterprise growth	+	Parsley (2004)	- Export provides growth opportunities for SMEs	
☒ Monetary Profit	+	Industry Canada (2011b)	- Export could increase sale revenue and profit	- Women tend to be motivated by work-life flexibility and personal fulfillment
☒ Risk	-	Sapienza et al. (2006)	- Export expose SMEs to riskier environment	- Women may be more sensitive to the risk in exporting
☒ Work/family balance	-	Orser et al. (2004)	- Export brings work/family conflict	- Women are more likely to put family in first priority when making career decision
Subjective Norms (SN)		Ajzen & Fishbein (1972, 1973)		
☒ Families/Life partners	+	Orser et al. (2012)	- SMEs' important reference groups include families/life partners, business partners, and supportive institutions	- Women's socially constructed role may result in gender-biased expectations from families/life partners, business partners, and advisors from supportive institutions
☒ Business partners	+	Orser et al. (2004)		
☒ Supportive institution	+	Orser (1998)		
Perceived Control (PC)		Billariet al. (2009)		
☒ Experience	+	Orser et al. (2008b)	- International business experience could generate favorability to export	- Women stock less management experience and knowledge in international markets
☒ Networking	+	Harrison & Mason (2007)	- Networking and financing are critical resources in international business	- Traditional ways of business networking may inherently exclude women out
☒ Financing	+	Orser et al. (2010)		- Female SME owners perceive higher restriction in fundraising

Table 7 Summary of Study Propositions (Continued)

Factors	Reported Impact on Export Propensity	Key References	Key Arguments	Potential Gender Effects
Perceived Control (PC)		Billariet al. (2009)		
☐ External Barriers	-	Industry Canada (2011b)	- External barriers may deter SME owners' perceived control of export	
Control Variables		Billariet al. (2009)		
☒ Firm size/age	+	Lefebvre & Lefebvre (2000)	- Stage/ Process theory - International New Ventures	- Female-owned SMEs are reported to be younger and smaller
☒ Sector				
• Agriculture	-	Halabisky et al. (2005)	- Firms in different sectors show different export propensities	- Female-owned SMEs tend to gather in tourism, professional services, wholesale/retail industries, but are underrepresented in manufacturing and knowledge-based industries.
• Manufacturing	+	Jung (2010)		
• Wholesale/Retail	+	Spence et al. (2011)		
• Professional service	+			
• Knowledge-base	+			
• Tourism	+			
☐ Location		Orser et al. (2006, 2008a)	- Exporting supports are more available in urban locations where more resources are centralized	
• Urban	+			
• Rural	-			
☐ Innovation	+	Lumpkin & Dess (1996)	- Innovative SMEs could better adapt to international markets.	
☐ Owner Education	+	Crick & Spence (2005)	- Education lead to greater openness and positive attitudes towards export	
☐ Owner Age	Inverted U-shape			
☐ Immigration	+	Orser et al. (2008a)	- Network theory	

Note: ☒ means gender effects are proposed.

4. Research Methodology

To find out how gender impacts SME owners' export propensity, quantitative research methods, Exploratory Factor Analysis (EFA) and Logistic Regression (LR), were adopted to test the framework of export propensity. The following section will explain the data collection process, measures of variables, and research method.

4.1 Data Collection

This thesis drew on the same data as Orser et al.'s (2008a,b; 2010) research on Canadian SMEs' export propensity from a survey conducted by Industry Canada in 2004. The survey collected data regarding the financing of Canadian small- and medium-size enterprises that employed fewer than 500 employees and generated less than \$50 million annual gross revenue. This survey gathered SMEs' information with respect to their demands for and sources of financing, engagement in international business activities, firm growth, and owner characteristics. The sampling frame contained 34,509 enterprises. Non-for-profit organizations, cooperatives, financing and leasing companies, multiple/federal government, subsidiaries, hospitals, schools, as well as other enterprises in specific industries⁷ were excluded from this sample. Specifically, the survey was conducted between September 2004 and March 2005.

The survey adopted stratified random sampling to acquire participants from the Business Register⁸. The sample was stratified according to four key variables: geographic region,

⁷ As identified by the North American Industry Classification System, enterprises in specific industries include utilities, finance and insurance, management of companies and enterprises, educational services, public administration, automotive equipment rental and leasing, commercial and industrial machinery and equipment rental and leasing, out-patient care centers, medical and diagnostic laboratories, other ambulatory health care services, general medical and surgical hospitals, psychiatric and substance abuse hospitals specialty (except psychiatric and substance abuse) hospitals, and community food and housing, and emergency and other relief services.

⁸ The Business Register is a Canadian government administrative database that contains all registered enterprises in Canada collected by the Canada Revenue and Customs Agency.

industry, firm age, and firm size, as well as Canadian Small Business Financing Act (CSBFA) to ensure a good representation of Canadian businesses. Data collection was conducted in two steps. Firstly, CATI (Computer Assisted Telephone Interviewing) was adopted to collect qualitative and quantitative questions concerning financial information, which could automatically detect errors through built-in on-line consistency edits and validity edits. Secondly, a questionnaire was mailed or/and faxed-out to participants who responded in step one, with follow-up via telephone to increase response rate. Response to the survey was voluntary. In total, 34,509 enterprises were sampled, from which 23,750 businesses were contacted (the other 10,759 businesses were out of scope, either out of business or unable to locate) and 13,042 businesses completed the telephone interview, resulting in a response rate of 55%. This relatively high response rate mitigated the effects of non-response bias to a considerable extent. Furthermore, nearest neighbor imputation was implemented to estimate missing or incomplete data from the nearest donors with similar attributes.

4.2 Hypotheses & Measures

Since the data is pre-collected, it does not contain all the information needed to test the whole framework. Thus, to make the best use of the data, the framework was adjusted with reduced measures and variables (see Figure 4), including:

- 1) Dependent variable:** SME owners' export propensity (behavior);
- 2) Independent variables (main factors):** attitudes (growth intention & perceived risk), perceived control (owner experience, financing resource, external barriers)⁹;
- 3) Moderator:** gender
- 4) Control Variables:** firm size, firm age, sector, location, innovation, owner age, immigrant status.

⁹ Unfortunately, existing data does not contain information regarding business owners' subjective norms of export. Future research and data collection are required to test this variable.

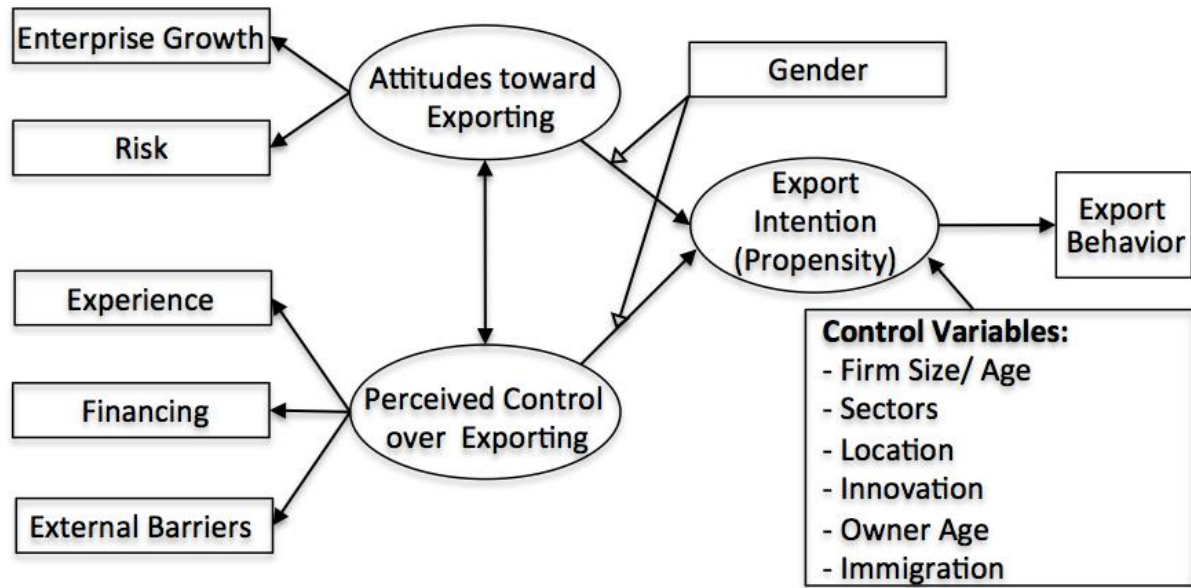


Figure 4 Reduced Framework of Export Propensity (Gender Applied)

4.2.1 Dependent Variables

The dependent variable, Y, is defined by whether or not the SME exports any goods or services outside of Canada: “1” was entered for firms with sales revenue from outside of Canada, and “0” was entered for firms with no sales revenue from outside of Canada. This dependent variable (SMEs’ export behaviors) is the only indicator of SMEs’ export intention (propensity), and was tested with a group of independent variables, control variables and the gender moderator (please refer to Table 8 for a detailed description of all variables with their corresponding question in the survey).

4.2.2 Independent Variables (Main Factors) and Moderator (Gender)

Gender is a key variable since the focus of this thesis is to find out how gender impacts SMEs’ export propensity. It was measured as a categorical variable (0% female business ownership, 1% to 49% female business ownership, 50% female business ownership, 51% to 99% female business ownership, 100% female business ownership). For mixed-gender business ownership, it is unclear whether male or female is the primary decision-maker

regarding to the business's export decision. Thus, to better identify gender's moderating effect on the dependent variable, the middle three categories, 1% to 49% female business ownership, 50% female business ownership, 51% to 99% female business ownership, were deleted in final data analysis¹⁰, keeping the first category, 0% female business ownership, and the last category, 100% female business ownership.

Attitude towards exports was measured by business owners' growth intention and perceived risk (See Table 8, monetary profits and work/family balance is unavailable in the existing database):

- ❑ **Growth intention** motivates SMEs to look for opportunities in export markets. It was measured as a dummy variable indicating whether the business owner intended to expand the size and scope of the company in the next two years. Growth intention could be a positive indicator of business owners' attitudes towards export, and has been reported to have a positive association with export propensity (Orser & Carrington, 2006). As suggested by Orser et al. (2008), male and female SME owners have the same aspiration to grow their firms. Accordingly, allowing for the control variables,

***H1:** Growth Intention is positively associated with SMEs' export propensity, such that SMEs with growth intention are more likely to export.*

***H1a:** Male and female SME owners do not differ significantly with respect to growth intention.*

¹⁰ In Orser et al.'s (2008b; 2010) research, when analyzing gender's impact on Canadian SMEs' export propensity, gender was defined as "whether or not the business ownership is primary owned by women", which is ambiguous because in the firm with 51% to 99% female ownership, it is possible for a male to be the primary decision-maker concerning exporting, while in the firm with 1% to 49% female ownership, it is possible for a female to be the primary decision-maker of exporting. To clarify gender's effect, we redefine it as "0% female business ownership (entered 0) vs. 100% female business ownership (entered 1)", deleting all data from 1% to 99% female business ownership.

-
- ❑ **Perceived risk** was measured by several binary variables, indicating whether SME owners perceived any problems or uncertainty in the business, such as instability of consumer demand and low profitability. Higher perception of risk in foreign markets may discourage SMEs' from exporting (Sapienza et al., 2006), thus it may be a negative indicator of business owners' attitudes towards export. As discussed above, women may be more sensitive to risk, which could contribute to relatively negative attitudes towards export. Accordingly, allowing for the control variables,

***H2:** Perceived risk is negatively associated with SMEs' export propensity, such that SMEs perceiving risk are less likely to export.*

***H2a:** SME owners' perception of risk is moderated by gender, such that female SME owners are more likely to perceive risk than male SME owners.*

***H2b:** With the same perception of risk, male-owned SMEs and female-owned SMEs are equally likely to export.*

Perceived control was measured by business owners' experience, financing resources and perceptions of external barriers.

- ❑ **Experience** was measured as a categorical variable indicating for how long the SMEs' primary owners had in running or managing a business. Such experience not only raises SME owners' awareness of growth opportunities in export markets, but stocks valuable knowledge that enriches SMEs' capacity to manage export activities. However, potential gender discrimination may put women in a relatively weaker position to acquire management experience. Accordingly, allowing for the control variables,

***H3:** Experience is positively associated with SMEs' export propensity, such that SMEs with more years of experience are more likely to export.*

***H3a:** SME owners' experience is moderated by gender, such that female SME owners hold less experience than male SME owners.*

***H3b:** With the same level of experience, male-owned SMEs and female-owned SMEs are equally likely to export.*

- ❑ **Financing** is one of the most important resources required to expand a business outside of Canada. This variable was measured in two ways: (1) Actual financing difficulty: whether the firm applied for any kinds of financial capital (e.g. debt financing, business credit, capital leasing, equity financing) but was rejected in the twelve months preceding their interview; (2) Perceived financing difficulty: whether SME owners found it difficult to obtain finance. Increased expense and slower collection of payment in export markets raises SMEs' demands for finance, and female SME owners have reported more difficulties in their access to financial resources than have male SME owners. Accordingly, allowing for the control variables,

***H4:** Financing difficulty is negatively associated with SMEs' export propensity, such that SMEs perceiving financing difficulty are less likely to export.*

***H4a:** SME owners' perception of financing difficulty is moderated by gender, such that female SME owners are more likely to perceive financing difficulty than male SME owners.*

***H4b:** With the same perception of financing difficulty, male-owned SMEs and female-owned SMEs are equally likely to export.*

- ❑ **External barriers** were measured as binary variables ("1" for yes and "0" for no) regarding business owners' perceptions of external obstacles, such as government regulation, levels of taxation, and insurance rate. These barriers might be perceived as

negative signals of export markets. They are uncontrollable and may decrease SMEs' intention to export. Accordingly, allowing for the control variables,

***H5:** External barriers are negatively associated with SMEs' export propensity, such that SMEs perceiving external barriers are less likely to export.*

***H5a:** Male and female SME owners do not have significant differences in their perceptions of external barriers.*

4.2.3 Control Variables

To avoid exogenous influences, control variables are important in data analysis. In this study, the control variables include firm size, firm age, sector, location, innovation (R&D investment), owner age, and immigrant status (See Table 8 for corresponding questions in the survey).

Firm size and **firm age** both have an impact on export propensity (McDougall, 1989; McDougall et al., 1994). Both were measured as continuous variables: firm size was measured by the company's employment (i.e., full-time equivalents, which equals to the number of full-time employees plus half of the number of part-time employees); firm age equals to the year the survey conducted minus the year a firm was established. Since the data on firm size was not normally distributed, we transferred it into $\lg(\text{firm size})$ to normalize this variable in the analysis of logistic regression.

Sector is a potentially important control variable since SMEs in different sectors show different propensities to export (Bardasi et al., 2011; Jung, 2010). It was measured here as a categorical variable, including services, goods, retail/wholesale, and knowledge-based industry.

Location could affect SMEs' export propensity through transactional costs, geographical market access, and institutional supports (Dunning, 2001). This factor was measured as a binary variable where "1" equals to "rural location" and "0" equals to "urban location".

Innovation may increase SMEs' adaptability to foreign preferences thus their capability to export (Lumpkin & Dess, 1996). This factor was measured by the percentage of total investment expenditure spent on R&D (Research and Development).

Immigrant-owned SMEs are more likely to export than other firms (Orser et al., 2008a). This factor was measured as a binary variable by asking whether the majority owner of the business had resided in Canada for less than five years.

Lastly, **Owner Age** was also added to the list of control variables, taking the potential influence of age into account on export propensity. It was measured as a categorical variable indicating different age levels of the person holding the largest share of business ownership.

Table 8 summarizes the description of variables and measures with their corresponding questions asked in the survey.

Table 8 Summary of Variables and Corresponding Questions in the Survey

Variables	Measures	Description	Corresponding Question in the Survey
Dependent variables			
Export Propensity	Export Behavior	"1" = Had sales from export "0" = Did not have sales from export	- H.2 a) Did the business sell or export any of its goods or services outside Canada during the past 12 months?
Independent variables (Main Factors)			
Attitudes	Growth Intention	"1" = Intended to grow the business "0" = Did not intend to grow the business	- H.4 During the next two years, do you intend to expand the size and scope of your business?
	Risk	"1" = Perceived risk in corresponding perspectives "0" = Did not perceive risk in corresponding perspectives	- Selecting from H.6, including: • Instability of consumer demand • Low profitability
Perceived Control	Owner Experience	"1" = Less than 5 years "2" = 5-10 years "3" = more than 10 years	- I3. How many years of experience does the majority owner or general manager have in owning or managing a business?
	Financial Difficulty	(1) "1" = Perceived difficulty in financing "0" = Did not perceive difficulty in financing (2) "1" = Got rejected in financing request "0" = Others	(1) H.6c. Is obtaining financing an obstacle for the growth of your company? (2) Combining C3/D4/D5/C5/E3/C6/F2, "1" was entered if the businesses applied for any kind of financial capital and were rejected; "0" was entered for the remaining
	External Barriers	"1" = Perceived barriers in corresponding aspects "0" = Did not perceive barriers in corresponding aspects	- H4. Which of the following obstacles external to your business are serious problems for the growth of your company? • Government regulations • Insurance rates • Level of taxation

Table 8 Summary of Variables and Corresponding Questions in the Survey (Continued)

Variables	Description	Corresponding Question in the Survey
Moderator		
Gender	"0"= 0% female ownership "1" = 100% female ownership	- H.10 What percentage of the business ownership is held by women?
Control variables		
Firm Size	Employment: Full-time Equivalents = # of full-time employees + (0.5 * # of part-time employees)	- B.7a (b) On average, how many paid full-time (part-time) employees --excluding the owners of the business and contract workers- did the business have during the past twelve months?
Firm Age	Firm age = The year the survey conducted - the year the company established	- H.1 During what year did the business first start selling goods and services?
Sector	Categorical variable indicating different industry-sectors	- Four categories: • Services • Goods • Retail/Wholesale • Knowledge-based Industry
Location	"1"= Urban "0"= Rural	/
Innovation	"1"= Had R&D investment "0"= No R&D investment	- H.3 What percentage of total investment expenditure was devoted to research and development?
Owner Age	"1"= Less than 30 years "2" = 30-39 "3" = 40-49 "4" = 50-64 "5" = 65 and over	- H.12 What is the age of the person with the largest share of ownership in [Business name]?
Immigrant Status	"1"= Immigrant-owned SMEs "0"= Other SMEs	- H.11 Was the majority ownership of the business held ... • by persons who have resided in Canada for less than 5 years?

4.3 Research Methodology

4.3.1 Exploratory Factor Analysis (EFA)

Firstly, since measures generated from the survey could cluster in different groups and present collinearity due to correlation, we adopted Exploratory Factor Analysis (EFA) to reduce the number of variables and to test whether the factors emerge in the pattern hypothesized in the conceptual framework. EFA is a statistical technique widely used to identify latent constructs and to uncover underlying structures of a set of measured variables (Fabrigar, Wegener, MacCallum, & Strahan, 1999; Norris & Lecavalier, 2010). The regression equation of EFA could be expressed as bellows (Gorsuch, 1997; Sun & Zhou, 2005):

$$X_n = W_{1n}F_1 + W_{2n}F_2 + \dots + W_{mn}F_m + W_nU_n + e_n$$

where, n is the number of measured variables, and m is the number of factors, thus X_n represents the measured variable(s); F_m represents common factors shared by all X_n ; U_n represents the special factor that only explains each of the corresponding measure variable; W_{mn} represents factor loading, the correlation coefficient between the measured variable X_n and the factor F_m ; and e_n represents the measurement error of the corresponding X_n . Factor rotation was employed to interpret factor patterns and factor loadings. This helped us to determine the best combination of factors to use in estimating logistic regression models.

4.3.2 Logistic Regression (LR)

Since the dependent variable (export propensity) was coded as a binary variable, logistic regression was employed to analyze predictors of SMEs' propensity to export. This is because logistic regression permits the modeling of a non-linear relationship between a

dependent variable and a series of independent variables. Additionally, to test for the moderating effect of gender, this factor was added as an interaction term in the logistic model. The regression equation used in this study can be described as follows:

$$\ln\left(\frac{f(x)}{1-f(x)}\right) = \alpha + \widetilde{\beta}_1 \widetilde{X} + \widetilde{\beta}_2 \widetilde{A} \text{ (Attitude)} + \widetilde{\beta}_3 \widetilde{C} \text{ (Control)} + \beta_4 G \text{ (Gender)} + \widetilde{\beta}_5 \widetilde{A} G + \widetilde{\beta}_6 \widetilde{C} G + \widetilde{\epsilon}$$

where $\ln$ denotes the natural logarithm, $f(x)$ represents the probability that the dependent variable equals a case ranging between 0 and 1; $\widetilde{X}$ is a vector of control variables that have potential influence on the export propensity; $\widetilde{A}$ and $\widetilde{C}$ are vectors of measures for SME owners' attitudes and perceived control of exporting; G is the moderator variable ("1" for 100% female ownership and "0" for 0% female ownership); $\widetilde{A} G$ and $\widetilde{C} G$ are interaction terms, representing the moderating effect of gender on attitudes and perceived control; α , $\widetilde{\beta}_1, \widetilde{\beta}_2, \widetilde{\beta}_3, \beta_4, \widetilde{\beta}_5, \widetilde{\beta}_6$ represent corresponding parameters, and $\widetilde{\epsilon}$ is a vector of error terms.

Furthermore, logistic regression analysis was conducted hierarchically: control variables were entered in the first block, followed by the main factors (attitudes and perceived control of export), and moderator variables (gender) were entered in the last block.

4.3.3 Interaction Effect in Logistic Regression

As suggested by Ai and Norton (2003: 129), the interaction effect "cannot be evaluated simply by looking at the sign, magnitude, or statistical significance of the coefficient on the interaction term when the model is nonlinear. Instead, the interaction effect requires computing the cross derivative or cross difference. Like the marginal effect of a single variable, the magnitude of the interaction effect depends on all the covariates in the model." To correctly capture the interaction effect, both Ai and Norton (2003) and Greene (2012) proposed a better way to calculate them in the nonlinear model by computing cross derivatives (or differences) between the interaction terms. Consequently, this thesis adopted

their method to test and interpret gender's moderating effect on attitudes and perceived control.

In our logistic regression,

$$f(x) = \frac{e^{(\alpha + \widetilde{\beta}_1 \widetilde{X} + \widetilde{\beta}_2 \widetilde{A} + \widetilde{\beta}_3 \widetilde{C} + \beta_4 G + \widetilde{\beta}_5 \widetilde{A} G + \widetilde{\beta}_6 \widetilde{C} G)}}{1 + e^{(\alpha + \widetilde{\beta}_1 \widetilde{X} + \widetilde{\beta}_2 \widetilde{A} + \widetilde{\beta}_3 \widetilde{C} + \beta_4 G + \widetilde{\beta}_5 \widetilde{A} G + \widetilde{\beta}_6 \widetilde{C} G)}}$$

where $\widetilde{\beta}_5 \widetilde{A} G$ and $\widetilde{\beta}_6 \widetilde{C} G$ are interaction terms. Most statistics software such as SPSS and Eviews will dutifully report coefficient $\widetilde{\beta}_5$ and $\widetilde{\beta}_6$ as the moderating effect of gender on attitudes and perceived control, which would be correct in linear regression because in the linear model,

$$\frac{\partial^2 f(x)}{\partial \widetilde{A} \partial G} = \widetilde{\beta}_5 \quad \text{and} \quad \frac{\partial^2 f(x)}{\partial \widetilde{C} \partial G} = \widetilde{\beta}_6$$

However, this is no longer accurate in the nonlinear model such as logistic regression. According to Greene (2012), the correct “interaction effect” should be calculated by cross derivatives between interaction terms. Applying to our model,

$$\frac{\partial^2 f(x)}{\partial \widetilde{A} \partial G} = \widetilde{\beta}_5 f(x)[1 - f(x)] + (\widetilde{\beta}_2 + \widetilde{\beta}_5 G)(\beta_4 + \widetilde{\beta}_5 \widetilde{A} + \widetilde{\beta}_6 \widetilde{C})f(x)[1 - f(x)][1 - 2f(x)]$$

$$\frac{\partial^2 f(x)}{\partial \widetilde{C} \partial G} = \widetilde{\beta}_6 f(x)[1 - f(x)] + (\widetilde{\beta}_3 + \widetilde{\beta}_6 G)(\beta_4 + \widetilde{\beta}_5 \widetilde{A} + \widetilde{\beta}_6 \widetilde{C})f(x)[1 - f(x)][1 - 2f(x)]$$

The moderating effect between gender and attitudes (perceived control) can no longer be simply estimated by $\widetilde{\beta}_5$ ($\widetilde{\beta}_6$). Instead, there are complicated additional terms. Take the interaction effect between gender and attitudes as an example. As suggested by Greene (2012), the first part of the derivative, $\widetilde{\beta}_5 f(x)[1 - f(x)]$, could be regarded as a “direct”

effect of gender on attitudes, while the second part of the derivative, $(\widetilde{\beta}_2 + \widetilde{\beta}_5 G)(\beta_4 + \widetilde{\beta}_5 \widetilde{A} + \widetilde{\beta}_6 \widetilde{C})f(x)[1 - f(x)][1 - 2f(x)]$, could be attributed to the fact that “we are differentiating a nonlinear model—essentially, the second part of the partial effect results from the nonlinearity of the function” (Greene, 2012: 700). Even when $\widetilde{\beta}_5$ equals zero, the derivative between gender and attitudes,

$$\frac{\partial^2 f(x)}{\partial \widetilde{A} \partial G} = \widetilde{\beta}_2(\beta_4 + \widetilde{\beta}_6 \widetilde{C})f(x)[1 - f(x)][1 - 2f(x)]$$

is nonzero (generally) due to the existence of the second part.

Consequently, the interaction effect of gender in our non-linear logistic regression model cannot be observed simply through the coefficient on the interaction term that are widely adopted in linear regressions, which could lead to biased results (Greene, 2010, 2012). Instead, we computed the cross derivative between interaction terms to measure gender’s moderating effect.

5 Data Analysis & Empirical Findings

Before proceeding to data analysis, inconsistent data and missing value were evaluated to ensure data accuracy. Specially, 4060 participants were eliminated due to the absence of a record for the dependent variable, whether the company exported in the last 12 months. As a result, 8427 observations were contained in the final analysis. Additionally, since the sampling frame is stratified, all data was weighted through SPSS to better represent the distribution of Canadian SMEs, contributing to a total of 7748 SMEs after weighting cases.

5.1 Descriptive Summary

Table 9 presents a descriptive summary of the data as well as a comparison between exporters and non-exporters firms across salient firm attributes and owner characteristics. Chi-square Tests of Independence were also conducted to examine whether SME owners' export propensity (exporter vs. non-exporter) was associated with other firm- and owner-level attributes. Overall, 7055 (91.6%) of all SMEs were non-exporters, and 693 (8.94%) were exporters. Given the P-value from the Chi-square Test and the percentage, we can directly compare the proportion of exporters and non-exporters with respect to a specific attribute.

Table 9 Descriptive Summary on Non-exporter and Exporter

	Frequency			Percentage ¹¹		Chi-Square	P-value
	Non-exporter	Exporter	Total	Non-exporter	Exporter		
Total	7055	693	7748	100.0%	100.0%		
Firm-level Attributes							
Sector						112.28	0.000
Goods	2184	227	2411	30.96%	32.76%		
Services	3541	233	3774	50.19%	33.62%		
Wholesale/retail	958	151	1109	13.58%	21.79%		
Knowledge-based	372	82	454	5.27%	11.83%		
Location						38.32	0.000
Rural	2226	140	2366	31.55%	20.20%		
Urban	4829	553	5382	68.45%	79.80%		
Firm size (FTEs)						18.04	0.001
0	5477	505	5982	77.63%	72.87%		
0.5-5	980	98	1078	13.89%	14.14%		
5.5-20	365	50	415	5.17%	7.22%		
20.5-100	143	23	166	2.03%	3.32%		
100.5-500	90	17	107	1.28%	2.45%		
Age of Firm						0.77	0.381
≤ 5 years old	2366	221	2587	33.54%	31.89%		
> 5 years old	4689	472	5161	66.46%	68.11%		
R&D Investment						275.63	0.000
No investment	5114	292	5406	72.49%	42.14%		
Had investment	1941	401	2342	27.51%	57.86%		
Gender Composition of Business Ownership						15.06	0.005
0% female	3625	354	3979	51.38%	51.08%		
1-49% female	2407	250	2657	34.12%	36.08%		
50% female	1514	130	1644	21.46%	18.76%		
51-99% female	109	11	120	1.55%	1.59%		
100% female	1023	89	1112	14.50%	12.84%		

¹¹ Here, the percentage means the proportion of exporters (or non-exporters) accounted for by the specific group (row).

Table 9 Descriptive Summary on Non-exporter and Exporter (Continued)

Frequency				Percentage		Chi-Square	P-value
Non-exporter	Exporter	Total	Non-exporter	Exporter			
Owner-level Attributes							
Immigration						40.53	0.000
Immigrant owned	102	33	135	1.45%	4.76%		
Non-immigrant owned	6953	660	7613	98.55%	95.24%		
Owner Experience						9.61	0.008
< 5 years	968	77	1045	13.72%	11.11%		
5-10 years	1310	107	1417	18.57%	15.44%		
>10 years	4777	509	5286	67.71%	73.45%		
Growth Intention						170.65	0.000
Intended to grow	2848	458	3306	40.37%	66.09%		
No growth intention	4207	235	4442	59.63%	33.91%		
Age of Owners						11.27	0.024
< 30 years old	239	10	249	3.39%	1.44%		
30-39 years old	1188	110	1298	16.84%	15.87%		
40-49 years old	2457	261	2718	34.83%	37.66%		
50-64 years old	2568	263	2831	36.40%	37.95%		
65 years and over	603	49	652	8.55%	7.07%		
Perceived Obstacles in...							
Instable market demand	2625	302	2927	37.21%	43.58%	10.90	0.001
Insurance rates	2589	297	2886	36.70%	42.86%	10.24	0.001
Management Capacity	985	139	1124	13.96%	20.06%	17.40	0.000
Finding qualified labor	2693	250	2943	38.17%	36.08%	1.177	0.278
Government regulations	2501	251	2752	35.45%	36.22%	0.163	0.686
Low profitability	2870	281	3151	40.68%	40.55%	0.005	0.946
Levels of taxation	3414	364	3778	48.39%	52.53%	4.316	0.038
Financing difficulty	1597	222	1819	22.64%	32.03%	31.02	0.000
Financing requests (rejected)	293	61	354	4.15%	8.80%	31.282	0.000

As suggested in Table 9, except for the age of firm, exporters and non-exporters do show significant differences in all other firm- and owner-level attributes. Specifically:

- **Sector:** SMEs operating in goods, wholesale/retail, and knowledge-based industries are more likely than those operating in service sectors to export (P-value < 0.000).
- **Location:** Firms distributed in urban locations show higher likelihoods of exporting than those distributed in rural locations (P-value < 0.000).
- **Size:** SMEs with greater size are more likely to become exporters (P-value = 0.001).
- **R&D Investment:** SMEs with R&D investment are more likely to export than those without R&D investment (P-value < 0.000).
- **Gender:** SMEs with 100 percent female business ownership are less likely than SMEs with majority male business ownership to report export sales (P-value = 0.005).
- **Immigrant:** SME exporters are more likely to have immigrant ownership (P-value = 0.000).
- **Experience:** Business owners of SME exporters tend to have longer years of management experience (greater than 10 years, P-value = 0.008).
- **Growth Intention:** Business owners of SME exporters tend to report a higher intention to grow their businesses (P-value < 0.000).
- **Age of Owner:** As expected, the relationship between export behavior and the age of owners shows an inverted U shape: SME owners older than 40 years old but younger than 64 years old show higher propensity to export, while SME owners younger than 40 years old or older than 64 years old are less likely to export (P-value = 0.024).
- **Obstacles in Business Development:** Exporters are more likely to perceive obstacles in the instability of consumer demand (P-value = 0.001), insurance rates (P-value = 0.001), management capacity (P-value < 0.000), levels of taxation (P-value = 0.038), as well as financing difficulty (P-value < 0.000), and are more likely to be rejected in requests for external financing.

Table 10 presents the descriptive summary of the gender composition of SMEs' business ownership across a group of salient attributes. Since the gender of dominant decision-makers in SMEs with mixed-gender ownership was uncertain, these observations have been removed from the table. Thus the table only compares SMEs with 100 percent male ownership and SMEs with 100 percent female ownership. Overall, 3981 (78.17%) of the SMEs are solely owned by men, while 693 (21.83%) of the SMEs are solely owned by women. Similarly, given the P-value from the Chi-square Test, we can compare the distribution of gender ownership in different firm- and owner-level attributes.

The data shows significant gender differences in all firm- and owner-level attributes except for growth intention. Specifically:

- **Sectors:** SMEs with 100 percent female business ownership (female-owned SMEs) are more likely to operate in service and wholesale/retail sectors but less likely to operate in goods and knowledge-based industries (P-value < 0.000).
- **Size:** Female-owned SMEs appear to be smaller (P-value = 0.016) than their male counterparts.
- **Location:** Female-owned SMEs tend to distribute in urban locations (P-value = 0.024).
- **R&D Investment:** Female-owned SMEs are more willing than male-owned SMEs to invest in R&D (P-value = 0.002).
- **Age:** Although female-owned SMEs are older than male-owned SMEs (age of firm, P-value = 0.001) on average, female business owners tend to be younger than male business owners (age of owner, P-value < 0.000). This may indicate that women are more likely to take over family businesses, while men tend to start new businesses on their own.
- **Experience:** Female SME owners have less experience than male SME owners (P-value < 0.000).
- **Immigrant:** Female-owned SMEs are more likely to have immigrant ownership (P-value = 0.001).

Table 10 Descriptive Summary on Gender Composition of Business Ownership

Frequency			Percentage			Chi-Square	P-value
100%Male	100%female	Total	100%Male	100% female			
Total	3981	1112	5093	100.0%	100.0%		
Firm-level Attributes							
Sector						208.79	0.000
Goods	1252	123	1375	31.45%	11.06%		
Services	1932	773	2705	48.53%	69.51%		
Wholesale/retail	555	163	718	13.94%	14.66%		
Knowledge-based	242	53	295	6.08%	4.77%		
Firm size (FTEs)						12.17	0.016
0	3159	886	4045	79.35%	79.68%		
0.5-5	470	155	625	11.81%	13.94%		
5-20	208	50	258	5.22%	4.50%		
20.5-100	88	13	101	2.21%	1.17%		
100.5-500	56	8	64	1.41%	0.72%		
Locations						5.20	0.024
Rural	1076	263	1339	27.03%	23.65%		
Urban	2905	849	3754	72.97%	76.35%		
R&D Investment						10.06	0.002
No investment	2872	748	3620	72.14%	67.27%		
Had investment	1109	364	1473	27.86%	32.73%		
Age of Firm						10.75	0.001
≤ 5 years old	2614	671	3285	65.66%	60.34%		
> 5 years old	1367	441	1808	34.34%	39.66%		
Owner-level Attributes							
Age of Owners						70.07	0.000
< 30 years old	146	64	210	3.67%	5.76%		
30-39 years old	657	290	947	16.50%	26.08%		
40-49 years old	1427	364	1791	35.85%	32.73%		
50-64 years old	1424	327	1751	35.77%	29.41%		
65 years and over	327	67	394	8.21%	6.03%		
Owner Experience						119.95	0.000
< 5 years	576	217	793	14.47%	19.51%		
5-10 years	708	335	1043	17.78%	30.13%		
>10 years	2697	560	3257	67.75%	50.36%		

Table 10 Descriptive Summary on Gender Composition of Business Ownership (Continued)

Frequency				Percentage			
		100% Male	100% female	Total	100% Male	100% female	Chi-Square P-value
Owner-level Attributes							
Immigration							11.59 0.001
Immigrant owned	55	32	87	1.38%	2.88%		
Non-immigrant owned	3926	1080	5006	98.62%	97.12%		
Growth Intention							2.21 0.138
Intended to grow	1757	463	2220	44.13%	41.64%		
No growth intention	2224	649	2873	55.87%	58.36%		
Perceived Obstacles in...							
Instable market demand	1409	454	1863	35.39%	40.83%	11.06	0.001
Levels of taxation	1856	562	2418	46.62%	50.54%	5.35	0.021
Insurance rates	1491	306	1797	37.45%	27.52%	37.57	0.000
Finding qualified labor	1525	356	1881	38.31%	32.01%	14.78	0.000
Management Capacity	623	147	770	15.65%	13.22%	4.00	0.046
Government regulation	1399	284	1683	35.14%	25.54%	36.22	0.000
Low profitability	1543	394	1937	38.76%	35.43%	4.11	0.043
Financing difficulty	905	301	1206	22.73%	27.07%	9.04	0.003
Financing requests (rejected)	172	49	221	4.32%	4.41%	0.02	0.901

-
- **Obstacles in Business Development:** Female-owned SMEs are more likely to report obstacles in the instability of consumer demand (P-value = 0.001) and levels of taxation (P-value = 0.021), but are less sensitive to issues related to insurance rates, human capital (finding qualified labor), management capacity, government regulation, and low profitability (P-value < 0.000, P-value < 0.000, P-value = 0.046, P-value < 0.000, and P-value = 0.043, respectively). Although female-owned SMEs are more likely to report financial difficulty (P-value = 0.003), there are no significant gender differences among SMEs that was rejected in their request for external financing. This indicates that while women are more likely to perceive financial difficulty, they are not necessarily disadvantaged in practice.

Overall, the descriptive analyses show significant differences between exporters and non-exporters and between male-owned and female-owned SMEs across salient firm- and owner-level attributes. However, descriptive analysis does not control for other variables when making the comparison between two variables. These results should be interpreted with caution due to potential collinearity. For instance, the data shows that SMEs with 100 percent female business ownership are less likely to export than their male counterparts. However, female-owned SMEs are also smaller, less experienced, and more likely to operate in service sectors, attributes that are correlated with lower likelihoods of exporting. Thus, descriptive statistics can provide diagnostic but not conclusive evidence to our hypothesis. To test our framework of export propensity, multivariate statistical analysis is required.

5.2 Data Analysis

Multivariate statistical analysis was conducted in three steps. Step one applied Exploratory Factor Analysis (EFA) to acquire indicators of the main factors for step two (Logistic Regression). Step three adopted Greene's (2012) method to calculate gender interaction effects on export propensity.

5.2.1 Exploratory Factor Analysis (EFA)

Since the measures of SMEs' attitudes and perceived control may have collinearity due to correlation among indicators, Exploratory Factor Analysis (EFA) was adopted first to reduce the number of variables¹². Table 11 shows the result of Exploratory Factor Analysis with four principal components emerging from the factor solution, collectively explaining 61.2 percent of the underlying variance. The eigenvalues of these four components all exceed 1.0. Overall, the components generated in Exploratory Factor Analysis correspond well with the expected patterns and the logical dimensions of SMEs' attitudes and perceived control suggested in the conceptual framework (see Figure 4).

Table 11 Exploratory Factor Analysis of SMEs' Attitudes and Perceived Control of Exporting

Measurement	Principal Component				Description
	1	2	3	4	
Obstacles in Insurance Rates	0.709				External barriers (Perceived control)
Government Regulations	0.704				
Levels of Taxation	0.673				
Financial Request Rejected		0.839			Financing difficulty (Perceived control)
Financing difficulty		0.769			
Instability of Consumer Demand			0.841		Risk (Attitudes)
Low Profitability			0.699		
Obstacles in Management Capacity				0.850	Management capacity (Perceived control)
Difficulty in Finding Qualified Labor	0.432			0.607	
Eigenvalues	2.086	1.263	1.113	1.048	
Percentage of Variance	23.17	14.03	12.37	11.64	
Cumulative Percentage	23.17	37.20	49.57	61.21	

The first two components measure SME owners' perceived control over export. Component one reflects SME owners' perceptions of external barriers, and component two indicates their perceptions of financing difficulty. Component three consists of two uncertainties in export

¹² Since both growth intention (indicator of attitudes) and owner experience (indicator of perceived control) did not have multiple measures in the survey, they were not included in the Exploratory Factor Analysis.

markets, profitability and instability of market demand, which could be interpreted as SME owners' perceived risk (lack of control). Although component four is a new indicator originally not included in our framework, it is rational and can be interpreted as SME owners' perceptions of internal control and management capacity. We selected the factor with the highest loading of each principal component as the measurement for the corresponding main factor in our logistic regression.¹³

5.2.2 Logistic Regression (LR)

Logistic regression analysis was conducted to test factors that contribute to SMEs' export propensity¹⁴. Three models were tested in the logistic regression hierarchically:

- 1) Base Model without interaction terms for three different samples (All SMEs, SMEs with 100 percent male business ownership, and SMEs with 100 percent female business ownership).
- 2) Full Model with interaction terms.
- 3) Reduced Model with interaction terms but insignificant factors was removed.

Table 12 shows the output of the logistic regression for the Base Model. The regression was repeated three times, first applying to all SMEs (Base Model One, N = 7748), then to SMEs with 100 percent male business ownership (Base Model Two, N = 3981), and then to SMEs

¹³ Specifically. We chose "obstacles in insurance rate" to represent SME owners' perception of external barriers, "instability of consumer demand" to represent SME owners' perception of risk, and "obstacles in management capacity" to represent SME owners' perceived lack of internal control over management capacity. However, with respect to financing difficulty, although "financing request rejected" had a higher loading, we have chosen to include SME owners' perception of financing difficulty in the data analysis. This is because in the test of the association between financing difficulty and SME owners' export propensity, it is the perception of "financing difficulty", instead of the actual financing difficulty (get rejected in the financing request), that contributes to the final decision.

¹⁴ In this paper, we use the broad definition of export behavior ("1" = has export sales "0" = has no export sales) as the indicator of export propensity. However, in Orser et al.'s (2008b) paper, they defined export propensity as "intensive exporter", where "1" equaled to SMEs with more than 25% revenues from export sales and "0" denoted SMEs with 0% revenues from export sales (deleting firms with 1%~24% revenues from export sales). We repeated all data analysis in both two definitions of exports and found no substantive differences in the outcomes. For the sake of consistency, we only report data output corresponding to the broad definition of export behavior in the main body of this text, but show data results of the "intensive exporter" in Appendix 1 and Appendix 2.

with 100 percent female business ownership (Base Model Three, N = 1112), respectively.¹⁵

Overall, the goodness-of-fit of all three models were acceptable. All models as well as each block of each model were significant (P-values < 0.000). Specifically:

- Block Two of Model One (all SMEs) increased the Cox and Snell R^2 value from 0.053 to 0.065 and the Nagelkerke R^2 value from 0.117 to 0.144;
- Block Two of Model Two (SMEs with 100 percent male business ownership) increased the Cox and Snell R^2 value from 0.057 to 0.072 and the Nagelkerke R^2 value from 0.126 to 0.160;
- Block Two of Model Three (SMEs with 100 percent female business ownership) increased the Cox and Snell R^2 value from 0.073 to 0.116 and the Nagelkerke R^2 value from 0.171 to 0.271.

¹⁵ For each regression, control variables were entered in the first block, including R&D investment (whether the SME had investment in R&D), rural location (whether the SME was situated in rural location), firm size (Full-time Equivalent = number of full-time employees + 0.5 * number of part-time employees), immigrant (whether the SME was immigrant owned), sector (goods, services, wholesale/retail, and knowledge-based industries), age of the firm, and age of the business owner (whether the SME owner was older than 40 years old). Main factors were entered in the second block, including (1) growth intention (whether the firm intended to grow in the following two years) and perceived risk (measured by perceived instability of consumer demands) as indicators of SME owners' attitude towards export, and owner experience (whether the SME's primary owners have more than 10 years of experience), (2) perceived external barriers (measure by perceived barriers in insurance rate), perceived obstacles in management capacity, and perceived difficulty in financing as indicators of SME owners' perceived control over export.

Table 12 Logistic Regression of the Base Model

	Base Model One (Full Sample, N=7748)						Base Model Two (100% Male, N=3981)						Base Model Three (100% Female, N=1112)					
	Block 1			Block 2			Block 1			Block 2			Block 1			Block 2		
	B	Sig.	Exp	B	Sig.	Exp(	B	Sig.	Exp	B	Sig.	Exp	B	Sig.	Exp	B	Sig.	Exp
R&D	1.22	0.00	3.38	0.98	0.00	2.66	1.03	0.00	2.79	0.78	0.00	2.19	1.66	0.00	5.24	1.31	0.00	3.72
Rural Location	-0.6	0.00	0.54	-0.6	0.00	0.54	-0.96	0.00	0.38	-1.05	0.00	0.35	0.32	0.25	1.37	0.17	0.57	1.18
Firm Size	0.25	0.00	1.28	0.20	0.02	1.22	0.42	0.00	1.52	0.33	0.00	1.39	-0.12	0.75	0.89	-0.18	0.66	0.84
Immigrant	1.12	0.00	3.06	1.08	0.00	2.94	1.40	0.00	4.06	1.49	0.00	4.45	1.54	0.00	4.68	1.60	0.00	4.96
Sector																		
-Services	-0.6	0.00	0.54	-0.5	0.00	0.57	-0.74	0.00	0.48	-0.70	0.00	0.50	-1.36	0.00	0.26	-1.24	0.00	0.29
-Knowledge-base	0.45	0.00	1.57	0.51	0.00	1.66	0.26	0.22	1.30	0.26	0.25	1.29	-0.81	0.15	0.45	-0.70	0.23	0.50
-Wholesale/retail	0.25	0.04	1.28	0.29	0.01	1.34	0.18	0.26	1.20	0.15	0.35	1.17	0.02	0.96	1.02	0.19	0.63	1.20
Age of Firm	0.08	0.00	1.09	0.10	0.00	1.10	0.07	0.07	1.07	0.08	0.04	1.09	-0.03	0.60	0.97	0.03	0.69	1.03
Age of Owner	0.24	0.03	1.27	0.23	0.06	1.25	0.40	0.02	1.49	0.32	0.06	1.38	0.18	0.49	1.20	0.21	0.49	1.23
Attitudes																		
-Growth Intention				0.80	0.00	2.23				0.89	0.00	2.42				1.01	0.00	2.76
-Perceived Risk				0.06	0.48	1.06				0.37	0.00	1.44				-0.02	0.93	0.98
Perceived Control																		
-External Barriers				0.13	0.13	1.14				0.12	0.33	1.13				0.52	0.05	1.67
-Financing Difficulty				0.05	0.61	1.05				-0.13	0.36	0.88				0.46	0.09	1.58
-Owner Experience				0.25	0.02	1.29				0.37	0.02	1.45				-0.22	0.46	0.81
-Perceived Obstacles in Management				0.24	0.03	1.27				-0.10	0.53	0.91				1.12	0.00	3.07
Constant	-3.26	0.00	0.04	-4.0	0.00	0.02	-3.14	0.00	0.04	-3.94	0.00	0.02	-2.47	0.00	0.08	-3.78	0.00	0.02
Omnibus Tests of Model Coefficients (P-value)																		
Step	0.00			0.00			0.00			0.00			0.00			0.00		
Block	0.00			0.00			0.00			0.00			0.00			0.00		
Model	0.00			0.00			0.00			0.00			0.00			0.00		
Model Summary																		
-2 Log likelihood	4249.03			4147.23			2157.19			2092.77			535.50			482.86		
Cox & Snell R²	0.05			0.07			0.06			0.07			0.07			0.12		
Nagelkerke R²	0.12			0.14			0.13			0.16			0.17			0.27		
Hosmer and Lemeshow Test																		
Chi-square	7.28			7.34			23.57			36.04			55.80			13.49		
Sig.	0.51			0.50			0.00			0.00			0.00			0.10		
Prediction Accuracy (Classification Table)																		
Percentage	91.0%			91.1%			90.9%			91.0%			92.4%			92.9%		

Although these R^2 values are not large, they are not unusually small and are considered acceptable in cross-sectional logistic regressions. And the increase of R^2 from Block One to Block Two indicates that the main factors add significant contributions to the regression model after controlling for other firm- or owner-level attributes.¹⁶ Overall in-sample prediction is another way to test the prediction power of our model. The Classification Table shows that all three models could correctly predict more than 90 percent of the dependent variables, indicating an overall good fit of the model.

❑ **Base Model One**

In Model One (Block Two), R&D investment, firm size, immigrant ownership, knowledge-based industries, wholesale/retail industries, firm age, and owner age are all positively associated with SMEs' export propensity; and service sectors and rural location are negatively associated with export propensity. With respect to the main factors, SME owners' growth intention, experience, and perceptions of obstacles in management capacity are all positively associated with export propensity. The other main factors, including external barriers, financing difficulty, and owner experience, also show a positive association with the dependent variable; however, the P-values for these factors are not significant.

❑ **Base Model Two**

When applying the logistic regression to Model Two with male-owned SMEs, R&D investment, firm size, immigrant ownership, firm age, and owner age remain positively associated with SMEs' export propensity. However, knowledge-based and wholesale/retail industries lose statistical significance compared to Model One. As does SME owners'

¹⁶ However, when we look at the Hosmer and Lemeshow Test, only Model One indicates a good fit of data (P-value = 0.506 for Block one and P-value = 0.501 for Block two, implying that there are no significant differences between observed values and model-predicted values). Neither Model Two nor Model Three shows an ideal goodness of fit in the Hosmer and Lemeshow Test. As suggested by Kramer and Zimmerman (2007), the Hosmer and Lemeshow Test may be problematic when the sample size is large or small. A significant test statistic of Hosmer-Lemeshow test does not necessarily indicate that the model is suspect or unhelpful (Allison, 2001; Bertolini, D'amico, Nardi, Tinazzi, & Apolone, 2000). The large sample size employed may be one of the reasons why the Hosmer and Lemeshow Test is significant in our model. In view of that possibility, we should interpret this statistic cautiously. Additional information is needed to evaluate the goodness of fit of the model.

perceived obstacles in management capacity. On the other hand, SMEs' perceived risk become significantly positively associated export propensity with the move to Model Two.

❑ **Base Model Three**

When applying the logistic regression to Model Three with female-owned SMEs, only R&D investment, immigrant ownership, growth intention, and perceived obstacles in management capacity remain positively associated with export propensity. Only service sectors remain significant negative association in Model Three. Rural location, firm size, firm age, owner age, and owner experience all become insignificant in this model. In contrast to the previous two models, perceived external barriers and financing difficulty have stronger positive association with female-owned SMEs' export propensity.

Comparing variable coefficients and P-values across three models, the data show that overall, SME exporters are more likely to have growth intention, R&D investment, and immigrant ownership than SME non-exporters, but are less likely to operate in service sectors. Additionally, SME exporters with 100 percent male ownership tend to be larger, older (in firm age), and to be distributed in urban locations. Their business owners (male) are also older with more years of experience. On the other hand, female SME exporters are more likely to report obstacles in management capacity, external barriers, and financing. The coefficients also indicate that R&D investment, immigrant ownership, and growth intention all tend to show a stronger positive association with female-owned SMEs' export propensity, while service sectors predict a stronger negative impact on export propensity. Despite these observations, a direct comparison of the coefficients across different models cannot provide verification of whether the gender differences are significant or not. In order to test gender's moderating effect on SMEs' export propensity, we added a group of interaction terms to our logistic regression (See Table 13 and Table 14 for the regression output). The new regression with interaction terms was conducted twice, generating a Full Model including all variables and a Reduced Model where insignificant variables were removed.

Table 13 presents the first two blocks (main effects only) of the hierarchical logistic regression outputs in the Full Model and the Reduced Model, including the control variables and the factors generated from the Exploratory Factor Analysis. Table 14 presents the third block of the logistic regression for both models, including all factors in the first two blocks (main effects) and the gender interaction term. In the Full Model, all three blocks as well as the whole model were significant, with all P-values less than 0.000. The Cox and Snell R^2 value increased from 0.055 in Block One to 0.071 in Block Two and 0.082 in Block Three; And the Nagelkerke R^2 value increased from 0.123 in Block One to 0.158 in Block Two and 0.184 in Block Three. These increases indicate that adding new variables has enhanced the predictive power of the model. The Classification Table shows that all three blocks could correctly predict more than 90 percent of the variation in the dependent variables, indicating a good overall model fit. However, since all interaction terms were expressed as the product between gender and other factors, it brings collinearity among factors to our regression, especially for the factors that were closely related to gender. This was verified in the VIF (Variance Inflation Factor) of the logistic regression (See Table 13 and Table 14 for details). After applying the gender interactions in Block Three, the VIF of gender increased dramatically from 1.090 in Block Two to 24.541 in Block Three. Similarly, VIFs of many interaction terms also showed a high level of correlation among factors. The existence of collinearity may change the significance level of some factors and result in a misleading outcome.

To eliminate the impact of collinearity, we conducted a Stepwise Logistic Regression¹⁷ to generate a Reduced Model, from which factors that were insignificant or had a high VIF in the Full Model were deleted¹⁸. All three blocks and the overall model of the Reduced Model

¹⁷ Both Forward and Backward Stepwise Logistic Regressions were conducted to generate the Reduced Model in SPSS, and these two methods gave the same outcome: the same group of variables were deleted from the Full Model in the final output of our Reduced Model.

¹⁸ Firm size is an important factor that differs significantly between male-owned and female-owned SMEs (Lefebvre & Lefebvre, 2000), and has been kept in the Reduced Model despite not being significant in the Full Model. This decision was made in order to test the interaction between firm size and gender.

were also significant (P-values < 0.000). The Cox and Snell R^2 value increased from 0.054 in Block One to 0.069 in Block Two and 0.079 in Block Three; the Nagelkerke R^2 value increased from 0.122 in Block One to 0.154 in Block Two and 0.177 in Block Three. After deleting half of the variables from the Full Model, both Cox and Snell R^2 and Nagelkerke R^2 in the Reduced Model did not drop severely, implying that the prediction power of the Reduced Model was not significantly weakened by the deletion of fifteen insignificant variables. On the other hand, the overall percentage of the in-sample predication for the Reduced Model was 91.3%, indicating an overall good fit of the Reduced Model as well. Additionally, all VIFs in the Reduced Model was lower than two, in other words, collinearity was no longer an issue in the logistic regression.

According to the final output of the Reduced Model (Table 14), R&D investment, firm size, immigrant ownership, and age of SME owners are positively associated with SMEs' export propensity. Service sectors and rural location are negatively associated with export propensity. With respect to the main factors, SME owners' growth intention, experience, perceptions of risk and external barriers are positively associated with export propensity. Both the control variables and the main factors kept in the Reduced Model have the consistent coefficients (positive or negative) with the output in the Base Model and the Full Model. On the other hand, firm size, knowledge-based and wholesale/retail industries, financing difficulty, perceived obstacles in management capacity, and gender's main effects are not significant and are removed in the Reduced Model. In conclusion, the Reduced Model further verifies the outcome in the Base Model: SME exporters tend to be larger, to have growth intention, immigrant ownership, and R&D investment, but are less likely to operate in service sectors and rural locations; Business owners of the SME exporters are more likely to be older, experienced, and to perceive risk and external barriers.

Table 13 Logistic Regression of the Interaction Model (Block 1 & Block 2: Main Effects)

N=5093 ¹⁹																
Block 1 (Main Effects)									Block 2 (Main Effects)							
	Full Model				Reduced Model				Full Model				Reduced Model			
	B	Sig.	Exp	VIF	B	Sig.	Exp	VIF	B	Sig.	Exp	VIF	B	Sig.	Exp	VIF
R&D Investment	1.13	0.00	3.09	1.02	1.13	0.00	3.09		0.82	0.00	2.27	1.14	0.84	0.00	2.32	1.12
Rural Location	-0.70	0.00	0.50	1.06	-0.72	0.00	0.49	1.01	-0.74	0.00	0.48	1.11	-0.77	0.00	0.46	1.07
Firm Size	0.37	0.00	1.44	1.02	0.38	0.00	1.47	1.02	0.29	0.01	1.34	1.03	0.31	0.00	1.36	1.02
Immigrant	1.39	0.00	4.02	1.03	1.33	0.00	3.76	1.00	1.41	0.00	4.08	1.03	1.32	0.00	3.75	1.01
Sector																
-Services	-0.83	0.00	0.44	1.46	-0.91	0.00	0.40	1.01	-0.78	0.00	0.46	1.55	-0.86	0.00	0.42	1.04
-Knowledge-base	0.12	0.54	1.13	1.20					0.16	0.44	1.17	1.22				
-Wholesale/retail	0.19	0.20	1.21	1.35					0.22	0.15	1.24	1.39				
Age of firm	0.04	0.20	1.04	1.11					0.07	0.03	1.08	1.23				
Age of Owner	0.34	0.01	1.41	1.08	0.38	0.00	1.46	1.02	0.33	0.02	1.40	1.27	0.34	0.02	1.41	1.24
Attitudes																
- Growth									0.92	0.00	2.52	1.25	0.89	0.00	2.43	1.16
- Risk									0.28	0.01	1.32	1.06	0.31	0.00	1.36	1.03
Perceived Control																
- External Barriers									0.20	0.08	1.22	1.10	0.20	0.07	1.22	1.06
- Financing Difficulty									0.05	0.70	1.05	1.15				
- Owner Experience									0.18	0.16	1.20	1.37	0.24	0.06	1.27	1.26
- Perceived Obstacles in Management									0.18	0.18	1.20	1.05				
Gender (100% female)									0.10	0.48	1.10	1.09				
Omnibus Tests of Model Coefficients (P-value)																
Block	0.00				0.00				0.00				0.00			
Model	0.00				0.00				0.00				0.00			
Model Summary																
-2 Log likelihood	2724.20				2727.34				2638.87				2648.04			
Cox & Snell R ²	0.06				0.05				0.07				0.07			
Nagelkerke R ²	0.12				0.12				0.16				0.15			
Hosmer and Lemeshow Test																
Chi-square	12.20				26.74				25.61				19.50			
Sig.	0.09				0.00				0.00				0.01			
Prediction Accuracy (Classification Table)																
Percentage	91.2%				91.2%				91.4%				91.4%			

¹⁹ SMEs with mixed-gender ownership are not included in the interaction model due to the ambiguity in the gender of the export decision-maker.

Table 14 Logistic Regression of the Interaction Model (Block 3: Gender Interaction Added)

Block 3	Main Effect								Gender Interaction										
	Full Model				Reduced Model				Full Model				Reduced Model						
	B	Sig.	Exp	VIF	B	Sig.	Exp	VIF	B	Sig.	Exp	VIF	B	Sig.	Exp	VIF	Interaction ²⁰		
R&D Investment	0.78	0.00	2.19	1.48	0.86	0.00	2.35	1.13	0.53	0.08	1.70	2.18							
Rural Location	-1.05	0.00	0.35	1.41	-1.08	0.00	0.34	1.33	1.22	0.00	3.38	1.72	1.22	0.00	3.39	1.55	0.09		
Firm Size	0.33	0.00	1.39	1.21	0.34	0.00	1.40	1.19	-0.51	0.22	0.60	1.35	-0.39	0.33	0.68	1.31	-0.03		
Immigrant Sector	1.49	0.00	4.45	1.64	1.38	0.00	3.98	1.02	0.11	0.87	1.12	1.70							
-Services	-0.70	0.00	0.50	1.81	-0.78	0.00	0.46	1.28	-0.54	0.14	0.58	7.34	-0.38	0.11	0.68	1.99	-0.02		
-Knowledge-base	0.26	0.25	1.29	1.47					-0.95	0.13	0.39	1.76							
-Wholesale/retail	0.15	0.35	1.17	1.70					0.03	0.94	1.03	2.78							
Age of Firm	0.08	0.04	1.09	1.71					-0.06	0.47	0.95	13.1							
Age of Owner	0.32	0.06	1.38	1.78	0.33	0.03	1.39	1.25	-0.12	0.74	0.89	4.70							
Attitudes																			
- Growth	0.89	0.00	2.42	1.59	0.84	0.00	2.32	1.17	0.13	0.70	1.14	2.57							
- Risk	0.37	0.00	1.44	1.38	0.30	0.01	1.35	1.04	-0.39	0.18	0.68	2.14							
Perceived Control																			
-External Barriers	0.12	0.33	1.13	1.37	0.18	0.10	1.20	1.08	0.39	0.18	1.48	1.80							
-Financing Difficulty	-0.13	0.36	0.88	1.50					0.59	0.06	1.80	2.11	0.66	0.00	1.94	1.28	0.05		
-Owner Experience	0.37	0.02	1.45	1.83	0.48	0.00	1.62	1.48	-0.59	0.07	0.56	3.15	-0.73	0.00	0.48	1.82	-0.06		
-Perceived Obstacles in Management	-0.10	0.53	0.91	1.32					1.22	0.00	3.39	1.44	1.13	0.00	3.10	1.09	0.08		
Gender(100%female)	0.16	0.81	1.17	24.5															
Constant									-3.94	0.00	0.02		-3.49	0.00	0.03				
Omnibus Tests of Model Coefficients (P-value)									Hosmer and Lemeshow Test										
Block	0.00				0.00				Chi-square				22.82				22.50		
Model	0.00				0.00				Sig.				0.00				0.00		
Model Summary									Prediction Accuracy (Classification Table)										
-2 Log likelihood	2575.626				2595.29				Percentage				91.4%				91.3%		
Cox & Snell R²	0.32				0.08														
Nagelkerke R²	0.08				0.18														

²⁰ The scores in the Interaction column were calculated by the cross derivatives between interaction terms (Greene, 2012) as we discussed in Chapter 4.3.3.

5.2.3 Interaction Effect of Gender

Gender interaction terms were entered in the last step of the hierarchical logistic regression, which are presented in Block 3 of Table 14. As we discussed in a previous chapter, the interaction effect in logistic regression should be evaluated by calculating the cross derivative of the interaction term instead of looking at the coefficient directly (Ai & Norton, 2003; Greene, 2012). The outcome of our calculation is presented in the last column of Table 14.

The data show significant interactions between gender and rural location, owner experience, financing difficulty and perceived obstacles in management capacity. Specifically, female-owned SMEs participating in exports are more likely to report financing difficulty and obstacles in management capacity. Contrary to the main effects of owner experience, which is positively associated with SMEs' overall export propensity, the interaction between gender and experience shows that after controlling for experience, female SME owners are still less likely to export. Similarly, rural location is negatively associated with SMEs' overall propensity to export in the main effects, but is positively associated with female-owned SMEs' export propensity. In other words, female-owned SMEs in rural locations are more likely to export than male counterparts. Additionally, both firm size and service sectors are negatively associated with female-owned SMEs' export propensity, but neither these relationships is statistically significant. Table 15 and Table 16 compare the output of data analysis across different Logistic Regression Models. Table 17 and Table 18 summarize the research findings corresponding to our hypotheses.

Table 15 Comparisons of Research Findings across Models (Main Effects)

Logistic Regression	Base Model			Reduced Model
	1	2	3	
Source	Table 12			Table 14
Sample Size	7748	3981	1112	5093
Control Variables				
R&D Investment	+***	+***	+***	+***
Rural Location	–***	–***		–***
Firm Size	+**	+***		+***
Immigrant ownership	+***	+***	+***	+***
Sector				
- Services	–***	–***	–***	–***
- Knowledge-based	+***			
- Wholesale/retail	+**			
Age of Firm	+***	+**		
Age of Owner	+	+		+
Main factors				
Attitudes				
- Growth Intention	+***	+***	+***	+***
- Perceived Risk		+***		+***
Perceived Control				
- External Barriers			+**	+
- Financing Difficulty			+	
- Owner Experience	+**	+**		+***
- Perceived Obstacles in Management Capacity	+**		+***	
Gender (100% female)				

Note: * denotes the significance level where *** corresponds to 99% (P-value ≤ 0.01), ** corresponds to 95% (P-value ≤ 0.05), and + corresponds to 90% (P-value ≤ 0.1).

Table 16 Comparisons of Research Findings across Models (Gender Interaction)

	Reduced Model (Logistic Regression)	Direct Gender Comparison (Chi-square Test)
Source	Table 14	Table 10
Sample Size	5093	5093
Control Variables		
R&D Investment		+***
Rural Location	+***	._**
Firm Size		._**
Immigrant ownership		+***
Sector		
- Services		+***
- Knowledge-based		+***
- Wholesale/retail		._***
Age of Firm		+***
Age of Owner		._***
Main factors		
Attitudes		
- Growth Intention		
- Perceived Risk		+***
Perceived Control		
- External Barriers		._***
- Financing Difficulty	+***	+***
- Owner Experience	._***	._***
- Perceived Obstacles in	+***	._**
Management Capacity		

Note:

1) The Reduced Model regresses gender (male =0, female =1) interaction effects on the probability to export (=1), while the Chi-square test directly compares male-owned and female-owned SMEs with respect to firm- and owner-level attributes as well as SME owners' perceptions.

2) * Denotes the significance level where *** corresponds to 99% (P-value ≤ 0.01), ** corresponds to 95% (P-value ≤ 0.05), and * corresponds to 90% (P-value ≤ 0.1).

Table 17 Summary of Research Findings in Hypotheses

Hypotheses	Finding
Attitudes	
Growth Intention	
H1 Growth Intention is positively associated with SMEs' export propensity, such that SMEs with growth intention are more likely to export.	Supported (Table 13 & 14) The relationship between growth intention and export propensity is positive and significant, indicating that SMEs with growth intention are more likely to export.
H1 a Male and female SME owners do not differ significantly with respect to growth intention.	Supported (Table 10) Although SME owners with 100 percent female business ownership show slightly less intention to grow their firms, the differences are not statistically significant.
Perceived Risk	
H2 Perceived risk is negatively associated with SMEs' export propensity, such that SMEs perceiving risk are less likely to export.	Refuted (Table 14) Contrary to our expectation, the relationship between perceived risk and export behavior is positive and significant, posing a challenge to this hypothesis.
H2 a SME owners' perception of risk is moderated by gender, such that female SME owners are more likely to perceive risk than male SME owners.	Supported (Table 10) Perceived risk is measured by SME owners' perceptions of instability of consumer demand. Female SME owners are more likely to perceive risk (instability of consumer demand) than male SME owners.
H2 b With the same perception of risk, male-owned SMEs and female-owned SMEs are equally likely to export.	Supported (Table 14) The interaction between gender and perceived risk does not significantly contribute to SMEs' export propensity and is deleted in the Reduced Model.
Perceived Control	
Experience	
H3 Experience is positively associated with SMEs' export propensity, such that SMEs with more years of experience are more likely to export.	Supported (Table 13 & 14) The relationship between owner experience and export behavior is positive and significant, indicating that SMEs with more years of experience may perceive higher control over export, thus being more willing to export.

Table 17 Summary of Research Findings in Hypotheses (Continued)

Hypotheses		Finding
Perceived Control		
Experience		
H3	SME owners' experience is moderated by	Supported (Table 10)
a	gender, such that female SME owners hold less experience than male SME owners.	Female SME owners are less likely to hold more than 10-year experience compared with male SME owners, and this difference is significant.
H3	With the same level of experience,	Refuted (Table 14)
b	male-owned SMEs and female-owned SMEs are equally likely to export.	Even after controlling for experience, female SME owners are still less likely to export.
Perceived Financing Difficulty		
H4	Financing difficulty is negatively associated with SMEs' export propensity, such that SMEs perceiving financing difficulty are less likely to export.	Refuted (Table 13 & 14) Although the relationship between financing difficulty and export behavior is negative, it is not statistically significant in the Full Model and is deleted in the Reduced Model.
H4	SME owners' perception of financing	Supported (Table 10)
a	difficulty is moderated by gender, such that female SME owners are more likely to perceive financing difficulty than male SME owners.	Female SME owners are significantly more likely to perceive financing difficulty, although they do not encounter higher rejection in the actual request for external financing.
H4	With the same perception of financing	Refuted (Table 14)
b	difficulty, male-owned SMEs and female-owned SMEs are equally likely to export.	Contrary to expectations, the interaction between gender and perceived financing difficulty shows a significant positive relationship with export behavior, indicating that female SME exporters are more likely to report financing difficulty.
Perceived External Barrier		
H5	External barriers are negatively associated with SMEs' export propensity, such that SMEs perceiving external barriers are less likely to export.	Refuted (Table 14) Contrary to our hypothesis, the relationship between external barriers and export behavior is positive.
H5	Male and female SME owners do not	Refuted (Table 10 & 14)
a	have significant differences in their perceptions of external barriers.	Female SME owners are less likely to perceive external barriers than their male counterparts generally. However, the interaction between gender and external barriers does not significantly contribute to SMEs' export propensity in the Full Model and is deleted in the Reduced Model.

Table 18 Additional Findings from the Logistic Regression

Findings	Source
R&D Investment	
• SMEs with R&D investment are more likely to export than those without R&D investment.	Table 14
• Female-owned SMEs are more likely to invest in R&D than male-owned SMEs.	Table 10
Rural	
• SMEs in rural locations are less likely to export than those in urban locations.	Table 14
• Female-owned SMEs are less likely to be situated in rural locations than male-owned SMEs.	Table 10
• However, female SME owners in rural locations are more likely to export.	Table 14
Firm Size	
• Firm size is positively associated with SMEs' likelihoods of exporting.	Table 14
• Female-owned SMEs tend to be smaller than male-owned SMEs.	Table 10
Immigrant ownership	
• SMEs with immigrant ownership are more likely to export than those without immigrant ownership.	Table 14
• Female-owned SMEs are more likely to have immigrant business ownership than male-owned SMEs.	Table 10
Sectors- Service	
SMEs in service sectors are less likely to export than those in other sectors.	Table 14
Female-owned SMEs are more likely to operate in service sectors than male-owned SMEs.	Table 10
Age of Owner	
• Age of owner is positively associated with SMEs' likelihoods of exporting.	Table 14
• Female SME owners tend to be younger than male SME owners.	Table 10
Perceived Obstacles in Management Capacity	
• SME exporters are more likely to perceive obstacles in management capacity than non-exporters.	Table 14
• Female SME owners generally are less likely to perceive obstacles in management capacity than male-owned SMEs.	Table 10
• However, for those involved in exporting business, female SME owners show a higher frequency of perceptions of obstacles in management capacity.	Table 14

5.3 Empirical Findings and Discussions

❑ Growth Intention

Allowing for the influence of control variables, the relationship between growth intention and export propensity is positive and significant, indicating that SMEs with growth intention may hold more positive attitudes towards export, making them more willing to export. Hypothesis 1 (Growth Intention is positively associated with SMEs' export propensity, such that SMEs with growth intention are more likely to export) is supported. Meanwhile, the comparison between male and female-owned SMEs shows that although SME owners with 100 percent female business ownership show slightly less intention to grow their firms, the differences are not statistically significant. Thus, male and female SME owners do not have significant differences in growth intentions. Hypothesis 1a is supported. These findings are consistent with Orser et al. (2008): even after controlling for firm size and sector, owners with growth intentions were still more likely to export than those who did not intend to grow. This may be explained by the opportunities that export offers for growth-oriented SMEs to capitalize on their competitive advantages and economies of scale.

❑ Perceived Risk

Contrary to our expectations, the relationship between perceived risk and export propensity is positive and significant. Hypothesis 2 (Perceived risk is negatively associated with SMEs' export propensity, such that SMEs perceiving risk are less likely to export) is rejected. The reason why SME owners perceiving risk are more likely, instead of less likely, to export may be explained by the differences between the way we structure our framework and the actual data we have. We hypothesized that the perception of risk may contribute to a negative attitude towards export, decreasing SMEs' likelihoods of exporting. To accurately capture this relationship, the perception of risk should occur before the actual exporting behavior. However, in the pre-collected data, SME owners' perceptions of risk and export behavior is

collected at the same time. This means we cannot conclude any casual relationship between these two variables. In fact, instead of interpreting the relationship as “SME owners perceiving risk are more likely to export”, the positive correlation between perceived risk and export behavior may be interpreted in a opposite direction: SME owners participating in exporting business may be more likely to perceive risk due to the fact that they are dealing with unfamiliar markets and customers. The latter explanation is more reasonable and convincing, but more information is needed to verify our interpretation.

With respect to gender differences, female-owned SMEs show a higher perception of risk. Hypothesis 2a (SME owners’ perception of risk is moderated by gender, such that female SME owners are more likely to perceive risk than male SME owners) is supported. Additionally, the interaction between gender and perceived risk does not significantly contribute to SMEs’ export propensity. In other words, with the same perception of risk, male-owned SMEs and female-owned SMEs are equally likely to export. Hypothesis 2b is supported.

❑ Experience

The relationship between owner experience and export behavior is positive and significant, indicating that SMEs with more years of experience may perceive higher control over export, thus making them more willing to export. Hypothesis 3 (Experience is positively associated with SMEs’ export propensity, such that SMEs with more years of experience are more likely to export) is supported. The comparison between male-owned and female-owned SMEs shows that female SME owners are less likely to hold more than 10-year experience compared with male SME owners, and this difference is significant. Hypothesis 3a (SME owners’ experience is moderated by gender, such that female SME owners hold less experience than male SME owners) is supported. Even after controlling for experience, female SME owners are still less likely to export. Hypothesis 3b (With the same level of

experience, male-owned SMEs and female-owned SMEs are equally likely to export) is refuted.

❑ **Perceived Financing Difficulty**

An interesting finding from the comparison between male and female SME owners is that, although female SME owners do not encounter higher rejection rate than male business owners in the actual request for external financing, they are more likely to perceive financing difficulty. Thus, Hypothesis 4a (SME owners' perception of financing difficulty is moderated by gender, such that female SME owners are more likely to perceive financing difficulty than male SME owners) is supported. Women's subjective perceptions of financing difficulty may be explained by their risk aversion and sensitivity to potential gender issues.

Although the relationship between financing difficulty and export behavior is negative, it is not statistically significant. Hypothesis 4 (Financing difficulty is negatively associated with SMEs' export propensity, such that SMEs perceiving financing difficulty are less likely to export) is refuted. However, the interaction between gender and perceived financing difficulty shows a significant positive association with export behavior, indicating that women perceiving financing difficulty are more likely to be involved in export. Hypothesis 4b is also refuted. Similar to experience, instead of interpreting the positive correlation between export behavior and gender interaction with financing difficulty as "female SME owners perceiving financing difficulty are more likely to export", it may be interpreted in an opposite direction: female SME owners participating in exporting business are more likely to perceive financing difficulty. Expanding into foreign markets is costly. The increased expense in travelling, tariff, overseas promotion, and marketing campaigns requires SMEs to acquire extra capital. Since female SME owners generally are more likely to perceive financing difficulty, they also react more sensitively to the increased capital needs in export markets.

❑ Perceived External Barrier

Contrary to our hypothesis, the relationship between external barriers and export behavior is positive. Hypothesis 5 (External barriers are negatively associated with SMEs' export propensity, such that SMEs perceiving external barriers are less likely to export) is refuted. Similarly, instead of interpreting the correlation as "SME owners perceiving external barriers are more likely to export", we found it more convincing to interpret this correlation as "Business owners of SME exporters are more likely to perceive external barriers than business owners of domestic SMEs". This may result from the fact that SME exporters are involved in more complex international markets, which brings extra barriers that SME non-exporters do not encounter in the domestic market. Participating in the export markets exposes the SME to a more dynamic market environment. Government regulations, exchange rate fluctuations, restricted industrial standards, unstable economic and political conditions (Secretariat, A. P. E. C., 2008) among other factors may increase SME owners' perceptions of external barriers. Additionally, female SME owners are less likely to perceive external barriers than their male counterparts on average. Hypothesis 5a (Male and female SME owners do not have significant differences in their perceptions of external barriers) is refuted.

❑ Perceived Obstacles in Management Capacity

Aside from perceived obstacles in external barriers and financing difficulty, another variable representing the perception of obstacles in business development was generated from the Exploratory Factor Analysis and stood out in the Logistic Regression: perceived obstacles in management capacity. The data shows that SMEs perceiving obstacles in management capacity have a higher likelihood of exporting. Again, instead of interpreting the relationship as "SME owners perceiving obstacles in management capacity are more likely to export", it is more reasonable to interpret it as "SME owners involved in exporting business are more

likely to perceive obstacles in management capacity”. Expanding to the foreign market requires not only extra money, but additional human capital to manage the export markets. Thus, SMEs may realize that their management capacity invested in the domestic market is no longer adequate when they expand to the foreign market. Furthermore, although direct gender comparison shows that female SME owners are generally less likely to perceive obstacles in management capacity, gender interaction tells a different story: female SME owners participating in exports are more likely to perceive obstacles in management capacity. This could be explained by the fact that export markets are more demanding than the domestic market, and the disadvantage of smaller firm size and less experience become an acute problem for the business development of female-owned SME participating in exports.

❑ R&D Investment

Consistent with previous research (Orser et al., 2008a; Spence et al., 2011), SMEs with R&D investment are more likely to export than those without R&D investment. R&D is an indicator of a firm’s innovation propensity. Investment in R&D may thus act as an indicator of SMEs’ creativity and ability to adapt to the complex international environment, unfamiliar export markets, and diversified preferences of foreign customers. Furthermore, comparison between male-owned and female-owned SMEs shows that female-owned SMEs are more willing to invest in R&D.

❑ Rural

SMEs in rural locations are less likely to export than those in urban locations. This is consistent with Orser et al.’s (2008a) study of Canadian SME exporters. Rural locations do not provide as many environmental supports and resources as large cities do in exporting (Wiedersheim-Paul et al., 1978). Female-owned SMEs are less likely to operate in rural locations. However, the gender interaction shows that female-owned SMEs in rural locations are more likely to export. More evidence will be required to determine why this is so.

❑ Immigrant ownership

SMEs with immigrant ownership are more likely to export than those without immigrant ownership, which is consistent with Spence et al.'s (2011) study finding that immigrant-owned firms have a higher tendency to export as a result of their international acumen in immigrant networks, foreign language competencies, and cultural familiarity. Furthermore, our data also shows that female-owned SMEs are more likely to have immigrant business ownership. In Canada, a lack of Canadian education background and domestic work experience put female immigrants in a relatively disadvantaged position in the labor market (Maitra, 2013). As elaborated by Maitra, this is “part of the systemic forms of discrimination or racism based on the assumed ethnic inferiority of certain foreign-born women and the assumed inferior quality of educational systems in their country of origin”. As a result, becoming self-employed and starting their own businesses can act as a survival strategy for disadvantaged female immigrants in Canada to escape from biased mainstream labor markets (Pio, 2007).

❑ Firm Size, Sector, and Age of Owner

The relationship between firm size and export propensity is consistent with traditional stage theory and process theory. Firm size is positively associated with SMEs' likelihoods of exporting. However, female-owned SMEs tend to be smaller than their male counterparts. Additionally, SMEs in service sectors are less likely to export than those in other sectors, and female-owned SMEs are more likely to operate in service sectors. Age of the SME owner is positively associated with SMEs' likelihoods of exporting, while female SME owners tend to be younger. Consequently, female-owned SMEs' decreased propensity to export could be partially accounted for by the facts that they are younger; their firms tend to be smaller; and their firms are more likely to be situated in service sectors. This could be explained by Liberal Feminism Theory: gender differences in export propensity could be accounted for by

systemic gender differences in firm- and owner- level attributes (Orser et al., 2008b, 2010).

5.4 Conclusions

This paper applied logistic regression to study factors that influence SMEs' export propensity and gender's moderating effect in the context of Ajzen and Fishbein's (2005) theory of Reasoned Action and Planned Behavior. We drew on the same data as Orser et al.'s (2008b) research, the 2004 survey of Canadian SMEs' financing, but improved the model in the following ways:

- 1) Orser et al.'s (2008b) study of gender and export propensity was based on the interpretation of the coefficients of interaction terms, which, according to Ai and Norton (2003), was problematic in the context of logistic regression. This work corrects for this potential issue by computing the cross derivative between interaction terms to measure gender's moderating effect.
- 2) Orser et al.'s (2008b) research defined gender as "whether the business ownership is primary owned by women (51%~100% female business ownership)", which was ambiguous because for mixed-gender ownership (1~99% female ownership), it was unclear whether the primary decision-maker regarding the decision to export was male or female. For firms primarily owned by women (51% to 99% female ownership), it remains possible that decisions regarding exports could be made by a male while the inverse is also true. To clarify gender's effect, we redefine it as "0% female business ownership (entered 0) vs. 100% female business ownership (entered 1)", deleting all data from 1% to 99% female business ownership.

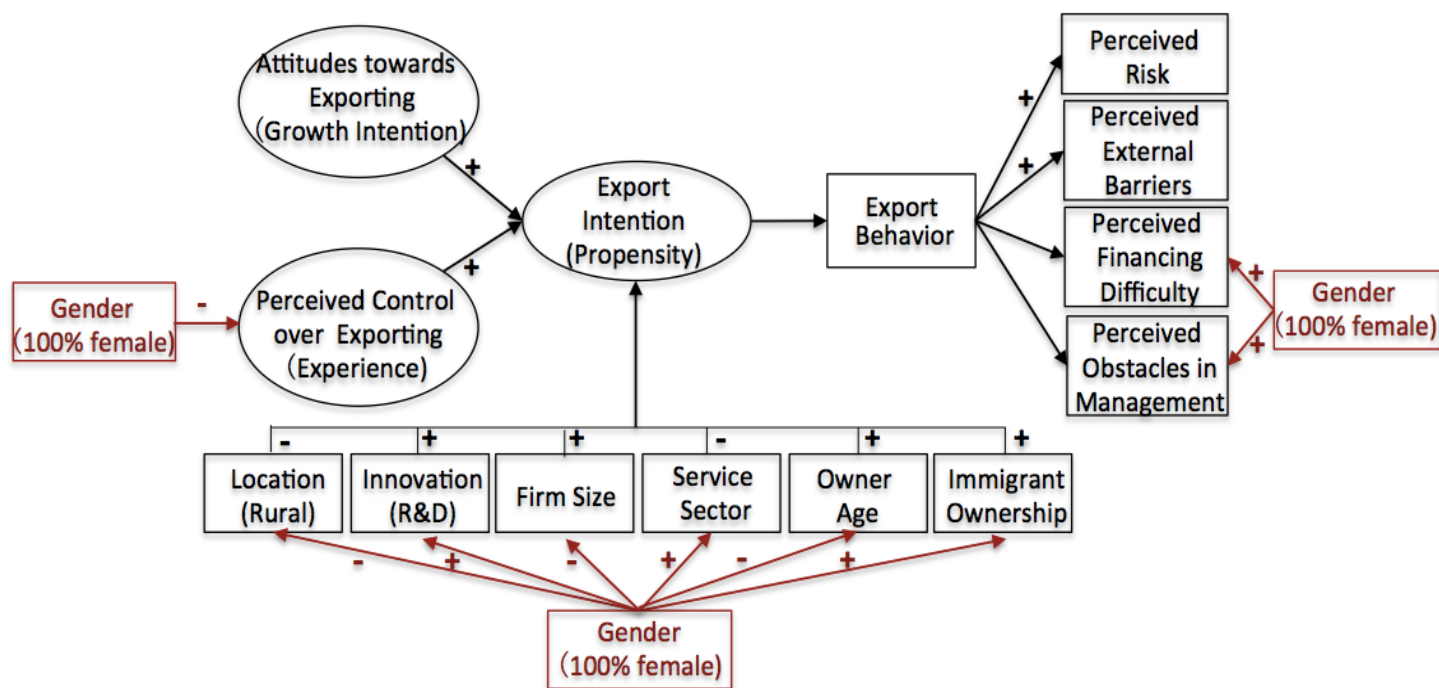


Figure 5 Modified Framework of Export Propensity (Gender Applied)

Figure 5 presents the modified framework of export propensity according to our research findings. Allowing for the control variables, the relationship between growth intention and export is positive and significant, indicating that SMEs with growth intention may hold more positive attitudes towards export and are more likely to export. Similarly, the relationship between owner experience and export is positive and significant, indicating that SME with more years of experience may feel a greater sense of control over export, making them more willing to export. Due to the nature of the data (that all information is collected at the same time without particular sequence), SME owners' perceptions of risk, external barriers, financing difficulty, and obstacles in management capacity appear to be poor indicators of their attitudes and perceived control that account for different export propensities. Instead, these factors show a stronger association with after-export perceptions. Specifically, SME owners participating in export are more likely to perceive risk, external barriers, financing difficulty, and obstacles in management capacity due to the fact that they are dealing with a complex international market which requires them to acquire extra financial and human

capital. Our model of control variables also indicates that all other factors held constant, R&D investment, immigrant ownership, firm size and age of owners are positively associated with SMEs' export propensity, while rural locations and service sectors are negatively associated with SMEs' export propensity. This is consistent with the previous studies of Orser et al. (2008a) and Spence et al. (2011).

With respect to the effect of gender, our data shows that gender does not have a direct impact on SMEs' export behavior. Instead, its interaction with other factors shows gender' moderating effects. Although male and female SME owners do not differ in growth intention, female SME owners tend to be younger, less experienced, and to run businesses with smaller size or businesses in service sectors, which could account for their lower likelihoods of exporting. This is consistent with The Liberal Feminism Theory (Orser et al., 2008b, 2010): gender differences in export propensity could be accounted for by systemic gender differences in owner- and firm-level attributes. On the other hand, comparisons between male-owned and female-owned SMEs suggest that female-owned SMEs are more likely to have immigrant business ownership and R&D investment, but are less likely to be situated in rural locations. These characteristics indirectly improve female SME owners' likelihoods of exporting. Additionally, female business owners of SME exporters show a higher perception of obstacles in management capacity and financing difficulty (although they are not disadvantaged in the actual request for financial support). Women's subjective perception of financial barriers is in accord with Social Feminism Theory, which emphasize that "Access to, and the utilization of, resources are gendered. Differential values may also explain gender differences in performance" (Orser et al., 2010: 935). Women's lack of confidence, cautiousness in taking risks, and sensitivity in interpersonal relationship may explain why they are more likely to anticipate financing difficulty, which may, to some extent, prevent them from taking more aggressive moves in the export market. This also adds to our understanding of why women are more likely to become "discouraged borrowers".

6 Implications

This study analyzed factors that influence SME owners' export propensity with particular reference to the moderating effect of owner gender. We found that although male- and female-owned SMEs show different likelihoods of exporting, gender does not have a direct residual impact. Instead, systemic gender differences account for most differences in the export propensity between male-owned and female-owned SMEs. Specifically, female-owned SMEs may be systemically disadvantaged because their firms are smaller with limited management capacity and with younger, less-experienced business owners. The lack of resources and market knowledge may become constraining factors for them with respect to becoming "export-ready" (Calof, 1994; Oviatt & McDougall, 1994). Additionally, female SME owners show a higher perception of risk and financing difficulty (although they do not encounter higher rejection rates of financing applications). Their subjective perceptions of potential barriers may contribute to their reluctance to export.

Since export constitutes a significant economic force in the Canadian economy, an increase of female participation in export activities would generate considerable economic welfare and job creation for the benefit of the Canadian economy. On the other hand, with lower export propensity, the potential of female-owned SMEs for organic growth, economic self-sufficiency and wealth creation may be comprised. Therefore, it is in the nation's best interest to address any barriers that may limit female-owned SMEs' engagement in export markets. Several policy implications could be drawn from this study:

- ❑ Establish gender-based programs to help female-owned SMEs become "export-ready"

Systemic disadvantages associated with female-owned SMEs could be addressed by special policies and programs. Policy makers could consult with female SME exporters and non-exporters with respect to their special needs when designing supportive programs.

Cross-institutional participation through strategic partnerships is also recommended to enable cross-organizational-resource combinations and to equip female-owned SMEs with critical exporting knowledge and assets, such that they could overcome obstacles through external assistance. (Deloitte Report, 2004)

❑ Educate female-owned SMEs with the advantages of export

To prevent misperceptions of gender obstacles from impeding women's export propensity, government, possibly through EDC and BDC, needs to transmit the correct information as well as the advantages of export. It is important to educate female SME owners on the benefits of export such as increased market demand and sales, opportunities for intentional growth and brand awareness. The communication of these messages should be facilitated across provincial and national business associations, forums, conferences, and entrepreneurial communities, such that all information is widely spread and accessible by the target audiences.

❑ Create a yet more “export-friendly” environment in rural locations

Our data indicates that SMEs in rural locations are significantly less likely to export. This could be accounted for by the fact that government supports, business incubations, and other supportive programs for exporters are relatively less available in rural locations, resulting in a less favorable export environment. Governments should allocate more resources to create an “export-friendly” environment and to facilitate export-related information flow in rural areas, such that SMEs in these locations have equal access to the governmental and industrial supports as well as export stimuli.

❑ Encourage more immigrants to participate in the export market

Although we use a relatively restrictive definition of “immigrant ownership”, whether the

business owners have resided in Canada for less than 5 years, it shows a strong positive association with SMEs' export propensity. Given that female-owned SMEs are more likely to be immigrant owned, it would be beneficial to encourage more immigrants to take advantage of their resources and connections from their countries of origin in the export market. As the expansion of immigrant-owned SME exporters, the increased demands not only create employment opportunities for both native and immigrant workers, but extend the industrial value chain to local suppliers for raw material, packaging, warehousing, and transporting, enhancing business cycles and adding value to Canada's economy. Female immigrant entrepreneurs emerge as an important but vulnerable group that has multiple identities with the intersection of gender, ethnicity, and entrepreneurship (DeVita et al., 2014). Awareness and understanding of the needs of this special group, as well as highlighting their voice for Canadian export market would be fruitful (Pio, 2007).

7 Limitations & Future Research

7.1 Study Limitations

❑ Pre-collected Data

Since we drew our data from an existing survey conducted by Industry Canada, our sample did not contain all information needed to test the comprehensive framework of export propensity built on Ajzen and Fishbein's (2005) theory of Reasoned Action and Planned Behavior. As a result, we have to drop potentially important factors, such as business owners' subjective norms of exporting, in the data analysis. Moreover, due to the nature of the data (that all information is collected at the same time without particular sequence), SME owners' perceptions of risk, external barriers, financing difficulty, and obstacles in management capacity appear to be poor causal indicators of attitudes and perceived control that may account for differences in export propensity. Instead, these factors show a stronger

association with post-export perceptions. To test the comprehensive framework of export propensity and to accurately capture the impact of SME owners' attitudes and perceived control on export propensity, further information and analysis are needed. It is also worth keeping in mind that the data from which this study drew its sample was collected in 2004. There have been changes in the international market and Canadian SMEs such that a 10-year-old data set may not reflect the latest status of Canadian SMEs.

□ Definition of "Export"

As we discussed earlier, adopting the operational definition of "export" as "whether or not the exchange of capital, goods, and services cross the boundary of national frontiers" may be problematic under circumstances where selling products or services abroad is easier and more convenient than selling to some inland cities. We also take Toronto, one of the biggest cities in Canada, as an example to illustrate why the traditional definition of "export" may be inappropriate if it is easier for businesses in Toronto to sell products or services to New York, United States, than to Quebec, Canada. However, we are unable to address and correct this problem in our study due to the limitations of pre-collected data.

7.2 Future Research

This study analyzes factors that affect SMEs' export propensity with a special attention to gender's moderating effect. We improve the methodology of prevailing research by redefining "gender" in a more appropriate way and by computing gender interaction effects more accurately. However, there remain several limitations of this study, pointing to the directions for future research.

Due to the limitation of pre-collected data, this study was unable to test the comprehensive framework of export propensity built on Ajzen and Fishbein's (2005) theory of Reasoned Action and Planned Behavior. To accomplish this, new data collection is required and should

be specially designed to reflect SME owners' attitudes, subjective norms, and perceived control of export. Specially, the questionnaire should include both export decision and export behavior so that researchers can distinguish between factors that contribute to pre-export intention (propensity) and factors that are associated with post-export behavior.

Findings from this study also raise further research questions:

- Why are female SME owners more likely to anticipate financing difficulty even though they are not really disadvantaged in the request for external financing?
- Why are female-owned SMEs located in rural location more likely to export?
- How do lack of experience and smaller firm size impact female-owned SMEs' propensity to export?
- Do gender obstacles exist and deter women business owners' intention to export, or might it be that women's subjective perceptions prevent them from taking the next steps?

In-depth qualitative study and longitudinal data are also recommended to explore female SME exporters' special needs with respect to supportive programs and to reflect the changes in SME owners' attitudes and perceptions of export over time.

Lastly, SME exporters located in special geographic locations (e.g. Maastricht in Netherlands & Toronto in Canada) may show higher likelihoods of exporting simply because of how "exporting" is defined and due to the context of location and cost-efficiency. Future research could apply case study methods to analyze how firms in these areas could benefit from their geographic locations and whether their export behaviors are different from other SMEs.

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Appendix 1 Descriptive Summary of Intensive Exporter

Table 19 Descriptive Summaries of Intensive Exporter & Non-exporter

		Frequency			Percentage			
		Non-exporter	Exporter	Total	Non-exporter	Exporter	Chi-Square	P-value
Total	7055	333	7388	100.00%	100.00%			
Firm-level Attributes								
Sector							70.01	0.000
Goods	2184	104	2288	30.96%	31.23%			
Services	3541	116	3657	50.19%	34.83%			
Wholesale/ retail	958	65	1023	13.58%	19.52%			
Knowledge- based	372	48	420	5.27%	14.41%			
Location							11.30	0.001
Rural	2226	76	2302	31.55%	22.82%			
Urban	4829	257	5086	68.45%	77.18%			
Firm size (FTEs)							15.39	0.004
0	5479	258	5737	77.66%	77.48%			
0.5-5	980	31	1011	13.89%	9.31%			
5.5-20	365	27	392	5.17%	8.11%			
20.5-100	143	8	151	2.03%	2.40%			
>100	88	9	97	1.25%	2.70%			
Age of Firm							0.09	0.761
≤ 5 years old	2366	109	2475	33.54%	32.73%			
> 5 years old	4689	224	4913	66.46%	67.27%			
R&D							166.85	0.000
No investment	5115	132	5247	72.50%	39.64%			
Had investment	1940	201	2141	27.50%	60.36%			
Gender							9.71	0.046
0% female	3625	169	3794	51.38%	50.75%			
1-49% female	784	54	838	11.11%	16.22%			
50% female	1514	67	1581	21.46%	20.12%			
51-99% female	109	5	114	1.55%	1.50%			
100% female	1023	38	1061	14.50%	11.41%			

Table 19 Descriptive Summaries of Intensive Exporter & Non-exporter (Continued)

		Frequency		Percentage				
		Non-exporter	Exporter	Total	Non-exporter	Exporter	Chi-Square	P-value
Owner-level Attributes								
Immigration							7.29	0.007
Immigrant	102	11	113	1.45%	3.30%			
Non-immigrant	6953	322	7275	98.55%	96.70%			
Owner Experience							9.05	0.011
< 5 years	968	36	1004	13.72%	10.81%			
5-10 years	1310	46	1356	18.57%	13.81%			
>10 years	4777	251	5028	67.71%	75.38%			
Age of Owners							6.788	0.148
< 30 years old	239	4	243	3.39%	1.20%			
30-39 years old	1188	58	1246	16.84%	17.42%			
40-49 years old	2357	125	2482	33.41%	37.54%			
50-64 years old	2669	118	2787	37.83%	35.44%			
65 years and over	602	28	630	8.53%	8.41%			
Growth Intention							83.23	0.000
Intended to grow	2848	219	3067	40.37%	65.77%			
No growth intention	4207	114	4321	59.63%	34.23%			
Perceived obstacles in...								
Consumer demand	2625	140	2765	37.21%	42.04%	3.173		0.075
Insurance rates	2589	107	2696	36.70%	32.13%	2.86		0.091
Management	985	61	1046	13.96%	18.32%	4.97		0.026
Qualified labor	2693	108	2801	38.17%	32.43%	139.47		0.000
Regulations	2501	125	2626	35.45%	37.54%	85.39		0.000
Low profitability	2870	136	3006	40.68%	40.84%	117.82		0.000
Taxation	3414	156	3570	48.39%	46.85%	170.11		0.000
Financing	1597	124	1721	22.64%	37.24%	37.94		0.000
Financing requests (rejected)	294	40	334	4.17%	12.01%	3.94		0.047

Appendix 2 Logistic Regression of Intensive Exporter

Table 20 Logistic Regression in Three Base Models

	Full Sample N=7388						100% Male N=3795						100% Female N=1061					
	Block 1			Block 2			Block 1			Block 2			Block 1			Block 2		
	B	Sig.	Exp	B	Sig.	Exp	B	Sig.	Exp	B	Sig.	Exp	B	Sig.	Exp	B	Sig.	Exp
R&D Investment	1.32	0.00	3.75	1.10	0.00	3.01	1.25	0.00	3.48	1.05	0.00	2.85	1.83	0.00	6.23	1.35	0.00	3.86
Rural	-0.41	0.00	0.66	-0.35	0.02	0.71	-0.94	0.00	0.39	-0.89	0.00	0.41	0.34	0.42	1.41	0.37	0.41	1.45
Firm Size	0.23	0.04	1.26	0.18	0.11	1.20	0.47	0.00	1.60	0.43	0.00	1.53	-0.44	0.48	0.64	-0.39	0.54	0.67
Immigrant Sectors	0.74	0.03	2.09	0.80	0.02	2.23	0.55	0.31	1.74	0.63	0.26	1.88	1.64	0.01	5.13	2.25	0.00	9.51
-Services	-0.51	0.00	0.60	-0.45	0.00	0.64	-0.88	0.00	0.42	-0.82	0.00	0.44	-0.42	0.39	0.66	-0.63	0.22	0.53
-Knowledge-based	0.70	0.00	2.01	0.71	0.00	2.04	0.33	0.24	1.39	0.28	0.34	1.32	-0.13	0.86	0.88	-0.12	0.88	0.89
-Wholesale/retail	0.21	0.22	1.23	0.22	0.19	1.25	0.27	0.21	1.31	0.20	0.36	1.23	-2.00	0.09	0.14	-2.20	0.07	0.11
Age of Firm	0.05	0.15	1.05	0.07	0.07	1.07	0.08	0.14	1.08	0.12	0.03	1.13	-0.23	0.01	0.80	-0.12	0.22	0.89
Age of Owner	0.18	0.24	1.19	0.11	0.52	1.11	0.29	0.20	1.34	0.20	0.41	1.22	0.51	0.19	1.67	0.47	0.32	1.61
Attitudes																		
- Growth Intention				0.74	0.00	2.10				0.71	0.00	2.04				0.86	0.07	0.74
- Perceived Risk				0.04	0.75	1.04				0.64	0.00	1.90				-0.03	0.93	0.04
Perceived Control																		
- External Barriers				-0.36	0.00	0.70				-0.41	0.02	0.66				-0.89	0.06	0.41
- Financing Difficulty				0.37	0.00	1.44				0.45	0.01	1.57				1.30	0.00	3.67
- Owner Experience				0.42	0.01	1.52				0.26	0.24	1.29				0.08	0.86	1.08
- Management Capacity				0.07	0.67	1.07				-0.30	0.18	0.74				0.42	0.40	1.52
Constant	-3.91	0.00	0.02	-4.60	0.00	0.01	-3.93	0.00	0.02	-4.84	0.00	0.01	-3.09	0.00	0.05	-4.25	0.00	0.01
Omnibus Tests of Model Coefficients (P-value)																		
Step	0.00			0.00			0.00			0.00			0.00			0.00		
Block	0.00			0.00			0.00			0.00			0.00			0.00		
Model	0.00			0.00			0.00			0.00			0.00			0.00		
Model Summary																		
-2 Log likelihood	2498.78			2435.25			1240.96			1197.70			277.79			254.72		
Cox & Snell R²	0.03			0.04			0.04			0.05			0.05			0.07		
Nagelkerke R²	0.09			0.12			0.12			0.16			0.17			0.25		
Hosmer and Lemeshow Test																		
Chi-square	11.02			25.38			14.71			9.76			11.35			9.92		
Sig.	0.20			0.00			0.07			0.28			0.18			0.27		

Table 20 Logistic Regression in the Interaction Model (Block 1 & Block 2: Main Effect)

N=5093		Block 1 (Main Effects)								Block 2 (Main Effects)							
Dependent Variable		Full Model				Reduced Model				Full Model				Reduced Model			
Export Behavior		B	Sig.	Exp	VIF	B	Sig.	Exp	VIF	B	Sig.	Exp	VIF	B	Sig.	Exp	VIF
R&D		1.36	0.00	3.90	1.01	1.37	0.00	3.94	1.01	1.10	0.00	2.99	1.12	1.12	0.00	3.06	1.11
Rural Location		-0.73	0.00	0.48	1.07	-0.76	0.00	0.47	1.02	-0.64	0.00	0.53	1.11	-0.62	0.00	0.54	1.06
Firm Size		0.44	0.00	1.55	1.02	0.43	0.00	1.54	1.00	0.40	0.00	1.49	1.04	0.43	0.00	1.53	1.01
Immigrant		0.96	0.02	2.60	1.02	0.98	0.01	2.65	1.01	1.09	0.01	2.98	1.02	1.02	0.01	2.77	1.01
Sector																	
- Services		-0.78	0.00	0.46	1.47	-0.85	0.00	0.43	1.02	-0.72	0.00	0.49	1.55	-0.81	0.00	0.45	1.04
- Knowledge-based		0.23	0.38	1.26	1.21					0.22	0.41	1.25	1.22				
- Wholesale/retail		0.08	0.72	1.08	1.35					0.03	0.89	1.03	1.39				
Age of firm		0.00	0.97	1.00	1.11					0.05	0.30	1.05	1.23				
Age of Owner		0.33	0.08	1.39	1.08	0.32	0.09	1.37	1.01	0.27	0.19	1.31	1.28	0.41	0.03	1.50	1.05
Attitudes																	
- Growth Intention										0.74	0.00	2.10	1.25	0.72	0.00	2.04	1.22
- Perceived Risk										0.48	0.00	1.61	1.05	0.46	0.00	1.59	1.03
Perceived Control																	
- External Barriers										-0.48	0.00	0.62	1.10	-0.47	0.00	0.63	1.08
- Financing Difficulty										0.57	0.00	1.78	1.15	0.53	0.00	1.71	1.13
- Owner Experience										0.20	0.28	1.22	1.37				
- Perceived Obstacles in Management										-0.12	0.55	0.89	1.04				
Gender (100% female)										-0.14	0.48	0.87	1.09				
Omnibus Tests of Model Coefficients																	
P-value																	
Block		0.00				0.00				0.00				0.00			
Model		0.00				0.00				0.00				0.00			
Model Summary																	
-2 Log likelihood		1553.56				1554.32				1498.45				1503.03			
Cox & Snell R ²		0.03				0.03				0.04				0.04			
Nagelkerke R ²		0.11				0.11				0.15				0.14			
Hosmer and Lemeshow Test																	
Chi-square		16.16				12.96				13.04				11.24			
Sig.		0.04				0.07				0.11				0.19			

Table 20 Logistic Regression in the Interaction Model (Interaction Effect Applied)

Dependent Variable	Main Effect								Gender Interaction							
	Full Model				Reduced Model				Full Model				Reduced Model			
Export Behavior	B	Sig.	Exp	VIF	B	Sig.	Exp	VIF	B	Sig.	Exp	VIF	B	Sig.	Exp	VIF
R&D Investment	1.05	0.00	2.85	1.46	1.12	0.00	3.06	1.13	0.30	0.52	1.35	2.15				
Rural Location	-0.89	0.00	0.41	1.42	-0.83	0.00	0.44	1.29	1.26	0.01	3.51	1.72	1.09	0.02	2.97	1.42
Firm Size	0.43	0.00	1.53	1.22	0.49	0.00	1.63	1.18	-0.82	0.21	0.44	1.38	-0.99	0.12	0.37	1.26
Immigrant Sector	0.63	0.26	1.88	1.73	0.52	0.33	1.68	1.70	1.62	0.06	5.07	1.80	1.78	0.03	5.91	1.72
- Services	-0.82	0.00	0.44	1.80	-0.88	0.00	0.42	1.15	0.19	0.74	1.21	7.99				
- Knowledge-based	0.28	0.34	1.32	1.49					-0.40	0.63	0.67	1.81				
- Wholesale/retail	0.20	0.36	1.23	1.69					-2.41	0.05	0.09	2.76	-2.49	0.03	0.08	1.19
Age of firm	0.12	0.03	1.13	1.71					-0.24	0.03	0.79	13.12				
Age of Owner	0.20	0.41	1.22	1.78	0.47	0.01	1.61	1.06	0.28	0.60	1.32	4.71				
Attitudes																
- Growth Intention	0.71	0.00	2.04	1.60	0.71	0.00	2.02	1.23	0.15	0.77	1.16	2.50				
- Perceived Risk	0.64	0.00	1.90	1.38	0.65	0.00	1.92	1.30	-0.67	0.12	0.51	2.13	-0.93	0.01	0.39	1.54
Perceived Control																
- External Barriers	-0.41	0.02	0.66	1.37	-0.48	0.00	0.62	1.09	-0.48	0.35	0.62	1.75				
- Financing Difficulty	0.45	0.01	1.57	1.50	0.39	0.02	1.48	1.42	0.85	0.06	2.34	2.06	0.89	0.01	2.43	1.57
- Owner Experience	0.26	0.24	1.29	1.83					-0.18	0.72	0.84	3.19				
- Perceived Obstacles in Management Capacity	-0.30	0.18	0.74	1.30					0.72	0.19	2.06	1.38				
Gender (100%female)	0.59	0.55	1.81	24.60												
Constant									-4.84	0.00	0.01		-4.15	0.00	0.02	
Omnibus Tests of Model Coefficients									Hosmer and Lemeshow Test							
P-value									Chi-square	15.65				20.04		
Block	0.00				0.00				Sig.	0.05				0.01		
Model	0.00				0.00											
Model Summary																
-2 Log likelihood	1452.42				1469.69											
Cox & Snell R ²	0.05				0.05											
Nagelkerke R ²	0.176				0.164											