

Entrepreneurial Orientation and International Performance: A contingent approach

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Abstract

The purpose of this paper is to study how dimensions of entrepreneurial orientation (competitive aggressiveness, proactiveness and risk taking) affect international performance in competitive and technology intensive international environments. Present study aims to extend the works of Zahra and Garvis (2000), Lumpkin and Dess (2001), and Wiklund and Shepherd (2005), for example, by applying entrepreneurial orientation on international business, examining the effects of different dimensions of entrepreneurial orientation on firm's international performance, and extending the research of the role of moderating effects on the relationship between entrepreneurial orientation and firm performance. To address the research questions structural equation modelling is applied to Finnish survey data (N=271). Our findings reveal that the dimensions of entrepreneurial orientation are differentially related to international performance, and that their effect is contingent on moderating variables. Consequently, prior striving for proactive behaviour, competitive aggressiveness and venturesome risk taking managers should study their international market environments carefully and truly understand the nature of these turbulent markets, as in many occasions strong emphasis on entrepreneurial behaviour does not seem to contribute positively to the international performance indicators, such as increasing sales and profits.

Key words: *International entrepreneurship, entrepreneurial orientation, international performance, contingent approach, turbulence*

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1. INTRODUCTION

The relationship between internationalisation and firm performance has been the focus of extensive research throughout the last decades. Although some of the findings (for reviews, see e.g. Sullivan, 1994; Annavarjula and Beldona, 2000) have been inconsistent and conflicting, the premise of international business is based on the assumption that increased multinationality is good for a firm's performance (Tallman and Li, 1996; Contractor *et al.*, 2003). In the current dynamic and competitive business environment, internationalisation is often perceived as a critical ingredient of the firm strategy for achieving firm growth, sustainable competitive advantage and above the average financial performance. It can be seen as a primary driver of the competitive landscape of the 21st century (e.g. Hitt and Ireland, 2000).

However, internationalisation is also a challenge. Firms are confronted by global and local rivals, and they need creatively leverage their resources and capabilities as well as acquire new skills to be able to be competitive in foreign markets. Strategy researchers have long retained that the characteristics of the management team can make the difference between firms' success and failure (see e.g. Eisenhardt and Schoonhoven, 1990; Zahra and George, 2002). Various leader or management characteristics have been seen important for international success, such as attitudes towards internationalisation, global mindset or international entrepreneurial orientation, and management experience related to internationalisation (see e.g. Oviatt and McDougall, 1995; Knight, 2000).

Many of the above-mentioned qualities are related to entrepreneurial behaviour.

Correspondingly, entrepreneurship (or intrapreneurship/corporate entrepreneurship in the case of established firms) has become a key element for success in current business environments.

Many firms regard entrepreneurial behaviour essential if they are to survive in a world which tends to be driven by change, for example, the shortening of the product and business model life cycles (Lyon *et al.*, 2000; Balabanis and Katsikea, 2003; Wiklund and Shepherd, 2005).

Entrepreneurship is associated to many positive things such as higher growth of the economy and new jobs.

Entrepreneurship scholars have attempted to give an explanation to superior performance by investigating a firm's entrepreneurial orientation (EO). According to Lumpkin and Dess (2001, p. 429) the term EO refers to "the strategy-making processes and styles of firms that engage in entrepreneurial activities". It can be seen as a strategic orientation associated with number of dimensions: autonomy, innovativeness, risk taking, proactiveness, and competitive aggressiveness (e.g. Lumpkin and Dess, 1996, 2001). There are several studies in which firms with higher EO have been found to perform better than their counterparts (e.g. Zahra and Covin, 1995; Wiklund, 1999; Wiklund and Shepherd, 2005). However, some results are contradictory: e.g. Smart and Conant (1994) were not able to find a significant relationship between EO and performance. Based on earlier research Lumpkin and Dess (2001, p. 430) also notice "...that entrepreneurial processes involve complex phenomena that may not always be associated with strong performance". Accordingly, several authors have pointed out the importance of business context; the effect of EO on performance may vary in different types of environments (e.g. Lumpkin and Dess, 1996; Wiklund and Shepherd, 2005).

Zahra and Garvis (2000, p. 469) note that “success in global business operations requires resourcefulness and entrepreneurial risk taking”. Several researchers have drawn both on international business and entrepreneurship literature and started to study international entrepreneurship (e.g. McDougall, 1989; Oviatt and McDougall, 1994; Zahra and George, 2002). Zahra and George (2002, p. 261) define international entrepreneurship as “the process of creatively discovering and exploiting opportunities that lie outside a firm’s domestic markets in the pursuit of competitive advantage”. Despite the numerous anecdotal evidence, the research community has so far studied the role of EO in the international context in the lesser extent. There is a limited amount of research which focuses on the role of entrepreneurship and its linkage to strategy and performance at the international markets; in some studies it has been found that EO has a direct effect or it is an important driver behind several parameters to international performance (e.g. Zahra *et al.*, 1997; Knight, 2001; Balabanis and Katsikea, 2003; Knight and Cavusgil, 2004).

In most of the cases EO has been studied as a single multidimensional construct. According to Lumpkin and Dess (2001) this might increase accuracy but it may correspondingly lead to the loss of parsimony. Following Lumpkin and Dess (2001) we feel that by studying the effects of various EO dimensions independently, we might be able to find distinct and unique relationships between the dimensions and international performance. In this paper, three dimensions of EO – competitive aggressiveness, proactiveness and risk taking are examined. The three dimensions were chosen because there is more to offer: proactiveness and competitive aggressiveness has been studied less frequently in relation to some other dimensions of EO in the literature and we see that these two concepts may have unique relationships to performance outcomes at international markets. Opportunity seeking such as

risk taking, in its turn, is closely related to the international business operations, and therefore included.

This study extends prior research in three ways. First, it broadens our understanding of the different dimensions of EO as we focus on their effect on international performance. Second, as previous studies have highlighted the importance of the contingent approach we investigate two moderators to the EO – international performance relationship, competitive environment firms operates within and technology intensity of an industry. Aggressive competition, rapidly changing technologies and changes in customer needs contribute to the level of turbulence in the competitive environment. Management research suggests that perceptions of industry complexity, heterogeneity, turbulence and competitive intensity have an effect on managerial decision-making and strategies. Strategies such as EO are seen as important means by which firms align their strengths and weaknesses with opportunities and threats in their environments (e.g. Eisenhardt and Schoonhoven, 1990; Li, 2001). An entrepreneurial strategic posture has been found particularly beneficial to small firms in turbulent and hostile environments (Covin and Slevin, 1989). Third, we also study firms (industries) from both high technology intensity and low technology intensity areas as we propose that technology intensity moderates the effect of entrepreneurial orientation on international performance.

The rest of the paper consists of three sections. First, the conceptual foundations and the hypotheses on the specific links between three dimensions of EO (competitive aggressiveness, proactiveness and risk taking), and competitive environment and technology intensity, and international performance are presented and developed. This is followed by methodological section describing the data and the analytical methods, and an empirical study that tested the hypotheses among the Finnish exporting firms in five industry sectors. The findings and their

implications for future research and managerial action are discussed in the final section of the paper.

2. LITERATURE REVIEW, CONCEPTUAL FRAMEWORK AND HYPOTHESES

There has been much discussion regarding the relationship between a firm's international activities and performance in the literature (e.g. Sullivan, 1994). Among the several internal factors that influence performance, EO and technological advances stand out in many studies (e.g. Covin and Slevin, 1989; Dess *et al.*, 1997; Hitt *et al.*, 2000). The model presented in this paper consists of three general categories of concepts: 1) three facets of firm entrepreneurial orientation, 2) moderators (competitive intensity and technology intensity), and 3) three facets of business performance. To describe the role of these factors in the development of superior performance in the international setting, we first explore the role of competitive aggressiveness, proactiveness and risk taking and then continue to the concomitant consideration of the EO dimensions and competitive and technology intensity respectively.

2.1 Entrepreneurial orientation and international performance

As noted earlier, EO provides a useful framework for researching entrepreneurial activity; especially as it focuses on key entrepreneurial processes, i.e. "how a firm operates" (Lumpkin and Dess, 1996, 2001). Accordingly, EO can be seen as a fundamental posture of the firm. Orientations tend to reflect firms' organisational cultures, i.e. beliefs and values which guide the organisation and are emphasised by the management (e.g. Knight, 2001). As such, EO should capture "specific entrepreneurial aspects of decision-making styles, methods, and practices" (Wiklund and Shepherd, 2005, p. 74). The five dimensions of EO presented in the literature characterise different elements of the construct. Briefly explained, the *innovativeness* of the firm is seen in its propensity for new idea generation, experimentation

and R&D activities resulting in new products and processes (cf. Lumpkin and Dess, 1996). *Autonomy* refers to independent actions carried through either by an individual or team aimed at bringing forth a business concept or idea and carrying it to action and completion (Lumpkin and Dess, 2001). *Risk taking* represents managers' willingness to pursue opportunities that carry a reasonable risk of costly failure. This would also mean that a firm would be willing to invest resources to projects even if there were a high potential for failure (Miller and Friesen, 1982). *Proactiveness* refers to a posture of anticipating and acting on future wants and needs in the market; this would enable a firm to gain a first mover advantage vis-à-vis its competitors (Lumpkin and Dess, 1996). *Competitive aggressiveness* in its turn reflects the intensity of a firm's operations to be able to outperform rivals within the industry. The characteristics of this type of behaviour can be seen in how a firm responds to competitors' actions (Lumpkin and Dess, 2001). EO can be seen as overarching construct having universal positive effect on performance (Wiklund and Shepherd, 2005). This notion is supported in the extant literature widely. For example, Dess *et al.* (1997) conclude that successful operations in uncertain and complex environments often demand a strong entrepreneurial stance in strategy making.

Interestingly, although the EO has often been measured as a single construct, Lumpkin and Dess (1996, 2001) argue that many of the dimensions are independent. For example, they have pointed out that competitive aggressiveness and proactiveness, although often measured together (cf. Covin and Slevin, 1989, 1991), are two distinct concepts. Whereas competitive aggressiveness refers to the intensity of firms' efforts to outperform their rivals, proactiveness should emphasise 'forward-looking perspective' characteristics of a market leader, i.e. foresight to act in expectancy of future demand, and thus, ability to shape the environment (Lumpkin and Dess, 2001).

Based on the discussion above and on earlier research (cf. Lumpkin and Dess, 2001) it is suggested here that it is important to test the independent effects of different EO dimensions on international performance. There are three main reasons for this. First, it is possible that a firm would only demonstrate one or two dimensions of EO. Second, the dimensions may be differentially related to performance, i.e. dimensions of EO may have an effect on dissimilar performance indicators. Third, as some of the dimensions are independent, their effect on performance may vary across different types of external environments and contexts.

There are only a few studies which have hypothesised the direction of the link between competitive aggressiveness and international performance. In their exploratory research Lumpkin and Dess (2001) did not find any direct significant relationship between competitive aggressiveness and firm performance. However, as it is seen as a part of generally positive EO construct, and as it is of importance to overcome existing entry barriers in various foreign markets, which often can be done by utilising a focused competitive strategy, we propose:

H1: Competitive aggressiveness of the firm has a positive effect on international performance.

The positive relationship between proactive behaviour and performance has been found in many extant studies (e.g. Miller, 1983). Proactive firms should be able to create so-called first-mover advantage: this type of firms can target premium market segments, charge high prices, and follow “market skimming” strategy in comparison to their competitors (Zahra and Covin, 1995). As proactiveness also lays a foundation for firms' international preparedness

and strategic competences it can also be a central key strategy to overcome barriers of entry at the foreign market place. Hence we hypothesise:

H2: Proactiveness of the firm has a positive effect on international performance.

Although the link between entrepreneurial risk-taking and superior performance has been supported in the extant research this is not always obvious (Wiklund and Shepherd, 2005). However, there are some results which lead to the conclusion that while tried-and-true strategies may lead to high mean performance, more risky strategies lead to larger performance variation – because some operations succeed and some fail – which in turn may lead to more profitable operations in the long term (March, 1991; McGrath, 2001). Therefore:

H3: Risk taking behaviour of the firm has a positive effect on international performance

2.2 Contingent relationships – interaction terms

According to the so-called ‘concept of fit’ in the moderation perspective, the impact that a predictor variable has on a criterion variable is dependent on the level of a third variable often termed as the moderator (Venkatraman, 1989b). Based on this type of approach we focus on the research question: “Under what conditions will competitive aggressiveness, proactiveness and risk-taking be positively associated with international performance?” (cf. Lumpkin and Dess, 2001).

Interaction between EO, the environment and international performance

As noted earlier there are several studies which suggest that the effect of EO on performance varies across different types of external environments (e.g. Covin and Slevin, 1989; Zahra and

Covin, 1995). This might be even more crucial in an international setting: while EO in an international context can be seen emphasising similar aspects or approaches to conduct business at the international market place, foreign operations often mean that business environments differ from each other in a large extent (cf. Lumpkin and Dess, 1996; Wiklund and Shepherd, 2005).

According to many studies, dynamism (rate and unpredictability of change) and hostility (unfavourable business climate, high level of competitive intensity and uncertainty) are essential dimensions of the external environment (Zahra *et al.*, 1997; Zahra and Bogner, 1999). Jaworski and Kohli (1993) focus on competitive intensity and market turbulence; their approach is that under heavy competition certain strategic orientations (such as market orientation) are needed to achieve superior performance. Competitive aggressiveness involves firms' reactions to existing demand and trends (Lumpkin and Dess, 2001). As such it is operationally more reactive and passive than 'proactive strategy'. Although the relationship between these two constructs has not been researched widely in the extant literature we suggest that:

H4 Competitive environment will moderate the relationship between competitive aggressiveness and international performance of a firm. A firm's competitive aggressiveness is more strongly associated with superior international performance when environmental turbulence is high than when it is low.

The dynamism of the market creates many opportunities for entrepreneurial firms. As mentioned earlier, proactiveness is associated with exploration of resources (March, 1991) and opportunity seeking. Zahra and Garvis (2000) note that the advantages of proactive

behaviour in international markets can also be conducive to successful firm performance.

Based on this and other existing literature we suggest that proactiveness has a positive relationship with performance in dynamic environments. (cf. Lumpkin and Dess, 2001).

Hence:

H5 Competitive environment will moderate the relationship between proactiveness and international performance of a firm. A firm's proactiveness is more strongly associated with superior international performance when environmental turbulence is high than when it is low.

Risk-taking involves large and risky resource commitments decided by entrepreneurial personnel (e.g. Miller and Friesen, 1982; Lumpkin and Dess, 1996). In turbulent environments, investments in untried technologies and/or making product launches are vital. Market environment for high technology products, in comparison to that for low technology, is seen as more turbulent, having shorter product life-cycles but higher market growth rate and product differentiation (Gardner *et al.*, 2000). Therefore, risk taking is closely related to proactiveness. Hence we hypothesise:

H6 Competitive environment will moderate the relationship between risk taking and international performance of a firm. A firm's risk taking is more strongly associated with superior international performance when environmental turbulence is high than when it is low.

Interaction between EO, technological intensity and international performance

Technological capabilities are among the most recognised success factors among internationalising firms. Technology can be seen as a sum of a firm's knowledge and skills, which determine the ability of the firm to offer products and services, gain market acceptance, survive in the long run and achieve financial success (Zahra and Bogner, 1999). Although technology-intensive firms can often be seen in operating in turbulent environments, they should be able to create sustainable competitive advantage by adapting to new environments more successfully than their non-technical counterparts (cf. Autio *et al.*, 2000). In such operations the firm which possess high EO should be in a good position, as possessing different virtues of EO is often linked with the development of competitive advantage.

Competitive aggressiveness can be characterised as a strong offensive posture directed at rising competitors, i.e. it is a defensive position against new type of competition or a bold movement including e.g. price cutting tactics (Venkatraman, 1989a; Lumpkin and Dess, 2001). As mentioned earlier, its effects have not been studied in a comprehensive manner. However, it can be suggested that virtues of competitive aggressiveness should be most useful in the latter stages of technology or product life-cycle when there will be more competition. Therefore we suggest:

H7 Technological intensity will moderate the relationship between competitive aggressiveness and international performance of a firm. A firm's competitive aggressiveness is more strongly associated with superior international performance when technology intensity is low than when it is high.

Autio *et al.* (2000) note that technology-intensive firms should be able to create new technologies or knowledge faster and adapt to new environments more successfully. This

ability to regenerate knowledge by learning should enable a firm to operate proactively in the market, for example introduce new products, and gain market leadership (cf. Venkatraman, 1989a). Therefore we hypothesise:

H8 Technological intensity will moderate the relationship between proactiveness and international performance of a firm. A firm's proactiveness is more strongly associated with superior international performance when technology intensity is high than when it is low.

Risk taking dimension of EO indicates that a management team of the firm is willing to take more risks than many other firms. In the context of international entrepreneurship this would often mean rapid and dedicated internationalisation (cf. Oviatt and McDougall, 1994; Zahra and George, 2002). This type of internationalisation strategy is a high risk – high growth strategy, which demands strong entrepreneurial stance and global mindset. In the extant literature focusing on international new ventures and born globals (e.g. Oviatt and McDougall, 1994; Knight, 2000; 2001, Rialp *et al.*, 2005), the empirical data has mostly been from high-technology industries. This is not surprising as it is evident that new technologies offer firms opportunities to “break away from the tried and true and venture into the unknown” (Wiklund and Shepherd, 2005, p. 75). As discussed earlier, there is some support in the previous literature for the link between this type of behaviour and superior performance (March, 1991; Bloodgood *et al.*, 1996). Hence:

H9 Technological intensity will moderate the relationship between risk taking and international performance of a firm. A firm's risk taking is more strongly associated with superior international performance when technology intensity is high than when it is low.

Our focus in this research is on the relationship between international entrepreneurial orientation and international business performance under varying levels of competitive environmental turbulence and technology intensity. For completeness, the proposed model (See Figure 1) also includes control paths between different international business performance dimensions, since, in the long term, greater sales efficiency and sales should increase profits (cf. Cadogan *et al.*, 2003).

In order to test our hypotheses respondents were subjected to structural equation modelling (SEM) with interaction terms (see Ping, 1995), using LISREL 8.30, so that the relationships between entrepreneurial orientation, technology intensity, competitive environment, interaction terms, and three international performance dimensions could be simultaneously examined. When testing the hypotheses, structural paths were specified (a) from the entrepreneurial orientation dimensions (competitive aggressiveness, proactiveness and risk taking) to the three international performance dimensions, (b) from the competitive environment to the three international performance dimensions, (c) from the technology intensity to each of the three international performance dimensions, and (d) from interaction terms to each of the three international performance dimensions (see Figure 1 for a diagrammatic representation of the linkages specified for model testing purposes).

TAKE IN FIGURE 1

3. METHODOLOGY

3.1 Sample

A sample of firms engaged in international business was extracted from the Kompass Finland database. Firms involved in international operations and employing more than 50 persons

were chosen. Thus, the sampling frame consisted of 1205 Finnish firms. In order to obtain the responses, to determine eligibility, to identify the contact names and to elicit cooperation, all the firms on the database were first contacted by telephone. Contacting the firms by telephone revealed that 237 firms were ineligible (i.e. the firm did not engage in international business, the firm did not exist anymore, etc.). Thus, a mail questionnaire was posted to 968 firms. In total, 783 usable responses were obtained, corresponding to an effective response rate of 81 per cent (783/968). Non-response bias was not an issue (Armstrong and Overton, 1977). The informant in the firm was either export director/manager, CEO, marketing director/manager or some other person who had primary responsibility for international business decisions. As an external proxy was used to measure technology intensity, a subset (N=271) of the total sample was drawn for the analyses. In the final sample there were 77 firms from low technology-intensity industries, 116 firms represented industries where the technology-intensity was moderate, and the rest 78 firms represented industries with high technology-intensity.

3.2 Measures

We studied separately the three dimensions of entrepreneurial orientation: proactiveness, risk taking and competitive aggressiveness. The proactiveness was captured using Jambulingam *et al.*'s (2005) proactiveness scale. The scale was adapted for international business context and reflected extent to which managers seized the opportunities in the anticipation of future market conditions. We captured the degree to which managers take risks using items drawn from Jambulingam *et al.*'s (2005) risk taking scale. The adapted scale gauges the role of risk taking as a part of firm's internationalisation strategy. Competitive aggressiveness measure was based on items from Narver and Slater's (1990) competitor orientation scale, and Jaworski and Kohli's (1993) market responsiveness scale. To measure the competitive

environment in each firm's international markets, we used Jaworski and Kohli's (1993) environmental turbulence measure for competitive turbulence, modified slightly for the international business context.

As several researchers have used R&D as a proxy for technological capabilities (see for example Hoskisson and Hitt, 1988), technology intensity was measured using an external proxy for R&D expenditures. The OECD average in 1991-97 of direct R&D expenditures as a percentage of production, that is gross output, was 8.0. Radio, television and communications equipment, medical, precision and optical instruments (7.3), and office, accounting and computing machinery (9.3) are classified as high-technology industries, whereas textiles (0.3), food products, beverages and tobacco (0.3), rubber and plastic products (0.9), and basic metals (0.8) are considered as medium-low or low technology industries (OECD, 2001). We were able to identify technology intensity values for 271 firms which participated in the survey. Respondents represented firms from five different industries and three different technology-intensity levels: food products, beverages and tobacco and textiles industries were considered as non-technology-intensive, basic metal and rubber and plastic industries were classified as industries where the level of technology-intensity was moderate and office, accounting and computing machinery industries represented high-technology firms with high levels of technology-intensity.

Following the recommendations of Cavusgil and Zou (1993) and Matthyssens and Pauwels (1996), among others, we measured the aspects of the firm's international sales, profits and efficiency. Our 'sales performance' measure contained items to capture (a) the firm's degree of satisfaction with its market share in its export markets, and (b) the firm's degree of satisfaction with its export sales volume. Our 'profit performance' measure captured (a) the

firm's degree of satisfaction with its export profits over the last three years, and (b) an overall assessment of the profitability of the firm's exporting operations during the last financial year. The third performance measure 'efficiency performance' captured (a) the ratio of the firm's total annual export sales turnover to the total number of employees working in the firm, and (b) the ratio of the firm's total annual export sales turnover to the total number of countries the firm exports to.

3.3 Measurement assessment and construction

The scales were first assessed using exploratory factor analysis (EFA) to identify poorly performing items. Confirmatory factor analysis (CFA) was then used for further examination of scales (see e.g. Gerbing and Hamilton (1996) for a similar procedure). Several items were deleted from the scales. Table I provides a correlation matrix, composite reliabilities, average variances extracted, means and standard deviations. The composite reliabilities are all above the recommend threshold of 0.60 (Bagozzi and Yi, 1988). The fit indexes for the measurement model are satisfactory (see Table II).

TAKE IN TABLE I

3.4 Analysis

The hypotheses were tested using Ping's (1995) method. Because of the model complexity, single indicants were constructed for each multi-item scale by averaging across the items (cf. Bagozzi and Heatherton, 1994). In order to test for the moderator effects, six interaction terms were created. The single indicators of the variables involved in the interaction terms were mean-centered to reduce multicollinearity concerns (Jaccard and Wan, 1996). The mean-centered variables were multiplied together to create the observed:

(1) Entrepreneurial Orientation x Competitive Environment interaction terms:

(a) Competitive Aggressiveness x Competitive Environment interaction term (CACE)

(b) Proactiveness x Competitive Environment interaction term (PRCE)

(c) Risk Taking x Competitive Environment interaction term (RTCE)

and

(2) Technology Intensity x Entrepreneurial Orientation interaction terms:

(d) Competitive Aggressiveness x Technology Intensity interaction term (CATI)

(e) Proactiveness x Technology Intensity interaction term (PRTI)

(f) Risk Taking x Technology Intensity interaction term (RTTI).

Two nested models were then estimated. First was a restricted structural model in which the loadings and error variances of the linear and interaction indicators were fixed at their previously estimated values, the γ parameters linking the six interaction latent variables to the three international performance latent variables were fixed at zero, and the remaining β and γ parameters were freely estimated. Second was an unrestricted structural model in which the γ parameters linking the six interaction latent variables to the three international business performance latent variables were freed. Table II provides the fit indexes obtained for the restricted and unrestricted models.

TAKE IN TABLE II

As can be seen, on moving from the restricted model to the unrestricted model clearly the latter provides a significant improvement over the fully restricted model. Based on the fit indexes for restricted ($\chi^2 = 74.92$, d.f. = 58, RMSEA = .035, CFI = .978, NNFI = .949, GFI = .964) and unrestricted models ($\chi^2 = 45.30$, d.f. = 40, RMSEA = .024, CFI = .993, NNFI =

.978, GFI = .978), we can conclude that unrestricted model outperforms the restricted model, and thus, we use the results from the unrestricted model to test the hypotheses.

3.5 Results

Table III provides the path estimates and t-values for the dependent variables for the unrestricted model. By looking at the path estimates depicted in Table III, we can now determine which of our hypotheses received support.

TAKE IN TABLE III

Direct effects of entrepreneurial orientation on international performance

Support was obtained for hypothesis H1, which argued that competitive aggressiveness of the firm would have a positive effect on international performance. Competitive aggressiveness was significantly and positively related to both sales and efficiency performance. However, the relationship between competitive aggressiveness and profit performance was not significant. Partial support was obtained for hypothesis H2 which suggested that proactiveness of the firm would have a positive effect on international performance as proactiveness was significantly related with firm profit performance, but no significant relationships could be revealed between proactiveness and sales and efficiency performances. Hypothesis H3 suggested that risk taking behaviour of the firm would have a positive effect on international performance. This seems to hold true only for the relationship between risk taking and firm's profit performance, as paths from risk taking to sales performance and to efficiency performance returned insignificant.

The moderating impact of competitive environment on the EO-performance relationship

We proposed that competitive environment would moderate the relationship between entrepreneurial orientation and firm's international performance. However, hypothesis H4 was not supported, indicating that competitive environment turbulence does not affect the relationship between competitive aggressiveness and firm performance.

Our hypothesis H5 which argued that the relationship between proactiveness and firm's international performance is moderated by environmental turbulence, was not supported as the path from PRCE interaction term to sales performance was significant but positive ($t = 1.62$). Unlike hypothesised this result indicates that under relatively *low levels of environmental turbulence*, increases in proactive behaviour are positively related to sales performance. As the competitive environment becomes more turbulent, the positive relationship between proactive behaviour and sales performance becomes weaker.

Some support was gained for hypothesis H6 which suggested that environmental turbulence would moderate the relationship between risk taking and firm performance. However, the significant path ($t = 1.44$) between the interaction term and sales performance indicates that under relatively *low levels of environmental turbulence*, increases in risk taking behaviour are positively related to sales performance. And, as the competitive environment becomes more turbulent, the positive relationship between risk taking behaviour and sales performance becomes weaker. The significant path ($t = 1.84$) between the interaction term and profit performance indicates also that under relatively *low levels of environmental turbulence*, increases in risk taking behaviour are positively related to profit performance, but when the competitive environment becomes more turbulent, the positive relationship between risk taking behaviour and profit performance becomes weaker. These results are contradictory to

our expectations and indicate that entrepreneurial orientation would not be beneficial for international firms operating in highly turbulent environments.

The moderating impact of technology intensity on the EO-performance relationship

It was also hypothesised that the relationship between entrepreneurial orientation and international performance could be moderated by the technology intensity of the firm.

Hypothesis H7 which argued that technological intensity would moderate the relationship between competitive aggressiveness and firm performance was not supported as none of the paths from interaction terms to performance indicators were significant. However, partial support was gained for the hypothesised moderator role of technology intensity as the path from PRTI interaction term to profit performance and the path from RTTI interaction term to profit performance were significant. The significant path ($t = 3.26$) between PRTI interaction term and profit performance indicates that under relatively low levels of technological intensity, increases in proactive behaviour are positively related to profit performance.

However, as technological intensity becomes more intense, the positive relationship between proactive behaviour and profit performance becomes weaker. This indicates that entrepreneurial orientation does not contribute to higher profits in technology intensive markets. The significant path ($t = -1.83$) from the RTTI interaction term to profit performance indicates that under relatively high levels of technological intensity, increases in risk taking behaviour are positively related to profit performance. However, for firms operating in less technologically intense industries, the positive relationship between risk taking behaviour and profit performance is weaker.

Finally, the control paths were examined. Control paths between competitive environment and firm performance indicators were significant for efficiency and sales performance but not

for the profit performance. One significant path between technology intensity and firm performance was identified as the path from technology intensity to efficiency performance was significant. Efficiency performance had a positive effect on sales performance, whereas sales performance had a positive effect on profit performance.

4. DISCUSSION

In this study, we extended and developed the works of Zahra and Garvis (2000), Lumpkin and Dess (2001), and Wiklund and Shepherd (2005) - among others – by (a) applying entrepreneurial orientation on international business context, (b) examining the effects of three different dimensions of entrepreneurial orientation on three dimensions of firm's international performance, and (c) extending the research of the role of moderating effects on the relationship between entrepreneurial orientation and firm performance.

Entrepreneurial activities are closely linked to firms' global operations (Dean *et al.*, 1993). It has been proposed that success in global business operations requires entrepreneurial orientation because domestic strengths do not always guarantee success in foreign markets. Previously e.g. Zahra and George (2002) have noted that EO or “international EO” may be particularly relevant to rapidly internationalising firms as such motivation seems to drive firms to develop high-quality goods, and which are associated, in turn, with success (cf. also Knight, 2000; Knight and Cavusgil, 2004).

As mentioned above, there has been a shortage of studies which focus on independent effects of EO dimensions and their effect on performance in international setting. However, this were of uttermost importance as, our results show that in international turbulent markets

emphasising proactive behaviour and competing aggressively may not be beneficial for firm's international performance.

4.1 Direct effects of entrepreneurial orientation on international performance

According to Lumpkin and Dess (2001) "a strong competitively aggressive stance gives a firm the ability to be a decisive player in a field of rivals", and thus competitive aggressiveness is believed to be associated with superior performance. Our analyses support this view as analyses revealed that competitive aggressiveness is associated both with high sales performance and efficiency performance. However, the relationship between competitive aggressiveness and profit performance was not significant, whereas, *proactiveness* was significantly associated *only* with profit performance. These results support Lumpkin and Dess' (2001, p. 435) view on that "the two dimensions [competitive aggressiveness and proactiveness] will vary in their relationship to performance". As competitive aggressiveness refers to a firm's response to competitive threats, it may be that for companies' who employ competitive aggressiveness competitive advantage is derived from cost advantages (cf. Lumpkin and Dess, 2001) leading towards higher sales and better efficiency performance but not contributing to the profits. As proactiveness refers to a firm's response to marketplace opportunities, it may be that proactive firms are the first-movers enabling them to enter new markets, and benefit from the first-mover advantages (Lieberman and Montgomery, 1988; Mascarenhas, 1997) and thus gain better profits.

According to Lumpkin and Dess (2001) risk taking means "a tendency to take bold actions such as venturing into unknown new markets", and is associated with internationalisation strategies (cf. Zahra and Garvin, 2000). However, the positive relationship between risk taking and firm's international performance is not evident, as risk taking has been shown to

possess a curvilinear relationship with performance (Begley and Boyd, 1983). Our results indicate that risk taking behaviour contributes only to the profit performance, and that risk taking actually decrease profits in the international markets. The negative relationship between risk taking and profit performance in international markets may result from the fact that costs of operating in international markets are higher compared to costs of operation of local counterparts (cf. Zahra and Garvis, 2000). This result is inline with earlier studies like Miller and Friesen's (1984) and Begley and Boyd's (1983), as Miller and Friesen (1984) noticed that "excessive entrepreneurship can reduce firm's profits", and Begley and Boyd (1983) proposed the curvilinear relationship between risk taking and firm performance.

4.2 Moderating effects on entrepreneurial orientation – international performance relationship

Competitive environment

As we recall from previous discussion proactiveness did not have a direct effect on efficiency performance or international sales. However, when the competitive environment turbulence was examined, it was found that proactiveness contributes to sales most in stable competitive environments. This result is contradictory to our expectations. Although proactiveness is seen as an opportunity-seeking forward looking perspective and acting in anticipation of future demand to create change (Lumpkin and Dess, 2001), it may be that these opportunities are tempered by the constraints imposed by the competitive forces (Zahra and Garvis, 2000) – like heavy industry and price competition, continuous new competitive moves, and aggressive selling (Jaworski and Kohli, 1993), and thus proactive behaviour does not contribute to the sales or profits in international markets – or not at least in a short-run.

Risk taking was significantly related to decreasing profits but did not have direct effect on other performance dimensions. Examination of the moderating role of competitive environment turbulence revealed that the relationship between risk taking and performance differed under high and low levels of competitive turbulence. Risk taking behaviour was associated with high sales performance in stable environments but did not contribute to sales in turbulent environments. Begley and Boyd (1983) note that high risk taking does not always lead towards better performance as they found that firm performance was highest at moderate levels of risk taking. Competitive turbulence is high when the industry is in 'the stage of incremental changes' in its life cycle (Anderson and Tushman, 1990) and then the focus of competition may be on lower costs and strategic positioning tactics (Porter, 1985). Thus, it is possible that [small] firms may perform better if they adopt a more passive, low profile strategy and do not attack industry competitors (cf. Covin and Covin, 1990) and do not take risks.

Technology intensity

The relationship between proactiveness and profit performance was moderated by the technology intensity as our analyses revealed that proactiveness leads towards better profit performance in low technology industries. In high technology industries the effect of proactiveness on profits was weaker. This result is contradictory to our expectation. Proactiveness is seen as a response to opportunities, and opportunity seeking behaviour is generally believed to be more successful in changing and uncertain environments (Lumpkin and Dess, 2001) - like high technology environments characterized with high R&D investments. One possible explanation for unexpected direction of the effect is that it may be that our technology intensity reflects environmental hostility and not the dynamism aspect. As the environmental hostility indicates the scarcity and intensity of competition for

environmental resources (Covin and Slevin, 1989), the effect of hostility on the proactiveness-performance relationship may be unfavourable (Lumpkin and Dess, 2001). According to Miller and Friesen (1983) forceful proactiveness can be very hazardous when competitive conditions are becoming more taxing. Other possible explanation for this result may be that the firms operating in fast changing industries with high turbulence need to invest heavily and patiently in R&D to be able to introduce constantly new products to build market share and get access into distribution channels and new markets. Thus, although the firms improve their operational performance, the profits are not seen as they are directed into operations. The temporal aspect of performance measurement could also explain this result, as the investments in efficiency may decrease profit performance in the short-run and only bear fruit in longer time frame.

Also the risk taking – performance relationship was to some degree contingent to technology intensity. Results revealed that risk taking behaviour increases international profits under relatively high technology intensity conditions. According to Khandwalla (1976/1977, p. 27-28) “a technologically sophisticated (i.e. technology intensive) environment implies that the products and processes produced or utilised in the industry involve the use of very sophisticated and complex operations technologies with a lot of research and deployment involved”. Successful risk taking behaviour seems, thus, to be linked with strong resources in R&D and technological capabilities.

Control paths

Technology intensity and competitive turbulence were significantly linked to better international efficiency performance. We also found that competitive environment had a significant and negative effect on international sales. According to Hitt *et al.*, (1997)

international markets can be described as hostile. When hostility and competitive intensity rise, especially in an international setting, the cost of international operations may increase significantly (that is need for more marketing, advertising and customer loyalty development), which in turn may lead to reduced profits (Zahra and Garvis, 2000) via reduced sales. Thus, although environmental hostility may positively influence performance, firms competing in excessively turbulent and hostile international environments may experience diminishing and negative returns (Zahra and Garvis, 2000).

Managerial implications

It is evident that the results stemming from our study indicate that entrepreneurial behaviour is of importance for managers involved in international business. However, results imply that prior striving for proactive behaviour, competitive aggressiveness and venturesome risk taking managers should study their international market environments carefully and truly understand the nature of these turbulent markets, as in many occasions strong emphasis on entrepreneurial behaviour does not contribute positively to the international performance indicators, such as increasing sales and profits. Also Zahra and Garvis (2000) found that increases in international corporate entrepreneurship activities lead to negative returns in multiple foreign markets, and explained the negative returns by the difficulties firms may experience in managing complex foreign operations and by costliness of coordinating, directing, and managing the venturing.

Consequently, one additional implication based on our results is that although it seems that especially for a firm aiming at rapid internationalisation it is a good idea to get any type international expertise into the firm, for example by hiring personnel with international experience, it is also important to study applicants contextual experience regarding e.g.

management and marketing skills in different types of market environments, before the final hiring decision.

4.3 Limitations

One obvious limitation is the use of survey data in measuring the key performance variables because of the potential source bias. One limitation is the measurement of technology-intensity, as this was carried out at the industry level using secondary sources. If possible, this should be done at the firm level. The cross-sectional nature of the data limits the possibility of drawing strong conclusions from the development of the relationships between the different constructs presented in this study. Finally, also the fact that the study was conducted in a single-country setting is a limitation. However, as all the firms were exporters from various industries, most of the results could be considered valid in an international context, particularly in small open economies such as Sweden and Ireland.

4.4 Future research

Further research should concentrate more on joint and interdependent effects of different predictors of international performance. Following e.g. Zahra and Garvis (2000) we emphasise the importance of environment. Although it is evident that international entrepreneurial efforts and international entrepreneurial orientation can enhance the growth and performance of exporting firms, there is a risk that financial return from these activities may decline when the environment changes. Therefore, it is of importance that a firm's contextual situation needs to be taken into consideration when the different dimensions of EO are studied. Longitudinal studies are also needed to provide a more comprehensive picture of the role of entrepreneurial orientation, environment and competition together with their interaction with the firm and industry specific determinants of performance. Regarding this,

we recommend more holistic frameworks to be presented; especially empirical testing of various frameworks, which try to explain the phenomenon of international entrepreneurship, is of importance (cf. Rialp *et al.*, 2005). Furthermore, temporal aspects of international entrepreneurship (paths, processes) should be linked to performance indicators, i.e. what is the actual value of the international entrepreneurship or international entrepreneurial orientation in a given time frame.

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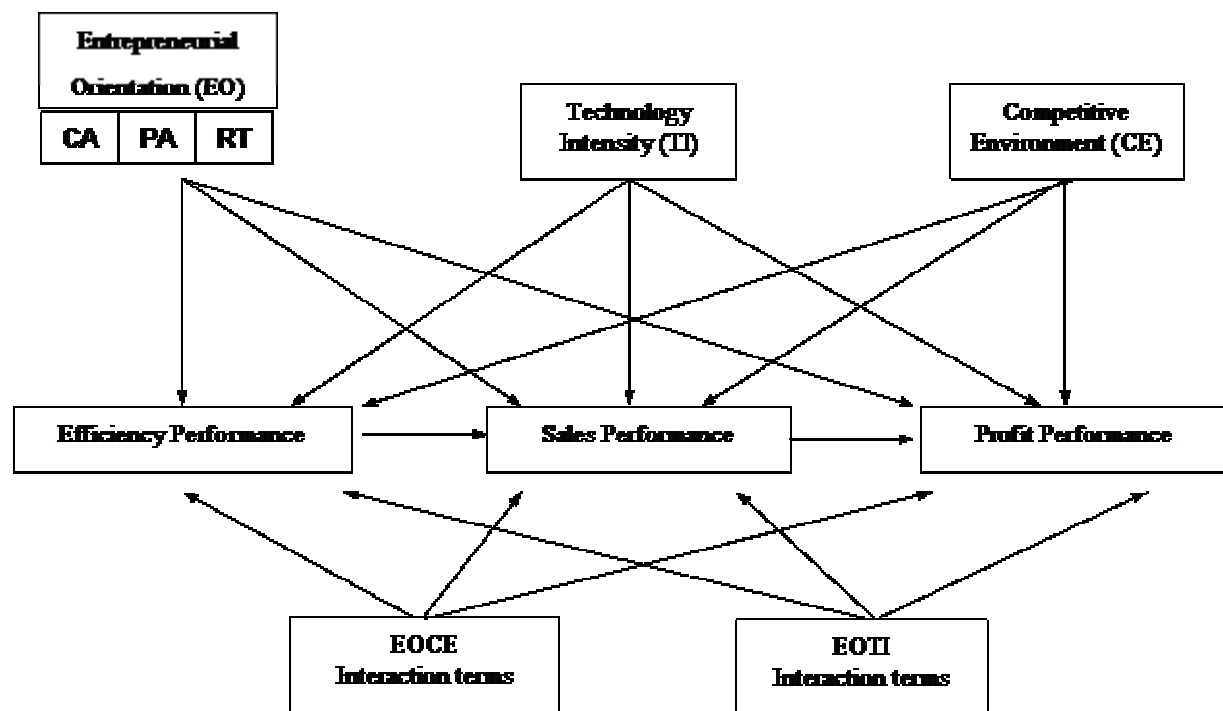


Figure 1.

Diagrammatic representation of the paths specified for model testing

Table I.
Scale properties and correlation coefficients^A

	Mean	SD	1.	2.	3.	4.	5.	6.	7.	8.
1. Competitive aggressiveness	4.93	1.09	.75							
2. Proactiveness	6.06	1.51	.45	.85						
3. Risk taking	3.98	1.78	.10	.34	.87					
4. Competitive environment	4.78	1.11	.23	.43	.34	.72				
5. Technology intensity	3.10	3.95	.04	.05	.23	-.01	.70 ^B			
6. Efficiency performance ^C	.23	1.32	.21	.19	.11	.29	.18	.76		
7. Sales performance ^D	.00	.90	.34	.21	.12	-.03	.17	.43	.75	
8. Profit performance ^D	.00	.92	.26	.25	-.05	-.06	.04	.19	.53	.86

A: Composite reliability on the diagonal

SD: Standard deviation

B: Single item measure – reliability set at .70

C: Scale items log transformed prior to averaging

D: Items standardized prior to averaging

Table II.

Fit measures for the models

Model	χ^2 (d.f.)	RMSEA	CFI	NNFI	GFI
Measurement Model	291.89 (168)	.056	.928	.910	.895
Restricted model	74.92 (58) ^A	.035	.978	.949	.964
Unrestricted model	45.30 (40) ^A	.024	.993	.978	.978

RMSEA = Root mean square error of approximation.

CFI = Comparative fit index.

NNFI = Nonnormed fit index.

GFI = Goodness of fit index.

A: significant at $\alpha = .05$.

Table III.**Standardized and unstandardized path estimates for unrestricted model**

<i>Hypothesized paths</i>		St. path estimate	Unst. path estimate	T- value*
H1	Competitive aggression → Efficiency performance	.20	.18	1.70 ^A
	Competitive aggression → Sales performance	.31	.25	2.88 ^A
	Competitive aggression → Profit performance	.09	.07	.85
H2	Proactive → Efficiency performance	.01	.00	.05
	Proactive → Sales performance	.10	.06	1.06
	Proactive → Profit performance	.20	.12	2.49 ^A
H3	Risk taking → Efficiency performance	-.03	-.02	-.30
	Risk taking → Sales performance	.05	.02	.54
	Risk taking → Profit performance	-.19	-.10	-2.50 ^A
H4	Competitive aggression × Competitive environment → Efficiency performance	-.17	-.10	-1.23
	Competitive aggression × Competitive environment → Sales performance	-.12	-.07	-.96
	Competitive aggression × Competitive environment → Profit performance	-.07	-.04	-.67
H5	Proactive × Competitive environment → Efficiency performance	.00	.00	.00
	Proactive × Competitive environment → Sales performance	.17	.07	1.62 ^B
	Proactive × Competitive environment → Profit performance	.05	.02	.57
H6	Risk taking × Competitive environment → Efficiency performance	-.05	-.02	-.55
	Risk taking × Competitive environment → Sales performance	.11	.04	1.44 ^B
	Risk taking × Competitive environment → Profit performance	.13	.05	1.84 ^A
H7	Competitive aggression × Technological intensity → Efficiency performance	-.01	-.00	-.13
	Competitive aggression × Technological intensity → Sales performance	-.01	-.00	-.14
	Competitive aggression × Technological intensity → Profit performance	-.06	-.01	-.93
H8	Proactive × Technological intensity → Efficiency performance	-.07	-.01	-.77
	Proactive × Technological intensity → Sales performance	-.00	-.00	-.03
	Proactive × Technological intensity → Profit performance	.22	-.03	3.26 ^A
H9	Risk Taking × Technological intensity → Efficiency performance	-.01	-.00	-.07
	Risk Taking × Technological intensity → Sales performance	.02	.00	.26
	Risk Taking × Technological intensity → Profit performance	-.12	-.01	-1.83 ^A
<i>Control Paths</i>				
	Competitive environment → Efficiency performance	.23	.21	1.93 ^A
	Competitive environment → Sales performance	-.32	-.27	-2.90 ^A
	Competitive environment → Profit performance	-.11	-.10	-1.17
	Technological intensity → Efficiency performance	.21	.05	2.17 ^A
	Technological intensity → Sales performance	.04	.01	.50
	Technological intensity → Profit performance	-.02	-.00	-.21
	Efficiency performance → Sales performance	.43	.40	4.51 ^A
	Sales performance → Profit performance	.46	.49	5.28 ^A

*Critical t-values: when $\alpha = .05$, critical t-value = 1.645; when $\alpha = .10$, critical t-value = 1.282 (since all hypotheses are directional, one-tailed tests were used).

A: Significant at 5%

B: Significant at 10%