GROWING UP IS HARD TO DO: MATURING BORN GLOBAL COMPANIES IN A HIGH-TECH ENVIRONMENT

Abstract

Born global companies, which are mostly young, one-product companies at the outset, face multiple challenges when striving for long-term independence. These challenges include short industry life cycles, limited resources and the need to maintain growth rates in order to satisfy external investors. However, few studies have explored the question how independent born global companies mature, if at all. This study focuses on the use of mergers and acquisitions as a means for born global companies to remain independent while maturing and the success of employing such a strategy over time.

An empirical analysis of longitudinal data gathered from 44 Israeli, high tech, maturing born global companies that were in the second decade of their organizational existence during the beginning of the millennium, showed that employment of M&A strategies increased the probability of independent survival. Results further showed that probability of survival increased with the number of performed acquisitions, which also had a positive effect on financial growth.

A higher probability of survival was mostly related to M&As that allowed expanding the company's product line; acquisitions that had other purposes were not related to survivability. The more successful born global companies continued investing in R&D and even increased their investments in R&D while investment in marketing and sales diminished over time. Thus supporting the argument that frequent use of M&A strategy for purpose of expanding the product line creates experience and an increased ability to release the inherent benefits related to acquiring. The M&A strategy seems to complement the company's in-house R&D activities.

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Introduction

The existence of born global companies has been evidenced both across national borders (Gabriellson and Kirpalani, 2004; Moen and Servais, 2002), and across different industries (Madsen and Servais, 1997). Even though some born global companies have originated from larger home markets such as the US (Knight and Cavusgil, 1996; Oviatt and McDougall 1994), Italy (Zucchella, Palamara and Denicolai, 2007) and France (Moen, 2002), these companies seem to be emerging more frequently from small, advanced economies (Gabrielsson and Kirpalani, 2004; Moen and Servais 2002). Examples include Israel (Almor and Hashai, 2004; Hashai and Almor, 2004;), Norway (Moen, 2002), Denmark (Rasmussen and Madsen, 2002), Finland (Laanti, Gabrielsson and Gabrielsson, 2007), and Australia (Mort, Weerawardena and Liesch, 2008).

In spite of their relatively small size and young age, restrains related to limited resources and lack of experience, born global companies seem to operate as larger multinational enterprises (MNEs) by targeting international markets, and organizing their value chain in an international setting (Knight and Cavusgil, 1996, Oviatt and McDougall, 1994; Almor and Hashai, 2004; Hashai and Almor 2004).

The technological advantage of born globals is constantly at risk of being neutralized by new and improved technologies (Almor, 2013; Andersson, Gabrielsson & Wictor, 2004), explaining why born globals seem to appear with a higher frequency in technological intensive industries. The shortening of industry life cycles in technological industries (Qian & Li, 2003; Cusumano & Yoffie, 1998) seems to force the companies to internationalize early on.

Born globals face multiple challenges when striving for long-term independence. These include short industry life cycles, limited resources, and the need to maintain growth rates in order to satisfy external investors. However, little research exists that explores the maturing process of born globals.

After their initial period of success, many born globals are acquired by other, often larger companies (Almor, Tarba and Margalit 2014; Weber and Tarba, 2011; Weber et al., 2012a, 2012b). However, Almor et al. (2014) found that the employment of mergers and acquisitions (M&A) strategy increases the probability of independent

survival for technology-based born globals over time. This study will focus on the use of mergers and acquisitions as a means for born global companies to remain independent while maturing and the success of such a strategy over time.

Subsequently, we will present a literature overview, which leads to a number of hypotheses that are tested on maturing born global companies originating in Israel. The sample on which the hypotheses are tested, the results of the tests and a discussion section are presented after that.

Born Global Companies

The terms 'Born Global', and 'International New Ventures' (INVs) have been used interchangeably to describe and denominate this type of companies. Madsen (2013) points out that a consensus exists between different scholars on the theoretical delineation of the different concepts, but that differences emerge when it comes to the empirical operationalization. Lately, various researchers have addressed the potential differences, and analyzed whether or not born globals and INVs refer to the same phenomenon. While some have argued that this is the case (Svensson, 2006), others claim that born globals and INVs exhibit different characteristics (Crick, 2009).

Still, most research on born globals and international new ventures does not differentiate clearly between the two (Oviatt and McDougall, 1994; Autio, Sapienza & Almedia, 2000; Knight and Cavusgil, 1996; Rennie, 1993). Therefore, we will assume that the two terms are interchangeable, and use the term 'Born Global' to refer to the broad phenomenon, further basing ourselves on the definition developed by Knight and Cavusgil (2004): *"Business organizations that, from or near their founding, seek superior international business performance from the application of knowledge-based resources to the sale of outputs in multiple countries" (Knight and Cavusgil, 2004, p.1)*

This definition highlights three important features of the born global: a) the early internationalization, b) the knowledge-based resources, and finally c) the multiple market focus.

a) Early internationalization

A committed management team consisting of entrepreneurs that employ an international mindset early on is an important enabler of the early internationalization of born globals (Freeman and Cavusgil, 2007). The background, capabilities, and

international orientation of the entrepreneurs are proven to have a great impact on the born global's tendency to internationalize early (Knight, 2000; Madsen and Servais, 1997; Oviatt and McDougall, 1994). Founders of born globals often have international experience from living, or working abroad, as well as education in relevant fields. These factors can lead to a lowered perceived risk of entering foreign markets in general, and markets from where the founders have specific experience in particular (Madsen and Servais, 1997).

In addition to the knowledge gained from previous experience, the experienced entrepreneur will have access to different networks, which can be used to compensate for the limited resources born globals are forced to deal with. In fact, access to international networks is considered crucial for the success of born globals (Freeman, Edwards and Schroder, 2006; Laanti, Gabrielsson and Gabrielsson, 2006; Madsen and Servais, 1997).

b) Knowledge-based resources

Even though born globals exist in both high and low technology industries (Madsen and Servais, 1997), studies have shown that they are more frequently represented in industries that can be characterized as technology-intensive (Aspelund, Madsen and Moen, 2006), and that they often sell innovative, self-developed technology-based products (Almor, 2013). As a result, a lot of the research on born globals is concentrated on companies originating in such high tech industries (Almor, 2013; Almor and Hashai, 2004; Hashai and Almor, 2004; Bell, 1995; Laanti, Gabrielsson and Gabrielsson, 2007; Rennie, 1993).

Among the factors believed to be important for the appearance of born globals in various industries, is the firm's possession of unique intangible assets based on knowledge management, and high value creation through product differentiation, leading-edge technology products, technological innovativeness, and quality leadership (McDougall et al., 2003; Rialp, Rialp and Knight, 2005). These resources are often used to produce a single product that the company market in a unique way (Almor, 2013; Freeman and Cavusgil, 2007). Accordingly, the born global's competitive advantage is often based on exploitation of unique resources and capabilities, enabling the development of leading-edge technology products (Knight and Cavusgil, 2004). The

competitive advantage is enforced by opportunistic first-mover advantages (Almor and Hashai, 2004; Rialp, Rialp and Knight, 2005).

c) Multiple market focus

One of the key enablers of the multiple market focus, as well as the early and rapid internationalization is the born global's frequent choice of niche strategy (Hashai and Almor, 2004; Almor and Hashai, 2004; Freeman and Cavusgil, 2007; Madsen and Servais, 1997; Rasmussen and Madsen, 2002; Rennie, 1993; Rialp, Rialp and Knight, 2002). The key to a niche strategy is to find a servable segment of customers that is so specific that it does not attract attention from the larger MNEs, though still being large enough to generate a sufficient profit (Porter, 1980). The chosen niche might not be big enough to be profitable in the born global's home market, but in an international, or even global perspective, it might be possible to achieve substantial profits.

Companies originating from smaller home markets have a higher probability of being born global (Madsen and Servais, 1997). This is often a result of domestic market size, meaning that the market niche that the company is dependent on is not of sufficient size in the respective firm's home market. Consequently, the firms are pushed towards internationalization from an early stage (Crick and Jones, 2000; Freeman et al., 2006). Some born globals even sell their very first product in markets outside of their home country, and revenue retrieved from the home market in general is often negligible compared to the amounts raised in foreign markets (Hashai and Almor, 2004; Oviatt and McDougall, 1994; Rasmussen and Madsen, 2002; Rennie, 1993).

Mergers and Acquisitions

In spite of varying findings concerning their contribution to financial performance (King, et al., 2004), mergers and acquisitions (M&A) are widely used in the business world today. One reason for this might be that the main motives for conducting acquisitions are often not of a strict financial character. In their research on high-technology acquisitions, Ranft and Lord (2000) discovered that firms name as the two main reasons for conducting acquisitions 1) obtaining specific product related technology, and 2) accessing product innovations and engineering capabilities (Ranft and Lord, 2000). Mergers and acquisitions enable small, young and entrepreneurial firms, with a narrow resource base to extend, enhance, and broaden their resources and

capabilities, and thus serve as means to grow and remain attractive for the company's investors (Agarwal and Helfat, 2009; Chaudhuri and Tabrizi, 1999; Eisenhardt and Martin, 2000; King et al., 2008;). In other words, by acquiring technological skills and capabilities, born globals can gain faster access to the resources they need to develop new products and additional technologies (Capron, 1999; Graebner, 2004; Graebner and Eisenhard, 2004; Grabner and Sjölander, 1990; Mowery et al., 1996).

Two important features of mergers and acquisitions which help compensate for the challenges influencing born globals is its ability to a) enable firms to access valuable resources and capabilities and b) help achieve strategic renewal (Agarwal and Helfat, 2009; Eisenhardt and Martin, 2000; Graebner, Eisenhardt and Roundy, 2010; Santos and Eisenhardt, 2009). In this sense, resources and capabilities refer to products and technologies, as well as knowledge (i.e. individual employees and teams of employees), which would otherwise have to be created through internal development. As previously mentioned, this is a both time consuming and resource draining process, which born globals are normally not equipped to perform to a satisfying extent (Gomes et al., 2011). Achieving strategic renewal refers to the reconfiguration and recombination of technologies and knowledge in order to reach new solutions. This contributes to faster introduction of new products, widening of existing product offerings and enhance internal technological capabilities (Graebner & Eisenhardt, 2004; Graebner & Sjolander, 1990). Firms in general and born globals in particular, often rely on a limited set of knowledge and managerial practices. This can lead to a state of rigidness and inertness towards environmental changes (Leonard-Barton 1992). Acquisitions serve as a means for preventing this phenomenon, and are particularly valuable for technology intensive firms, as new technologies often arise from the combination of existing knowledge (Graebner, Eisenhardt, and Roundy, 2010; Kogut and Zander, 1992).

However, the use of mergers and acquisitions is associated with several challenges and related research is inconclusive in its determination of success, failure and resulting performance (Gomes et al., 2011; Haleblian, Devers, McNamara, Carpenter & Davison, 2009; Papadakis & Thanos, 2010; Schoenberg, 2006; Stahl & Voight, 2008; Thanos & Papadakis, 2012; Weber et al., 2011b). Several researchers have indicated that mergers and acquisitions in fact neither increase shareholder wealth (Tuch and O'Sullivan, 2007), nor lead to superior post-acquisition performance (King et al., 2004). An important issue concerning post-acquisition performance is whether to integrate the

acquired firm within the buying firm (Weber and Tarba, 2011; Parachuri et al., 2006). One of the main motives of going through with the acquisition in the first place is often the potential synergy that is possible to achieve with the merger of two different entities, the choice not to integrate is assumed to prevent these synergic effects (Parachuri, et al., 2006). However, integration is not without challenges. As Parachuri, Nerkar and Hambrick (2006) pointed out, integration is highly disruptive for the company's employees, and among these the technical personnel that actually perform the work related to corporate innovation. This disruption leads to severe productivity drops. Reasons for this might include that employees' routines are interrupted, knowledge-based resources are destroyed, cultural clashes occur, or most importantly: the loss of key employees and managers that often tend to follow the acquisitions process (Ernst & Vitt, 2000; Puranam, Singh & Zollo, 2003; Puranam and Srikath, 2007; Weber et al., 2012a, 2012b).

Benson and Ziedonis (2009) researched the importance of handling the acquisition process correctly. They found that mergers and acquisitions enable firms to gain access to technologies and know-how when they acquire startups, as long as the company effectively identifies and monitors the technological activities during the acquiring process (Benson and Ziedonis, 2009). One of the factors believed to affect mergers and acquisitions performance in a beneficial way, is experience gained from previously going through this process (Eisenhardt and Martin, 2009; Haleblian and Finkelstein, 1999; Hayward, 2002). Such experience can also contribute to reducing the previously explained disruption phase (Parunam and Sirkath, 2007), and thus lead to a more efficient integration process (Hitt et al. 1991). However, some researchers have also revealed that inexperienced acquirers might tend to overgeneralize the experienced gained from their first acquisition, and thus fail to see important differences which might demand different actions from the company compared to what the previous acquisition and following integration did (Haleblian and Finkelstein, 1999). Considering the vulnerability of born globals, resulting from their small size and narrow resource base, it is reasonable to assume that they will be severely damaged by a failed acquisition process, and that they might not be able to survive beyond it. Based on this argument it is reasonable to believe that a single acquisition might not lead to valuable acquisition experience, while the ability to survive through multiple acquisitions will strengthen the company in terms of their capability to perform additional acquisitions

successfully. The proposed disability of born globals to survive from failed acquisitions is accompanied by the belief that it is the companies that are able to perform them successfully that are the ones that survives beyond the acquisition process. This leads us to believe that not only will mergers and acquisitions in general increase the born global's probability of survival, but also, that there is a positive relationship between number of M&As and survival. This argument leads to the following hypothesis:

Hypothesis 1a – the probability of survival of technology-based born globals increases with the number of performed mergers and acquisitions.

While previous research reveals contradictory results concerning the relationship between acquisitions and increased financial performance, experience achieved from multiple acquisitions reduces disruption, and enables integration that is more efficient. Therefore, we argue that an increased number of acquisitions reduces the required resources during the post-merger phase. When fewer resources are used to handle the post-acquisition challenges, more can be devoted to the potential benefits related to acquiring the target firm in question (e.g. exploring new markets, targeting new customers, and developing new products). Hayward (2002) argues that experiential learning from previously performing acquisitions is challenged by the fact that a) different acquisitions are performed for different reasons; b) there often are variations related to how well the firm handles the acquisition; c) acquisitions occur irregularly. Thus, a company may have to go through the process of M&A several times before learning how to exploit the potential benefits in a way that results in increased financial performance. This argumentation leads to the following hypothesis:

Hypothesis 1b – a positive relationship exist between number of performed M&As and the growth in sales, gross profit and equity of technology-based born globals

To date, there has been little research trying to explore potential growth opportunities for born globals, and what strategies these companies should choose in order to survive independently over time (Almor, 2013; Benson and Ziedonis, 2009; King et al., 2004). Almor (2013) addressed this issue when she developed a framework

aimed at conceptualizing paths of growth for technology-based born globals originating from a small population, advanced economy (Almor 2013).

Growth is important for born globals, both in order to survive, but also to satisfy external investors that have invested their capital in these companies (Almor, 2013). This leads to an expectation that born globals will explore opportunities for expansion. While born globals can choose different paths of growth (Almor, 2013) Almor et al. (2014) found that Israeli, maturing born global companies tend to grow foremost in terms of product line offerings and that they use mergers and acquisitions in order to expand their product lines. In this study we pose that:

Hypothesis 2 – technology-based born globals that use M&As first and foremost to expand their product lines, survive more frequently than those who use M&As for other purposes.

Almor and Hashai (2004) examined the tendency of knowledge-intensive born global firms to perform marketing and R&D activities in-house. Among the companies in the sample, 80 % internalized R&D activities, and 78 % did the same with their marketing activities, whereas only 28 % of the companies internalized the production process. This is in line with the core competency approach, which states that capabilities that underlie the company's competitive advantage should be performed in-house rather than outsourced to external parties (Prahalad and Hamel, 1990; Peteraf, 1993).

R&D

Technology-based born globals often have a competitive advantage that is grounded in their unique, technological know-how. R&D activities thus make a vital contribution to the final value offered to the company's customer (Almor, 2013). As technological knowledge is often of a tacit nature, experience-based, and integrated in relationships within each respective firm, it is difficult to exchange and transmit it through arms-length relationships (Bertrand, 2000; Esienhardt and Martin, 2000; Graebner, et al., 2010; Ranft and Lord, 2000). In-house R&D allows the firm to secure ownership of its technological knowledge, and to sustain its competitive advantage (Tallman, 1991).

Findings related to how mergers and acquisitions affect the company's investment in R&D have been somewhat contradicting. While some authors reported

that the decision to acquire another company is related to low levels of R&D expenditure (Blonigen and Taylor, 2000; Desyllas and Hughes, 2008; Hitt, Hoskisson, Ireland & Harrison, 1991; Hitt, Hoskisson, Johnson & Moesel, 1996), others reveal results that indicate the opposite (Bertrand and Zuniga, 2006; Geroski, Machin & Reenen, 1993). Blonigen and Taylor (2000) found a remarkably strong negative correlation between the propensity to acquire and R&D expenditure. This relationship was significant both between companies and within the same company (i.e. in times of low R&D expenditure the firm acquires, in times of high R&D expenditure it does not). Desyllas and Hughes (2008) came to the same conclusion when they found that a firm's commitment to internal R&D is negatively affected by the decision to acquire, while low R&D productivity increases the likelihood of acquisition. Thus, we pose that born globals will tend to use M&A as a substitute for their own R&D activities, especially in order to extend the product line.

Hypothesis 3a – technology-based born globals that invest relatively less in R&D are more likely to perform M&As in order to expand their product line.

Marketing

Born globals with a technology-based competitive advantage tend to interact a lot with their customers. This is partly due to the fact that their high-tech offering often requires demonstration, the provision of training, installation, as well as maintenance and repairs. These activities tend to be related to the proprietary knowledge of the born globals, and are thus closely related to what constitutes their competitive advantage (Hirsch, 1989; Almor and Hirsch, 1995). First of all the likelihood of providing pre- and post-sale services of sufficient quality is expected to be higher if employees that have received extensive training from the company perform it. Additionally, keeping marketing activities in-house ensure the protection of proprietary know-how, and retrieval of customer-related knowledge spillovers (Almor and Hashai, 2004; Almor, 2013; Simonin, 1999).

While post-acquisition the acquiring company is most likely left with a larger customer base, Hitt, Hoskinson and Ireland (1990) have shown that marketing may be neglected because the integration phase following the acquisition turns the managerial focus inwards rather than towards their customers. This can cause customer-related

tasks to be neglected, and potentially a decline in service quality (Urban and Pratt, 2000), which can ultimately lead to the risk of losing customers (Bekier and Shelton, 2002). Moreover, the new entity is likely to demand more resources related to managing the business, as it is now larger and perhaps more bureaucratic than before (Bertrand, 2009). If the acquisition is financed by debt, focus is likely to shift to debt repayments and cost reductions, relative to other business functions (Baysinger and Hoskinson, 1989). Thus, we pose that:

Hypothesis 3b – technology-based born globals that use M&As are likely to decrease their marketing expenditure over time.

Methodology

Population: Israeli technology-based born global companies

Israel is a democratic country with a small, open economy. In spite of its small population it holds a rather unique position in the world resulting from the country's dynamic start-up-intensive high technology cluster (Avnimelech and Teubal, 2006; Avnimelech and Schwartz, 2009; Bresnahan, Gambardella and Saxenian, 2001), making it a market leader in high-tech start-ups. Compared to the rest of the world, Israel has the highest percentage of investments in R&D as a percentage of GDP (Senor & Singer, 2009). Additionally, Israel also benefits from a high number of scientists and engineers (i.e. 130 per 10 000 workers) relative to other countries (i.e. 80 in the US and 70 in Japan) (Chorev and Anderson, 2006). These characteristics have led to Israel being recognized for its entrepreneurial culture and strong technological capabilities (Avnimelech and Schwartz, 2009; Bresnahan, et al., 2001). Thus, Israel is a good case study to study maturing born globals.

Definition of born globals

Commonly used criteria to define born global companies include 1) selling their first product in foreign markets within three years of their inception, and 2) deriving at least 25 % of their turnover outside their home market (Knight & Cavusgil 1996; Madsen & Servais, 2000; Madsen, Rasmussen & Servais, 2000). Almor and Hashai

(2004) pointed out that these criteria might lead to the exclusion of a big group of companies that should actually be viewed as born globals leading them to formulate the following criteria, which are employed in this study. They include: 1) the first international sale took place within three years after incorporation and the firm's foreign sales account for at least 25 % of its turnover; or 2) the first international sale took place no longer than nine years after incorporation and the firm's foreign sales account for at least 75 % of its turnover.

Sample

The initial data in this study were gathered in 1999; 51 firms from the 1999 sample were revisited in 2009. The new sample only included Israeli technology-based born globals that were founded before the year 2000 and were publicly traded at NASDAQ or other foreign stock exchanges before the year 2000 and belonged to one of Israel's three most important high-tech industries: software, telecom, and electronics. In 2009, these companies were either in their maturing phase, or had ceased to exist, allowing us to examine what happens to born globals as they mature.

Data were collected for the period 2000-2009, and included various financial data and information about mergers and acquisitions. By focusing on publicly traded firms, we are able to study the historical development of companies with a confirmed track record of business operations. Furthermore, it gives an easy access to data. Publicly traded companies are required to publish their annual reports, which includes all financial data, and relevant information about performed acquisitions (i.e. name of the acquired firm, acquisition price, and reasons for acquiring). The original data in 1999 were gathered by means of interviews. The follow up data were collected through secondary sources such as annual financial reports and statements, newspaper articles, the company websites, and other online sources such as NASDAQ.

Seven companies were excluded from the current sample because of various reasons: 1) extreme outlier values of any of the variables (3 companies were excluded), 2) employing more than 1000 employees (3 companies were excluded), and 3) did not fulfill the requirements set by the chosen definition (1 company was excluded). Thus, the sample employed in this study ultimately consisted of 44 companies. 31 (70 %) of these companies survived throughout 2009, while 13 (30 %) did not. The born globals

that did not survive where often acquired by larger companies, or they ceased to exist for some other reason (e.g. bankruptcy).

The original data included year of establishment, when and where the first product was sold abroad, whether or not different activities (i.e. production, marketing and R&D) where performed in-house or outsourced, as well as the expenditure related to each of these activities. The follow-up data included financial data (e.g. sales, cost of sales, operating income, shareholders' equity, R&D and marketing expenditure, etc.) for the period 2000 – 2009, or as long as the company remained independent.

Among the 44 companies 34 (77 %) performed a total number of 107 M&As, while 10 companies (23 %) did not employ this strategy. Of the 44 companies that acquired other companies, 27 (79 %) survived, while 7 (21 %) ceased to exist before the year 2009. Both qualitative information such as strategic reason for acquiring (i.e. as part of product, customer or country strategy), type of integration (i.e. horizontal or vertical), and type of product (i.e. competitive or complimentary), and quantitative information (i.e. price of acquisition) were collected for the purpose of this research. Table 1 shows descriptive statistics for all the performed acquisitions.

Table 1 Descriptive statistics of 107 M&As performed during the period 2000-2009

Variable	Percentage	Average	Range
Acquisition price (Thousand USD)	-	43,040	
Number of M&As performed per company	-	2.4	0 - 11
Horizontal (%)	88	-	-
Vertical (%)	12	-	-
Competitive (%)	18	-	-
Complimentary (%)	82	-	-

Data and Measures

All companies in the sample are or were traded at NASDAQ or other stock exchanges, which enabled access to both financial data and information concerning mergers and acquisitions. In some cases information was missing, or could not be found because the company ceased to exist in these cases, information was retrieved from the company's website, news articles commenting on the acquisition, press releases or

industry websites (e.g. nasdaq.com, finance.yahoo.com, bloomberg.com, wikinvest.com, tase.co.il, etc.).

A company was defined as "Independent in 2009" if during the period 2000-2009 the following conditions were met:

- It published its annual report
- Its stock was traded on the stock market
- It existed an official company website which specified the company's activities and business operations

A company was defined as "Not independent in 2009" if during the period that was studied, it was either acquired by another company, or ceased to exist for some other reason. This was determined through a range of factors related to the specific company:

- Annual reports could not be found
- Its stock was no longer traded on a stock market
- Its official website could not be found
- Results from internet searches indicated that the company had been either acquired by another company, or ceased to exist for some other reason (e.g. bankruptcy)
- The acquiring company's official website provided information about the acquisition (acquired company, year of acquisition, reasons for acquiring, etc.)
- The original product name still existed but this was acquired by another company

Financial performance is a term with several dimensions, and a single measure reflecting financial performance in general is yet to be found. Different accounting measures such as sales, profit, shareholders' equity, and ROE are often used in studies investigating M&A performance (Grabner et al., 2010; King et al., 2004; Benson and Ziedonis, 2009). In this study, we analyzed financial performance based on three financial parameters that all reflect different aspects:

- Growth: Measured by growth in sales (i.e. from 2000 to 2009)
- Profitability: Measured by growth in gross profit (i.e. from 2000 to 2009)
- Profitability to shareholders: Measured by Growth in Shareholders' Equity (i.e. from 2000 to 2009).

When comparing investment in R&D among different companies it is common to use R&D expenditure relative to sales (i.e. R&D/Sales). Median investment in R&D in 1999

among firms in the sample was 14%. A company was characterized as investing relatively less (more) in R&D if it invested less (more) than 14 % of its sales. Because the aim was to look at levels of R&D prior to conducting M&As, the R&D/Sales levels used are related to the numbers from year 2000.

Change in marketing investment was measured using the difference in marketing expenditure between the years 2000 and 2009 rather than the change in marketing to sales. This measure was used in order to exclude effects of change in sales that might follow an acquisition of a target company.

Findings and Results

SPSS Statistics 21 was used for testing the different hypotheses.

Hypothesis 1a stated that *the probability of survival of technology-based born globals increases with the number of performed mergers and acquisitions.* Analysis included all 44 companies, and was carried out by conducting a Pearson's Chi-square test. Table 2 shows the frequency distribution of the investigated companies. Among the companies that did not acquire during the period only 40 % (4) were still independent in 2009. However, among the born globals that acquired 1-3 other companies, 77 % (17) companies survived, and among the born globals that acquired 4 or more times during the period 83 % (10) companies survived. Pearson's Chi Square test showed a statistically significant relationship ($p = 0.052$) between the number of acquisitions performed by the born globals, and survival throughout the period from 2000 until 2009 (X^2 (2, N = 44) = 5.903, $p = 0.052$), thus supporting hypothesis 1a.

Table 2 Frequency distribution related to hypothesis 1a

			Independent in 2009		
			Not Independent in 2009	Independent in 2009	Total
Number of M&As	No M&As	Count	6	4	10
		% within number of M&As	60.0 %	40.0 %	100.0 %
		% within independent in 2009	46.2 %	12.9 %	22.7 %
		% of total	13.6 %	9.1 %	22.7 %
	1-3 M&As	Count	5	17	22
		% within number of M&As	22.7 %	77.3 %	100.0 %
		% within independent in 2009	38.5 %	54.8 %	50.0 %
		% of total	11.4 %	38.6 %	50.0 %
	4 or more M&A	Count	2	10	12
		% within number of M&As	16.7 %	83.3 %	100.0 %
		% within independent in 2009	15.4 %	32.2 %	27.3 %
		% of total	4.5 %	22.7 %	27.3 %
Total		Count	13	31	44
		% within number of M&As	29.5 %	70.5 %	100.0 %
		% within independent in 2009	100.0 %	100.0 %	100.0 %
		% of total	29.5 %	70.5 %	100.0 %

Hypothesis 1b addressed the potential impact of M&A frequency on financial performance (sales, gross profit and equity) among surviving companies, and stated that a positive relationship is expected to be found between the number of M&As performed and financial performance. To test this hypothesis a SPSS database was created that included continuous variables for three financial measures and a continuous variable for number of performed M&As. The analysis of this hypothesis consisted of the 31 companies that survived throughout the period 2000-2009. The rational for excluding the companies that did not survive is that financial data for these companies do not exist for year 2009.

Regression analysis showed that the number of M&As explained 72.4% of the variance in sales growth, and that the model significantly predicted growth in sales ($F(1,29)=76.052$), $p < 0.001$). The number of M&As was significantly positively related to growth in sales ($t(30) = 8.721$, $p < 0.001$, $\beta = 66981$, $p < 0.001$). The number of mergers and acquisitions explained 54.4 % of the variance in gross profit growth, and the model significantly predicted growth in gross profit ($F(1,29)=34.645$), $p < 0.001$). The number of M&As were significantly positively related to growth in gross profit ($t(30) = 5.886$, $p = 0.013$, $\beta = 41940$, $p < 0.001$). The number of M&As explained 58.0 % of the variance in equity growth, and it significantly predicted growth in equity ($F(1,29)=40.087$), $p < 0.001$). The number of M&As was significantly positively related to growth in equity ($t(30) = 6.331$, $p < 0.001$, $\beta = 56515$, $p < 0.001$). Compared to growth in sales and gross profit, M&As have a stronger effect on sales than on equity, and a stronger effect on equity than on gross profit. (β(Sales) = 66981 > β(Equity) = 56515 > β(Gross Profit) = 41940), thus supporting hypothesis H1b. Hypothesis 2 posed that *technology-based born globals that use M&As first and foremost to expand their product lines, survive more frequently than those who use M&As for other purposes.* To test this hypothesis a SPSS database was created with the following variables: 1) the born globals used M&As for the main purpose to expand product line (i.e. a categorical variable that stated whether the company acquired primarily to expand their product line, if they acquired for other reasons, or if it did not acquire at all); and 2) if the companies remained independent in 2009 (i.e. a categorical variable that stated whether or not the company survived independently throughout the investigated period). The analysis of this hypothesis also included all 44 companies.

Pearson's Chi Square test showed a (marginally) statistically significant ($p = 0.054$) relationship between acquiring primarily to expand the technology-based born globals product line, and survival throughout the period from 2000 until 2009 (X^2 (2, N = 44) = 5.829, $p = 0.054$), thus supporting hypothesis 2.

Hypotheses 3a and 3b stated that:

Technology-based born globals that invest relatively less in R&D are more likely to perform M&As in order to expand their product line.

Technology-based born globals that use M&As are likely to decrease their marketing expenditure over time.

In order to test the hypotheses, the following variables were created: 1) R&D/Sales in 2000 (i.e. a categorical variable that stated if the company's investment in R&D was above or below the sample median); 2) Change in marketing expenditure (i.e. a categorical variable that stated if the company's marketing expenditure either decreased or increased between 2000 and 2009, or the last year that the company survived); 3) The firms in the sample acquired primarily to expand their product lines (i.e. a categorical variable that stated whether the company acquired first and foremost to expand their product line, if they acquired for other reasons, or if it did not acquire at all). Analyses included all 44 companies.

The Pearson Chi-square test shows that there is a statistically significant ($p = 0.050$) relationship between acquiring primarily to expand the product line, and initial R&D levels (X^2 (2, N = 44) = 6.010, $p = 0.050$). However, the relationship is in the opposite direction of what was expected, thus not supporting H3a. The Pearson Chi-square test further shows that the relationship between acquiring primarily to expand the product line and change in marketing expenditure (X^2 (2, N = 44) = 4.626, $p = 0.099$) is a marginally significant ($p < 0.10$) in the expected direction, thus, supporting H3b.

Discussions and Conclusion

Even though substantial research during the last two decades has led to a rather extensive body of literature concerning the emergence and existence of born globals, we still have little understanding how these companies can manage to survive independently over time. The aim of this paper is to explore how the use of mergers and acquisitions can potentially serve as a means to increase the probability of independent survival.

This study focused on Israeli technology-based born globals. Israel constitutes an excellent case to study born global behavior as the country has a competitive advantage in high-tech industries and the creation of startups. It is reportedly one of the countries with the highest percentage of high-tech startups. While existing studies have focused on the establishment and attributes of born globals, this study has concentrated on the long-term independent survival, which seems to be a challenge for these companies, as their limited resources do not enable them to grow easily beyond a one-product, global niche, strategy.

Mergers and acquisitions seem to be a viable growth option for born globals, as it

allows quick access to additional resources, such as new knowledge and innovation capabilities. It is further a recommended strategy to employ in declining industries, in which high-tech born globals find themselves frequently. However, research is inconclusive on important issues such as success factors and effects on financial performance, and studies have revealed a high percentage of acquisition failure leading to a negative effect on performance.

In line with findings by Almor et al. (2014), results presented in this paper show that maturing born globals can increase their probability of independent survival by employing a M&A strategy. Results further show that the probability of survival increases with the number of performed acquisitions. The percentage of surviving firms was lowest for the group of companies that did not acquire, higher for the companies that performed 1-3 M&As, but highest for the companies that performed 4 or more M&As. Among the surviving companies, the number of acquisitions also had a positive effect on financial growth. This effect was particularly strong for companies that had performed a high number of acquisitions, while the difference was less evident among the companies with only a few acquisitions during the 10-year period that was studied. These findings support the notion that acquisition experience leads to a reduction of the disruption period and the resources needed to overcome it during the merger period. Consequently, it seems that experience creates an increased ability to release the inherent benefits related to acquiring. The results of this study thus add to the current literature, by showing that higher numbers of acquisitions are actually related to a higher growth in financial performance, relative to companies that acquired less in the same period. However, it is important to realize that the benefits of multiple acquisitions are likely to be determined by several factors, and that performing several acquisitions without carefully addressing the related challenges might have a negative effect rather than contributing to survival. Specifically, the way in which the acquisition process is handled, selection of the target company and the time span between the different acquisitions are factors likely to have an effect.

As initially expected, the results also confirm that a higher probability of survival is related to M&As with the purpose of expanding the company's product line and that acquiring in order to enter new geographical markets or access new customers are related to a lower survival probability. Thus, it seems that born globals are better off buying additional technology or products as well as the competencies needed to create

them, than creating them through internal development.

However, the findings related to the investment in R&D over time, contradict what we initially assumed. M&As that allow expansion of the company's product line are actually related to higher levels of initial investment in R&D, thus leading us to the conclusion that acquiring does not seem to substitute, but rather complement internal R&D. This contradicts other studies, which found that the use of M&As is related to low levels of investment in R&D (Blonigen and Taylor, 2000; Desyllas and Hughes, 2008). Several explanations can be offered. One can assume that higher levels of investment in R&D indicate a relatively deeper commitment to innovation and development of new products and technologies. Because of the resource limitations and time constrains born globals are forced to deal with, the companies that invested relatively high amounts of money in R&D in 2000, realized early on that they lack the knowledge and capabilities to develop new products at the needed pace. Acquiring companies that includes individuals, or teams of individuals, with the required knowledge, is in such a case preferred compared to the highly uncertain process of in-house development.

It is also important to point out that this tendency does not seem to apply for companies that use M&As for reasons other than to expand their product line. Among this group of companies, almost half were associated with high initial levels of R&D, and the other half were associated with low initial levels. These findings could indicate that it is investment in R&D, and not the M&A process, that actually increases probability of independent survival, and that the above findings thus constitute a spurious relationship. However, it is beyond the scope of this paper to examine this question further.

The tendency to reduce marketing expenditure throughout the post-acquisition period is similar to findings reported in several other studies. Management of the post-merger process seems to result in a focus on inward managerial issues, away from customers, as well as on an emphasis on debt repayment rather than expenditure (Hitt, Hoskinson and Ireland, 1990; Bertrand, 2008; Baysinger and Hoskinson 1989). It is interesting to notice the difference in relation to this tendency, between companies acquiring for product purposes, and companies acquiring for other reasons. Among the companies that acquired in order to enter new markets or approach new customers, the majority of the firms increased their marketing expenditure over time. An explanation for this may be that while companies that acquire for reasons of product line

development, focus on their newly acquired product or technology, the companies that acquire for other reasons will focus on their newly acquired customers. In sum, the findings related to R&D and marketing thus indicate that a relationship exists between the level of investment in core activities and the strategy underlying the decision to acquire.

In conclusion, born globals manage to overcome their small size and limited resources by employing a niche strategy. However, this challenges the born globals ability to innovate continuously and deal successfully with shortening product life cycles and industry life cycles, thereby challenging long-term survival. Mergers and acquisitions has proven to be a strategy that enable born globals to handle their life threatening challenges, and this particular study has also shown that multiple acquisitions might be beneficial in order to secure survival over time. Moreover, multiple acquisitions also lead to better financial performance of the company. The strategy underlying the decision to acquire has consequences for both probability of survival, and affects its core activities. Acquiring in order to expand the company's product line seems to be beneficial to securing long-term, independent survival, and seems to be related to higher levels of financial success. It seems that firms that invest above the median in R&D prefer this strategy, and it leads to a decrease in marketing expenditure over time. Acquiring for reasons other than product line expansion seems to create less success over time and leads to an increase in the company's marketing expenditure.

As all studies, this one has a number of limitations, which are among others, the result of the sample used here, that focused on Israeli, high-tech, publicly trade born global companies between the years 2000-2009. There is no doubt that a study based on a sample with born globals from both the private and public sector, originating from a wider geographical area and belonging to more industries will provide stronger results. Moreover, a larger sample would probably also provide results that are more robust. However, maturing born globals are difficult to identify and measure, especially if they are not traded publically.

There is still a lot of unfamiliar territory surrounding born global companies and what strategic actions they should take on their road to long-term survival. Building on the findings presented here and questions raised by this study, conducting in-depth interviews and case studies of born globals and their founders would enable a broader

understanding of the strategic choices underlying the investigated actions. Moreover, external validity would be strengthened if findings regarding maturing born globals outside Israel would be similar. One could also consider examining companies originating from low-technology industries, in order to determine whether the findings applied to born globals in general. Use of different financial variables, or sets of variables, will provide a better picture of born global behavior.

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