

**FINANCING AND MANAGING GROWTH OF A BORN  
GLOBAL: CASE OF MAD.ONION**

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## **ABSTRACT**

This study is investigating a relatively new phenomenon namely “born globals”. These companies can be defined as those, which generate global sales, a minimum of 20-30% outside their home continent in an early stage of establishment, and are generating at least 80% of their net sales from the international markets. Single-case study research was selected as methodological approach to study the phenomena.

The empirical investigation was carried out as an explorative single case study on MadOnion. This method can be justified by the scarcity of research in the area. The analysis of the data revealed the following main results discussed more in the earlier chapter. First, the internationalization process of born globals does not follow the mainstream stage pattern but rather leapfrogs certain stages. Second, this puts extreme requirements on organizing the resources both internally (founders, management team) and externally (co-operation). Third, finance cannot be carried out through traditional debt but must rely in start stage on seed money (governmental promotional funds and founders) and in the growth stage on venture capital investors (both domestic and foreign) given reasonable conditions. Globalization may require an IPO in later stage given the market conditions are favorable. These results are of both theoretical importance as contributing to the very scarce research on the topic, but also of managerial value due to their guidelines provided to managers of these born globals.

The study concludes by suggesting more studies in this interesting research area.

# **FINANCING AND MANAGING GROWTH OF A BORN GLOBAL: CASE OF MAD.ONION**

## **INTRODUCTION**

The globalization pressures have increased tremendously lately. On one hand many companies are pushed to globalize their activities due to increased global competition and too small domestic markets for their often very specialized products. Whereas on the other hand large, deregulated and increasingly open global markets are creating a strong pull factor. This development is enabled by changes in the globalizing environment, increase of global trade, specialization between countries' production structure and also the economics growth driven by the new economy.

This study is investigating a relatively new phenomenon namely "born globals". These companies can be defined as those, which generate global sales, a minimum of 20-30% outside their home continent in an early stage of establishment, and are generating at least 80% of their net sales from the international markets.<sup>1</sup>

It is especially interesting to study Finnish 'born globals' because the number of hi-tech firms, and 'born globals', has increased rapidly in recent years in Finland (see Appendix 1), much because the industrial production has become more diversified in structure. Hi-tech exports has grown rapidly and totaled EUR 8 billion in 1999, 21 percent of total exports and technology forms an essential part of Finnish economic policy today. In 1999 Finland was among the top of OECD countries investing in R&D with an investment of 3.1 percent of GDP on R&D. The software industry in Finland has been growing, too. The export of software products increased by 80%, from FIM 490 million in 1996 to FIM 900 million in 1997. The Finnish software industry consisted mainly of small and medium-sized firms that had emerged from small groups with technical ability and expertise<sup>2</sup>.

The existence of 'born globals' has been identified by earlier research (see Kirpalani & Luostarinen 1999, Knight & Cavusgil 1996, Majkgård & Sharma 1999, Rennie 1993). However, thorough research in this area is relatively limited.

## **LITERATURE REVIEW AND RESEARCH QUESTIONS**

### **Born global phenomena in respect to the internationalization pattern**

The Nordic research concerning the internationalization of the firm has regarded it as a process, and the firm goes through consequential stages in accordance with increased learning of foreign operations (Luostarinen 1970, 1979, Johanson & Vahlne 1977, Luostarinen & Welch 1990). International, mainly American research has

focused more on how the organization and the firm's strategy changes when the business environment changes and becomes international (Chandler 1962, Porter 1980, Prahalad & Doz 1987, Bartlett & Ghoshal 1989).

The internationalization of the firm has been an increasingly growing research area among international scholars and can broadly be divided into two main research streams (Forsgren, 1989 p.6). The first research tradition deals with FDI decisions as the result of a rational plan (at least implicitly) decided and implemented by the top management (see Kindleberger, 1969; Caves, 1971, 1982; Buckley and Casson, 1976; Hymer, 1976; Dunning, 1980, Hennart, 1982; Doz, 1986; Rugman, 1982, and Porter, 1986)<sup>3</sup>. Dunning (1980) synthesized the rational behind FDI into an eclectic theory, where he explained that ownership advantages, such as superior technology or other monopolistic advantages was not enough to explain FDI. Instead he pointed out that companies well endowed with ownership advantage (O) are more inclined to internalize (I) them. Furthermore those companies are more inclined to exploit their ownership advantages internationally. The structure of location endowments (L) then explain whether its is more favorable for the company to trade or invest in local production. In the case of born globals where rapid growth is important for survival, internalization mentioned above can be explained in terms of how well they can control ownership advantages, i.e. externalize (E). The second research stream views the foreign investment as an incremental process, i.e. companies increase their presence in foreign markets gradually in terms of operational models, diversity of modes and range of markets penetrated. Researchers like these, from the Scandinavian 'Nordic School'<sup>4</sup>, emphasize an evolutionary pattern of international activity, during which organizational learning takes place<sup>5</sup>. However, we have little knowledge indicating to which category 'born globals' would belong to.

Empirical research on business practices has consistently highlighted market similarity as the major determinant of international market entry, i.e. similarity of the foreign market to the firm's home market (Erramilli & Rao 1993). 'Nordic School' researchers argue that exporting begins with countries close in terms of "psychic distance"<sup>6</sup> and extends incrementally to "psychic distant" ones as the firms gain experience (Johanson & Vahlne 1977; Wiedersheim, Olson & Welch 1978 and Buckley, Pass & Prescott 1992). However, Johanson and Wiedersheim-Paul (1975) did not fully find support for this notion. Luostarinen (1979) on the other hand found in his study of 1006 Finnish manufacturing firms that companies enter into markets in a sequential order, i.e., first into countries with a short 'business distance'<sup>7</sup> and later into countries with larger 'business distance'<sup>8</sup>.

Many of the Nordic scholars have studied the traditional internationalization path of companies originating from the small and open countries (SMOPEC) both on country (Luostarinen 1970, Johanson & Vahlne 1977) and company level (Luostarinen 1979). In Finland companies have followed a laterally rigid process by where they start with less demanding products (P), foreign business operations (O), markets (M), and then as their experience increases move over to more demanding ones (Luostarinen 1979, FIBO Research project 1976, 1983, 1990, 1996)<sup>9</sup>. Also evidence has been presented that companies proceed according to a holistic internationalization pattern: first inward, then outward and finally through a co-operative stage (Luostarinen 1994,

Korhonen 1999). According to Andersen (1993) the stage theory is particularly important in the early stages of internationalization and in SMOPECs.

However, recent research has indicated that firms do not necessarily advance in stages any longer (Nordström 1990, Calof & Beamish 1995, Härkki & Huotari 1995). Preliminary findings on studies ongoing in the FIBO research program have indicated that born-global companies can be found in one of the following business areas: high-tech, high-service, high-design and high-quality systems (Kirpalani & Luostarinen 1999). ‘Born globals’ are operating in an environment where competition is global, products are highly specialized with a global appeal, and therefore operations must support all continents and customers and/or markets from the establishment of the company. These companies do not have necessarily time to proceed following the traditional pattern (see e.g. Kirpalani & Luostarinen 1999, 12-13).

Studies on the globalization of SMEs in Finland have suggested that some start-ups with unique products may have a very short domestic period, lack the domestic period or have a simultaneous domestic and foreign stage, followed by any stages of the traditional internationalization process (Luostarinen 1994, 224). Born globals may be expected to comply with one of the following globalization strategy developments compared to the traditional internationalization process (see Kirpalani & Luostarinen 1999, 12):

- A) Rapid development of their POM-strategies
- B) Leapfrogging over certain POM-strategy stages
- C) New patterns including untraditional directions (de-internationalization) or new order of development in the holistic pattern (co-operation started first).

Figure 1: Internationalization patterns

	<b>Step-by-step</b>	<b>FDI</b>
<b>Traditional</b>	Stage-wise	OLI
<b>‘Born-globals’</b>	Rapid development of POM Leapfrogging POM New patterns (ex. Cooperation)	OLE

**Born globals in respect to the corporate strategy, characteristics and capabilities**

Welch and Luostarinen (1988) extended the concept of internationalization of the firm, from the traditional one describing it as the outward movement of a corporations international operations, to “the process of increasing involvement in international operations” (Welch and Luostarinen, 1988, 36). Welch and Luostarinen pointed out that to be able to measure internationalization, one need to look at characteristics of the firm, as well as on the nature of the firm and its capacity to conduct international operations. Calof & Beamish (1995,116) very well captured the extended view of

internationalization introduced by Welch & Luostarinen, when they described internationalization as "the process of adapting firm's operations (strategy, structure, resources, etc.) to international environments".

An efficient utilization of company resources requires changes in structure when the strategy changes (Chandler, 1962). Strategy can be considered as a process involving a broad spectrum of management to identify and develop core capabilities the company can use to create unique levels of value for selected customers and stakeholders group. According to earlier research, the organizational structure of the firm changes when it internationalizes from an initially domestic one to a global one (Luostarinen, 1979). When firms start their internationalization process, their operation (routines, administrative structure) is designed for domestic markets. When the companies become more international, their operations change. The companies need to decide on the knowledge they need to acquire and the resources they are going to commit (Johanson & Vahlne 1977). It is important to ensure a 'fit' between existing resources and resources needed due to internationalization (Eriksson, Johanson, Majkgård & Sharma 1997). Thus, it is relevant to incorporate the internationalization process into the overall organizational structure and strategy of the firm. Firms entering into foreign markets can adjust their resources and capabilities gradually, whereas 'born globals' need to respond very fast to opportunities in the global market.

Furthermore, rapid globalization is expected to put extremely high pressure on organizing resources for faster and deeper global commitment. It is of great importance for internationalizing firms, and in this case 'born globals' to know how to adapt the whole organization to the international environment and also to know how they can sustain, and even improve performance during the internationalization period. According to Cardwell, Mäkelä, Jokinen & Kumpulainen (1999) hi-tech companies often have limited resources and access to skills that are needed for global expansion. In cases like this venture capitalist often help companies in areas where knowledge is lacking, thus justifying a high rate of return on investment. Earlier studies on fast growing global high technology companies in high growth, rapidly changing industries have indicated that early setting of global objectives and early entering of lead markets is crucial. Further criteria for managing the growth include development of global products and ensuring global distribution. (Alahuhta 1990, 120-125).

This can be achieved through cooperation by entering into cooperation, by for example entering into Original Equipment Manufacturing (OEM) co-operation with international channel members as early as possible. In this arrangement a channel member carries out the marketing and selling often under their own brand, whereas the OEM manufacturer produces according to given specification. (Alahuhta 1990, 120-125). This may also lead to utilization of multiple sales channels based on partnerships in the early stage in reaching and managing the necessary growth (Gabrielsson 1999).

There are two main paradigms in the strategy literature explaining performance of the firm (McGrath, McMillan & Venkataraman 1995), the theory of industrial organization and the resource-based theory. Important elements in the resource-based theory are distinctive competencies (Selznick 1957) and intangible - tacit - assets

(Penrose 1959). An important element of the stage model of internationalization (Johanson & Vahlne 1977, Luostarinen 1979) is the theories concerning the growth of the firm (Penrose 1959). The stage model argues that a firm bases its foreign market entry and choice of country of which to market on its current (stock of) knowledge. Firms accumulate experiential knowledge through operating in foreign markets

The experience can be divided into objective – transmittable - knowledge and experiential - intangible or tacit - knowledge (Penrose 1959,53). We have scarcely any knowledge about how ‘born globals’ are accumulating knowledge during their globalization process, but we can assume that the knowledge accumulation process needs to be very rapid.

Recently researchers concerned with issues regarding corporate competitive advantage have deviated from the industrial organization theory framework (Porter 1980, 1985) and become interested in the resource-based view of the firm (Penrose 1959, Rumelt 1984, Wernerfelt 1984, 1989). A key element in the resource-based view of the firm is that competitive advantages emerge through processes of resource accumulation and deployment, leading to distinctive endowments of proprietary assets (Penrose 1959, Wernerfelt 1984, Prahalad and Hamel 1990, Mahoney and Pandian 1992, Amit and Schoemaker 1993, Peteraf 1993). McGrath, MacMillan and Venkataram (1995) takes up three processes of resource-deployment to improve competitive positions; firstly utilizing present resources to enter into new markets or market areas, this was the strategy of General Electric Financial Services; secondly by contributing to ‘absorptive capacity’ of the firm, by entering into less challenging markets in the learning phase; and thirdly by just having good luck. The process of resource-deployment of ‘born globals’ might be one of the above or then one of cooperation, sharing the resources with other specialists, thus gaining a stronger competitive position than by acting alone.

Stalk, Evans and Shulman (1992) viewed competencies and capabilities as separate, in contrast to earlier strategy researchers. Competencies consisted of firm knowledge and skills, whereas capabilities consisted of both of business processes to deliver knowledge as well as the competencies. Long and Vickers-Koch (1995) categorized capabilities into, ranging from threshold capabilities, i.e. support services servicing internal customers to cutting edge capabilities, i.e. skills and systems contributing to and enhancing competitive advantage.

Figure 2: Capability development of traditional vs. born global firms

<b>Traditional</b>	<b>‘Born globals’</b>
Low pressure of expansion Gradual process, maintain ‘fit’ Manage growth on its ‘own’	High pressure of expansion Rapid process of organizing resources Manage growth based on ‘cooperation’
‘Established firms’	‘Start-up firms’
Strategy: concentration or diversification	Strategy: concentration on core competence

## **Born globals in respect to finance**

A review of the literature reveals that financing in general from a managerial perspective and internationalization of financial operations is not a widely studied topic by international business researchers. The research interest has been in the area of interactions of firm and market (Lessard 1991), and research regarding functional issues has mostly dealt with risk management, how firms with production in one country face unpredictable variation in costs relative to revenues when conducting business with other countries (Ghoshal and Westney 1993).

Although a few studies have examined the extent of change in financial practices in MNCs due to increased involvement in foreign business using size of foreign business to explain differences in financial practices (Robbins and Stobaugh 1974) and sales and size to explain organization of treasury management (Åhlander 1990), studies taking into account the internationalization process and its affect on financial practices, both managerial and organizational, has not been found. Thus, it is unclear what kinds of concerns 'born globals' have regarding the process of changing the finance function and financing in general when the firm globalizes.

The financial transactions within the firm increase with growing presence abroad, due to internal transfer of goods, service, technology and capital (Shapiro 1982/1992). The main duties of the finance function is to ensure that the firm has adequate capital (i.e. acquisition and investment of funds), sufficient liquidity, risk management and payment systems. When the company internationalizes the financing need of it changes to the host country where its business activities takes place, away from the home country. The firm starts to raise funds directly from markets where it operates in, through share issues (Saudagaran 1988) or through loan-arrangements. Thus, the internationalization of the firm is creating two opposing forces affecting the finance function; on one hand centralization is needed due to increased financing know-how required by increased complexity of transactions. On the other hand decentralization of financing know-how to business units is required to ensure efficient implementation of transactions.

A Finnish study (Cardwell, Mäkelä, Jokinen & Kumpulainen 1999) stated three main problems that small hi-tech companies have regarding finance; 1. These companies usually lack cash flow, but have high development costs; 2. The demand for finance takes the form of 'jumps' rather than developing gradually; and 3. High growth requires large amounts of working capital. Thus, hi-tech companies have more basic concerns, i.e. the ability to finance growth.

Welch and Luostarinen (1988) stated that internationalization enables firms to use an increased amount of financing sources and that the financing techniques would develop among the internationalization process. They, however, did not discuss further the finance function's role in the internationalizing firm or elaborate on how internationalization affects the function in itself; the resources and knowledge required. In the case of hi-tech companies it seems that choosing locations close to other hi-tech firm, for example Silicon-Valley, would increase availability of

financing sources (see for example Claymon 1997 and Penttilä 1999) because the US is still the largest single capital market<sup>10</sup>.

Tables 1 and 2 show how the evolvments in internationalization affects finance activities and how activities differ between 'stage pattern' firms and 'born globals'.

Table 1 show that the need of financial resources varies depending on whether companies are engaged in direct investment operations or non-direct investment operations. Therefore firms usually relies on non-direct investment operations in the initial stages of internationalization and move towards direct investment operations when moving through the stages of internationalization. Consequently financial transactions within the firm expand with growing presence abroad, due to internal transfer of goods, service, technology and capital (Shapiro, 1982/1992) and the financial system of the firm becomes more complex (see also Robbins and Stobaugh 1974, 17).

Table 2 shows that in the starting stage 'born globals' have an international market that rapidly becomes global. However, they are relying on non-direct investment operations in the starting stage but rapidly moves towards direct investment operations. The finance in the starting stage is so called 'seed and start-up money',<sup>11</sup> followed by venture capital in the growing phase and finally when moving towards the global phase the companies gain access directly to capital markets. These companies move very fast through each step, compared to firm internationalizing step-by step.

Table 1: Companies internationalizing step-by-step

	Stage 1 Starting Stage	Stage 2 Development Stage	Stage 3 Growth Stage	Stage 4 Maturity Stage (MNC)
International Operations	Other than subsidiary operations abroad, mainly export	Other than production units abroad, export, sales subsidiaries	Production or/and assembly units in less than six countries	Production or/and assembly units in at least six countries
Markets	Domestic	Europe	Europe, and / or North- America and / or Asia	Global
Financing Activities	Finance domestic operation and export -Domestic bank finance -Export finance	Finance domestic operation and sales operation abroad -Domestic capital market -Domestic and foreign bank finance -Export finance	Finance domestic operation and foreign operation in less than 6 countries -Domestic and foreign capital market -Domestic and foreign bank finance	Finance domestic operation and foreign operation in more than 6 countries -Domestic and foreign capital market -Domestic and foreign bank finance
Organizational Structure of Finance	No separate finance department	Domestic finance department	Centralized finance department – domestic and foreign	Domestic and foreign finance organization

Source: Sasi, V. (2000), Internationalization of the finance function of Finnish firms – a study of patterns and capability development.

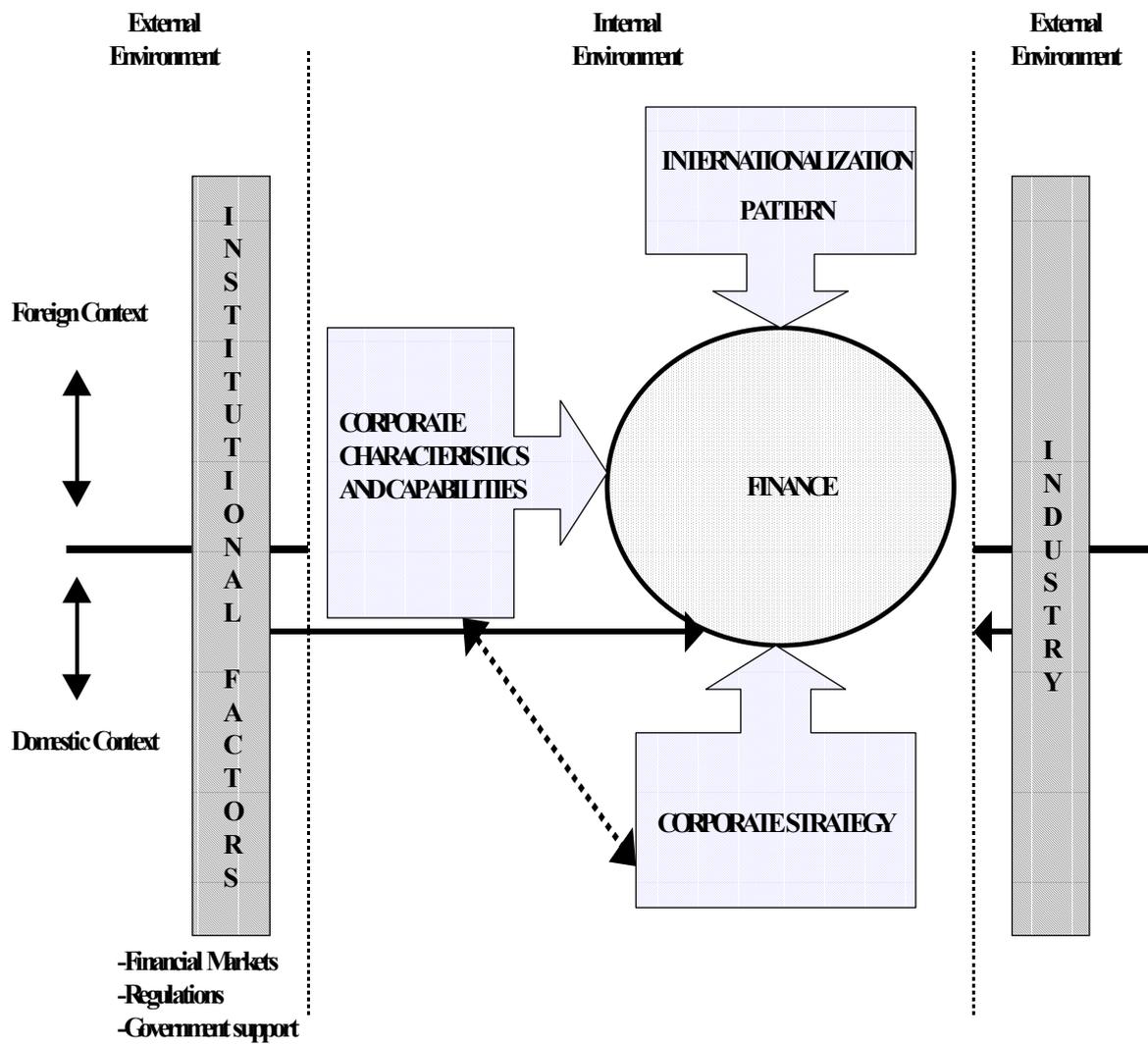
Table 2: Born global Companies

	Stage 1 Starting Stage	Stage 2 Growth Stage	Stage 3 Global Stage
International Operations	Other than subsidiary operations abroad, mainly export	Other than production units abroad, export, sales subsidiaries	Production or/and assembly units on at least two continents
Markets	Europe, and / or North-America and / or Asia	Europe, and / or North-America and / or Asia	Global
Financing Activities	Finance domestic operation and export -Domestic seed finance	Finance domestic operation and foreign operation in less than 6 countries -Domestic and foreign venture capital market	Finance domestic operation and foreign operation in more than 6 countries and 2 continents -Domestic and foreign capital market -Domestic and foreign bank finance
Organizational Structure of Finance	No separate finance department	Domestic finance organization	Domestic and foreign finance organization

Source: Sasi, V. (2000), Internationalization of the finance function of Finnish firms – a study of patterns and capability development.

The literature review above can be synthesized in the framework below (see figure 3). The internationalization patterns of born globals differ from that of traditional firms, and affects the way resources need to be accumulated, both business and financial resources. Also the chosen strategy, in terms of degree of concentration or diversification will have an affect on both resources required and financing needed. Specifically in terms of born globals the industry to which it belongs to have an impact. Most born globals are hi-tech companies in highly specialized business, often-small segments, with a short life cycle and high development costs. Institutional factors also have an impact, for example in terms of how developed the capital market is in the home country, for example in case of born globals venture capital market and also available funding for start-ups.

Figure 3: Theoretical framework



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Source: Sasi, V. (2000), Internationalization of the finance function of Finnish firms – a study of patterns and capability development.

## **Research Questions**

This study is addressing the question of how to finance and manage the growth and globalization process of a small sized high-tech software developer and producer, which can be characterized as born global.

The research questions are highly explorative in nature, as the field of investigation is new and under-researched.

1. What is the globalization processes that the case company Mad.Onion has followed in its growth strategy? Are these steps consistent and step wise, and if so what are the steps and their order?
2. What have been the alternatives for financing its activities and how has it financed each step?
3. What conclusions can be drawn to the existing mainstream pattern of internationalization related to deviations of behavior?

## **Research methodology**

Single-case study research was selected as methodological approach. The case study enables us to build our understanding inductively from data rather than deductively through theory testing. The case method's strength is the likelihood of it resulting in theory development (Eisenhardt 1989, 17) and the method is especially applicable in answering "how" and "why" questions. The single case study approach can be recommended especially when the case represents an "extreme case" or "revelatory opportunity" to analyze a phenomenon previously inaccessible to scientific investigation (Yin 1989, 46-48).

The data gathering and analysis process borrowed many of the suggestions by Eisenhardt (1989, 533). To cover first, the data gathering process: (1) In the "getting started phase" the research questions were stated" clearly. (2) In the "selection of cases phase" particular attention was paid to the suitability of the case to the born global phenomena, thus following a "theoretical sampling logic"(Yin 1989, 53). (3) Multiple data collection methods to triangulate the findings, combining the qualitative and quantitative methods were used<sup>12</sup>. Among other persons the managing director of the case company Aki Järvillehto was interviewed several times.

After the field had been entered and data collected it was time to (4) analyze it. (5) Then the tabulation of evidence for each construct and search for evidence of 'why' behind the relationships took place. The main analysis method has been explanation building (Yin 1989, 112-116). The last two steps of Eisenhardt (1989, 533) are (6) the use of literature as a comparison in terms of similar and conflicting findings and finally (7) "reaching closure" as theoretical saturation is reached. This included also critical evaluation of the quality based on the tactics presented by Yin (1989, 41).

Validity was enhanced through having key informants review the draft case report, having multiple persons analyzing the results and reliability through careful data collection.

## **EMPIRICAL DATA**

### **Case company characteristics, core strategy and capabilities**

Mad.Onion (established under name Futuremark) is a spin off company of Remedy Entertainment, which develops recreational games (e.g. Max Payne). It was set up in 1997 to capitalize on the in house developed three-dimensional graphics benchmark software, which was seen to deviate from the core business thus allowing Remedy to focus fully on game development. Futuremark was established to concentrate on the new business area. Aki Järvillehto, from Arthur Andersen Business Consulting, was nominated the managing director of Futuremark. He was the brother of Petri Järvillehto, which was the part owner of Remedy Entertainment. See Appendix 2 for Futuremark's ownership structure.

Originally the product had been developed as part of the request of a large Dutch publishing house with over forty computer magazines, VNU Business Publications, which had contacted Remedy Entertainment to create software to test the three-dimensional graphics capabilities of computers. VNU Business Publications planned to distribute 300000 – 400000 copies of the software as free CD-ROM supplements to its magazines at this time. Remedy Entertainment agreed to the deal primarily due to the positive PR that they hoped to gain from the project. The software was launched as CD-ROM supplements to computer magazines in the summer of 1997. It was superior to existing products on the markets both in terms of the disk space required (7 MB), performance and user interface.

The software's smaller size meant that it could be relatively easily downloaded from the Internet. Final Reality, the software that Remedy Entertainment had created was a huge hit – demand for the product exceeded anybody's wildest dreams, exceeding seven million distributed copies to date. Newspaper articles had come out in the spring and summer of 1999, stating how Futuremark was on the verge of building an Internet empire<sup>13</sup>.

As a recent article in a magazine, *bisnes.fi*<sup>14</sup>, stated Ari Järvillehto's best characteristics seemed to be the ability to identify competency gaps and to then find people of the right caliber to fill these. It had been a high priority for Futuremark to acquire experience and know-how, not only in the operational level but also into upper management.

Two key players in this facility were Risto Siilasmaa and Artturi Tarjanne. In the spring of 1999, Risto Siilasmaa bought a share of the stock and became the chairman of the board. Siilasmaa was the CEO, founder and part owner of F-secure (at that time Data Fellows), one of the most successful Finnish Software Company to date. Risto

Siilasmaa was Futuremark's Chairman of the Board of Directors. He brought a considerable amount of "street credibility" in to the firm with his vast experience and success. F-secure had doubled its sales since establishment in 1994 each year to reach ECU 13 million (approximately USD 14 million) in 1997. He had also been ranked by financial analysts to be one of the ten most capable Finnish managers. He was a member of various boards of software and trade associations including The Foreign Trade Association, IT Services Association TIPAL and the Association of Software Entrepreneurs. Artturi Tarjanne a veteran of the industry, who had acted as the company's trusted advisor and consultant, was also recruited to the Board. Prior to his consultancy career Mr. Tarjanne had founded a database company, Solid Information. Mr. Siilasmaa and Mr. Tarjanne brought with them over fifteen years of management experience in high-tech information business. In 1999 Futuremark's management team was highly experienced with Markus Mäki (25, Technology Manager, MSc in Engineering), Tomi Kunnamo (28, Financial Manager, MSc in Economics and Business Administration) and Aki Järvillehto (26, Managing Director, BBA) and had a more business oriented approach and background than the average Finnish software firm.

Nathan Harley had come on board from the very start as well, he had left his job in the UK as head of VNU Business Publication's Head of Technology Laboratories to take on the role of Director of Sales and Marketing in Futuremark's Toronto office. His initial visions of benchmarking software had been key in triggering the birth of Futuremark. Harley's participation had strongly encouraged Järvillehto; "Most local small software companies don't have a marketing manager at all. We had an innovative and experienced industry professional in charge of marketing right from the start."; "This made a significant difference in establishing our presence to North American markets." Harley had moved from the UK in the fall of 1998 to found a new office in Toronto.

Building a culture in which the staff felt motivated was a partially unconscious effort on Järvillehto's part. He felt that a straight talking and honest, yet informal and relaxed approach from management was the way to deal with programmers. Futuremark's programmers were known to work around the clock on occasion. However, it was not at all uncommon that employees, including Järvillehto, would also spend hours in the middle of the day fighting frantically together on the latest network games or hang out together in local pubs, assuming that the latest deadlines were not looming near. Generally the spirit was very hard working, but relaxed.

### **The product and product development**

The product was highly specialized and was targeted as a standardized measure of computers' 3D capabilities. The product enjoyed a competitive advantage against rather expensive and heavy computer memory-requiring competitors' products, which could not be afforded by private users. The increasing PC penetration rate and a boom in Internet connections was creating an exponential demand for benchmarking services. One Internet subscription could actually mean multiple users as more than one person used the connection at home or at work, a growing customer base had been identified. See Figure 4.

Figure 4: forecasts on Internet subscription growth and expectations (millions) <sup>15</sup>

Year	1998	1999	2000	2001	2002	2003	2004	2005
Dial-up subscribers	56	73	89	107	129	153	183	206
Permanent	0,5	0,7	1,2	2,3	5	9,8	13,7	17,5
Total	56,5	73,7	90,2	109,3	134	162,8	196,7	223,5

The main competitor at the time for Futuremark's product was a software product called 3Dwinbench, of larger size thus unloadable from internet, owned by the worlds largest publisher of IT magazines, Ziff-Davis, who owned about 25% of US IT magazines. In addition some games had also been used to measure 3D performance, however, showing only limited information. Information about computer's 3D performance is of use for computer publications, who routinely rank hardware for their readers and also for individuals who use 3D graphics for non-recreation uses, although more difficult to quantify.

Based on Remedy's successful Final Reality benchmark Futuremark launched 3DMark 99 – the Gamers Benchmark. This was available on the Internet where anyone could download it from (load it from the Internet onto their own computer and use it) for free. Meanwhile downloading the software Futuremark gained accurate data about the users' computer. This data was then stored onto an Internet based database for Futuremark's use. In addition to 3DMark 99 Futuremark produced demonstration software (demos) based on OEM assignments of hardware producers, contributing about 2 million FIM, or half of sales. Yet a trade off was evident as the demos tied up resources from the core business of benchmark development outlined in the business plan.

About 2 million FIM of the companies funding came from public support, namely TEKES in the form of support for technological development. Income from the Internet advertisements was negligible.

The current cash flow, or rather the lack of it from the benchmarking business was not considered to be crucial. The key to profitability and larger revenues was in the commercial exploitation of an established standard. The potential in this area was deemed to be so huge that it was perceived to be an attractive approach, even if it resulted in loss making operations in the short term.

There were plans within Futuremark to expand the product portfolio. In addition to benchmarking graphics the company was set to produce software that was able to measure video performance. Just like the graphics accelerator market, which had expanded from 30 million in 1997 to a current 1999 total of about 120 million the video market was expected to boom. As bandwidth on the Internet expanded, video and audio applications were starting to spring up. Futuremark was set to build

software to measure the performance in collaboration with alliance partners with compatible skills and resources. The next phase would be to expand the product range into audio benchmarking. Radio-stations were available on the net and music was being listened to already.

Benchmarks for measuring all other relevant areas of PC performance were also being planned. Where 3D and video were highly focused interest groups, the other testing software was supposedly the way to move towards mainstream.

The target was to build a family of benchmark products that would be able to measure all relevant user computer performance. All the benchmarks would help to identify bottlenecks in performance, compare different hardware objectively and to tie the user to Futuremark by providing value-added services. This in the end should be converted into real financial gain. Preliminary targets for distribution during year 2000 were set by Järvillehto to be, “28 million copies of 3DMark, 14 million copies of Videomark, Audio and Office benchmarks by the end of the year 2000.”

### **Operation and distribution strategy**

The operations were expanded rapidly by establishing a sales office to Toronto, Canada. Nathan Harley had left from the UK customer of Futuremark in the fall of 1998 to found a new office for Futuremark in Toronto. Later Brian Wheatley a former logistics manager for Canada Air was hired as an administrator to help him, as paper work routines had tied Harley down. While the Toronto office at the time consisted only of two persons - the reach and boost in the way Futuremark was perceived by the industry players was immense. Futuremark was now reachable in North American office hours and could have a representative in meetings almost anywhere in U.S. within 5-6 hours.

By July 1999 Futuremark had distributed 8 million copies of its software. The amount of actual users could have been substantially lower than this. The software had been primarily distributed as supplemental CD-ROMs (6.0 million) and through the Internet (1,3 million). There were plans to bundle the product with original equipment manufacturers (OEMs), where the software would be available with the hardware it supported i.e. graphics drivers. 3DMark had been distributed in 18 countries as CD-ROMs attachments. The distribution of utility and recreational software CD-ROMs as attachments was common practice among software and computer magazines. The software companies generally received a modest compensation per unit from the publisher; the end user received the CD-ROM free of charge. The readership of magazines that used 3DMark totaled about 20 million. Over 150 magazines in eighteen countries used the software.

The reproduction costs of CD – ROMs was small and the cost of downloading the software from the net was miniscule, as the users paid for the time he/she was on-line to the service provider. Often such on-line time was set at a fixed rate and thus, the user incurred no additional charges. There was very little cost for the user of Futuremark’s software and high potential utility. Once the software was developed all

the costs could be considered fixed. Futuremark incurred no additional cost per unit of downloaded or distributed software.

The Internet had expanded rapidly. The variety and quality of content and ease of access through better technology showed constant improvement. "A positive spiral<sup>16</sup>" had taken place. As more and more individuals hook up to the net the true commercial potential was being explored. Security had improved to the degree that many felt comfortable conducting business on the Internet, such companies as amazon.com and AOL were paving the way into a Internet that promised business gain.

### **Markets and marketing strategy**

The US markets are key for global expansion. "We must make it commercially in the US first, if we can succeed there then the world is open." This was not a surprising comment from Aki Järvillehto if one considered that US firms obtained 84% of revenues from "pay for" content on the Internet. Already over half of Futuremark's users were in the US.

The benefits of selling on the Internet were various. The audience was captive; i.e. they looked at their screen as they proceeded with the downloading the software. It might also have been more attention grabbing than direct sales pitches and advertising leaflets in the mail. Also the medium provided high potential for product demonstration and ease of purchase (click on the mouse a few times and enter a credit card number). The company applied a dual strategy, a simpler version of the program was available for free and for the more advanced versions there was a charge. Thus, customers were able to familiarize themselves with the product before buying. Aki Järvillehto like many in the industry was optimistic "In 1994 we saw a boom in Internet stocks as more and more people went on-line. Now in 1999 we are seeing a second boom as e-commerce and monetary transactions become a reality. In other words in 1994 people 'went to the Internet'. In 1999 people are finally starting to buy from the Internet." International Data Corporation estimated that sales to households over the Internet would skyrocket from an estimated 2 billion USD in 1997 to 93 billion USD in 2002. In 1998 industry analysts estimated that 18% of online users had done an e-commerce transaction and by 2002 it was estimated that 40% of users would have done one<sup>17</sup>. Also see Appendix 4-6.

Advertisements had become more commonplace in what was once considered a puritanically non-commercial environment. Advertisers paid for advertisement space as in any conventional media. The net had provided access to specifically targeted segments e.g. a Firearm manufacturer advertising on a rifle club's homepage or diet products being promoted on a weight watchers site etc. Direct links from these also allowed potential buyers to view the product and its features and to possibly buy it online. Legitimate concerns existed about privacy and security of financial transactions but the consensus seemed to be that possible hurdles would be overcome.

With a targeted "audience" of 14 million distributed copies in 1999, Futuremark had access to a large and attractive segment for many companies. Actual frequent users of Futuremark's site were estimated to be above 100,000. No specific market data

existed to date about the personal profile of 3DMark's users. Technical information about their computers was however, detailed and stored in a database. This provided a large captive audience for advertisers seeking to target this segment, and provided Futuremark with a potential for advertising revenue. Advertisement revenue at the time was negligible and was considered a "bonus".

MadOnion.com replaced the brand name "Futuremark" in November 1999. The intention of re-branding, among other things was to find a memorable and catchy name as well as to differentiate the company in the market. The new name, MadOnion.com was also intended to profile the company as an e-commerce company in the minds of consumers and investors alike.

### **External environment: industry**

In this section the industry dynamics and software industry players are covered as part of the external environment Futuremark is phasing.

After launching 3DMark, at the COMDEX fair in 1998, updates were introduced twice a year. Subsequent versions had been developed following the tested formula. This was a necessary process, as Futuremark needed to develop and enhance its own software to fully utilize and assess the performance of new hardware. The product lifecycle of hardware was extremely short. Hardware companies had sought to launch new products virtually simultaneously in the global market. There was little time for them to move along the traditional international product life cycle.

The constant improvements meant that Futuremark was in a cycle of constant development. The development cycle for graphic accelerators was eight months. Moore's Law stated that computer chip capacity will double about every eighteen months - this had been the case in the past and few doubted that it would be altered any time soon. Futuremark's products were heavily dependent on this development. On one hand the managing director Aki Järvillehto had considered it a key point in their strategy - there seemed to be a perpetual demand for this kind of product - on the other, it set the organization under strain. The need to meet each challenge and to live on the leading edge of technology demanded constant vigilance and allowed little for day dreaming - "Futuremark needs to keep abreast with these new developments and be able to assess the newest technology", said Aki Järvillehto. The company had openly taken part in product development with Beta programs, where prototype technology was at the company's disposal before it hit the market. "We've been able to work with prototype hardware in general about six months before it is commercially available. In this industry it's quite rare to have such a view on development of new innovations of companies such as Intel or AMD." Järvillehto highlights the close relationship they have with industry "heavyweights"<sup>18</sup>.

In its assessments of performance Futuremark had sought to be impartial. Previously manufacturers' own claims of performance were exaggerated. Manufacturers such as AMD and Intel stayed in close touch with Futuremark and the company sought to objectively assess their competing products. The end users counted on the impartiality of Futuremark, as it had no direct commercial interest with any of the product

manufacturers. Manufacturers voluntarily communicated developments in new technologies to Futuremark to ensure that it was able to prudently assess their products. This performance information could then be used in the manufacturers' marketing.

The value of establishing an industry standard had been highly rated in software. Perhaps the most visible example of software standards was Microsoft's dominant Windows. As critical mass is achieved (enough users) compatible products become the norm – the ones that do not function with the standard withered away. Issues relating to monopoly positions had been raised, with regards to the degree a firm was allowed to exploit a software standard. Futuremark's products functioned with Microsoft's Windows technology.

There had been attempts in the computer field to achieve industry standard or benchmark status. The successes were well known but many have died along the way as did Beta in videos and Atari in computers- "adapt to the standard or die" had been the prevailing motto – the business potential was immense if the firm managed to establish a standard. In addition to natural standards that had evolved from market events and customer demands - governments and international agencies had regulated high technology compatibility to ensure critical mass. Such behavior had evidently been more common in Europe than in the US e.g. the NMT mobile phone standard for the Nordic Countries<sup>19</sup>. If a company managed to develop an accepted standard, either by sheer scale or product superiority (which seemed to be the case in computers and software at the time) the benefits could be immense. Small licensing revenue per unit could have turned into a flood and an immense user-base may turn into realizable revenue.

Futuremark sprang out of a growing Finnish software industry. The volume of software exports had increased by 80% from FIM 490 million (1996) to FIM 900 million (estimate 1997)<sup>20</sup>. For approximately 17% of the exporting firms, the value of exports exceeded 60% of net sales. This has been explained with the high internationalization costs associated with penetrating key markets i.e. the U.S. (estimated at FIM 2-3 million<sup>21</sup>). The high cost of internationalization also seems to explain that only a quarter of export firms had an office outside Finland. Small Finnish firms have lacked capital and marketing expertise to carry out the strategic step of internationalization.

The Finnish software industry consisted mainly of small to mid-size firms that had sprung from technological ability and know-how. The median figure of the labor-force for software firms with only domestic sales was eight and seventeen for the ones with international sales. In the summer of 1999 Futuremark employed 18 people, 2 in Toronto and 16 in their offices outside Helsinki in Espoo. 27% of the export firms had sales of FIM 20 million or more.

The valuation rule of thumb for software and high technology companies was six times sales or twelve times profits, however substantially higher sums had been paid by foreign firms acquiring Finnish software companies. Internet firms were valued with higher multiples. The number of Internet users the companies are controlling through their web sites is key to the value of the companies. The development and harvesting of frequent Internet users was Futuremark's aim as well. The company had

set an internal target of reaching 300,000 frequent users for its Web site by the end of year 1999. Frequent users had been used as a guideline for the valuation of Internet firms. Amazon.com, an online book and music store had set a life time value of 3000 USD per user, America online had set its life time value at 5000 USD per user. As Järvillehto recently put it in an article "The evaluations are quite radical, and that's where we're heading as well. It all makes for interesting calculations." The company sought out to increase the value added service its site offered in order to acquire and retain users.

Starting from the beginning of 1999 many publicly listed Internet stocks have seen a decline in value. The P/E ratios had risen to record values. See Appendix 2a-b. Some felt that this was a sign that "the air" had been let out of Internet stocks, yet other felt this was merely an indication of the markets volatility and that a long-run rising trend in the stocks would continue. How and exactly at what value should Internet stocks had been debated. Various differing and conflicting opinions had been voiced. Companies had started to utilize the Internet increasingly and a clear market value exists for such companies as illustrated by appendix 2a-b.

### **External environment: Institutional factors**

The necessary start-up and development costs for Futuremark had also been assisted and supported substantially by TEKES, a governmental technology fund operating under the Ministry of Foreign Trade, and by the Ministry of Trade and Industry, which also supported Futuremark's international marketing efforts with smaller sums.

Organizations such as TEKES may have provided 50 to 70% of the start up capital and thus the amounts required from the private sector were smaller. The fact that funding for product development and R&D was available in the very first stages was beneficial when establishing such firms. However, traditionally the risk averse financing prevalent in Finland has not provided a base for marketing and sales expenditure that is required to build global brand recognition and distribution.

### **Financing growth**

At least in the past the US and some Western European financial markets provided a wider investment base of venture capital than Finland. Finland did not have a significant or extensive tradition of venture capital; but one was developing as institutional investors learned to appreciate this tool. Potential investors looking for a share of the company had approached Futuremark – the reactions were cautious. In total eleven Finnish and one U.S. venture capital firms had approached the company. The motivations and implications of outside capital were openly questioned. Total venture capital provided for the Finnish software market was US 20 million (about FIM 106 million) in 1998. The industry turnover was FIM 1,8 billion.

Successful Internet firms were establishing track records internationally and in Finland. This young industry was proving that venture capitalists might gain high

returns and actually get returns for their investment. Thus, more and more attention was being paid to firms such as Futuremark. There had been a change in the venture capital markets within Finland. On one hand Finnish software firms had shown that they were able to produce results and reward investors - on the other the markets have learned to understand and value the future potential of the information technology industry. Finnish venture capital firms also seemed to be taking a longer-term view of investments compared to their foreign counterparts. Indicative of new rises in investor interest was a separate high tech and software list that was set up on the Helsinki Stock Exchange (HEX) and the growth of domestic VC firms.

Additional funding was needed to develop and commercialize the product portfolio. The source of growth funding was still open. Aki Järvillehto eventual target was to do an IPO<sup>22</sup> - as many in the Internet business had done. So far only one Finnish technology startup had been listed on NASDAQ<sup>23</sup> and he was well aware of how long and risky the road to an IPO would be. "The likelihood of taking a Finnish software start-up to an IPO is extremely small, and we should not kid ourselves otherwise. It's very unlikely, yet it's been done - so it has certainly been proven possible. Setting our targets high will help us to strive forward faster. At the same time it's crucial to keep our feet on the ground and eyes on the ball."

According to Aki Järvillehto one needs to be optimistic but often keep a "reality-check." He felt that the company's need for growth financing could be viewed in stages "We are now in stage one and in the start-up phase. Our next financing round should be used to carry out product diversification and fund growth towards the United States. Once the distribution, sales and marketing power and human resources are enhanced we will be in a position to push forward towards a third phase of financing."

There were alternative forms of financing available for the next round. The big question was which form should the company pursue. Currently the company held minimal debt, but it was doubtful that the company could raise the 10 to 50 million FIM, even if it was willing to utilize a high leverage. However, if debt financing could be arranged it held the benefits of high autonomy, as covenants were thought to be less restricting on operations than e.g. new ownership. However, the risk premiums attached to any debt for Futuremark would be high and future interest payments might tie up cash flows that the company would need to reinvest. The company was projecting negative cash flows for the next three years (at least) and did not have the funds required to feed growth efforts.

The offers by venture capitalists had not led to any actions. Venture capital investors offered financing arrangements in which they would issue the company with debt and reserve the right to convert this into partial ownership at a latter date. It was debated what the company's value was as this outlined how much of the company an investor should get for his/her investment. The firm's management did not feel attracted to venture capital arrangements in which the investors could reap the benefits of success, yet leave the company to repay a substantial loan if the loan was not converted to equity.

Capital funding seemed like an attractive choice for Futuremark, if it could be arranged. Due to the level of financing needed capital investment would have to come

from corporate or institutional sources. As the company was not publicly traded the lack of liquidity would be an issue for any potential investor. In capital funding the dilution of the current shareholders stocks would automatically take place. Once again the valuation would be an issue, how much of the company should Futuremark have to sell off to get the needed financing was open to interpretation. Also, it was unsure could the firm attract the required capital investors.

According to Aki Järvillehto an IPO was definitely premature even though NM-list for technology start-ups had finally started to function well at Helsinki Stock Exchange. The company needed to develop a lot further before a listing on the HEX (Helsinki Stock Exchange) or NASDAQ could take place. However, outsiders noted that companies with less sales and revenues were being listed. See Appendix 4. The projections of growth and future returns seemed to override imminent financial performance as a criterion for listing on to an exchange. Timing, both macro economically and company wise needed to match for an IPO to succeed.

Internet industry performance figures would seem out of place in a traditional macro environment. Loss making firms were listed -and stock prices increased. With total estimated revenue of about FIM 6 million (1,2 million USD) in 1999 Futuremark was looking for additional funding of FIM 10 million to develop, grow and move the business over to the US. The humble and perhaps pessimistic view typical to Finns did not characterize Futuremark's management or its aspirations "We probably should be looking at our shoes, shaking our heads and thinking that nothing is going to come of this, but lets plod along anyway." Aki Järvillehto sarcastically said about the stereotypical Finnish approach.

The need to find individuals with experience in listing Internet companies in the US was important to Aki Järvillehto as he said that they did not have the know-how or experience for this in-house. Futuremark's desire to look at US markets was matched by American interest in Finnish software firms. The US had ranked second in foreign acquisitions for the last three years, accounting for 15,9% (1997) of new foreign companies and acquisitions in Finland<sup>24</sup>. In 1995-1999 five-software related starts-ups or acquisitions by American companies have been identified<sup>25</sup>. Substantial US interest for new hi-tech firms has been evident.

Futuremark decided to finance its growth through capital investments by Conventum limited, a Finnish capital investment company. Conventum Limited purchased 20% of the share capital of Futuremark Corporation in August 1999. The purchase price for the shares was approximately FIM 12,5 million. Shares have been purchased partly from the targeted share issue and partly from the present owners of the company. Futuremark gained sufficient capital funding to expand its product development and to start a move in to US market. R&D would remain in Finland but an office in the Silicon Valley has been set up to follow through sales and marketing as well as to gain a better interface with customers and partners.

## DISCUSSION ON THE FINDINGS

The analysis of the case MadOnion followed the framework presented in Figure 3. The analysis of the internationalization process revealed that the case company has not followed the traditional stage-wise mainstream model (see Luostarinen 1979). Rather it has advanced through leapfrogging certain stages (see also Kirpalani & Luostarinen 1999, 12). Regarding the *product strategy* MadOnion's product includes both physical aspects and services from the very outset. The demonstration software is tailored made for the purposes of magazine distribution and delivered as CD-ROM's. Whereas the 3Dmark 99 can be downloaded from the Internet site for free. The target of MadOnion is to build an established standard for benchmarking 3D performance and then exploit this potential, e.g. through collected customer databases. The *operation strategy* deviates from the mainstream pattern by lagging behind the globalization process of MadOnion. They were first using a non-direct marketing investment operation strategy by selling on the Internet, and then direct marketing investment operation strategy, which consists of a sales office located in Toronto and global distribution through Internet. The distribution strategy choice seems to precede the operation strategy choice. The distribution is carried out through dual sales channels including both indirect (OEM) channels and direct (Internet) sales channels (see also Gabrielson 1999). The establishment of an R&D office in the Silicon Valley, however, is a step toward more advanced operation strategies, inline with what the traditional mainstream model would anticipate. The *market strategy* consists of simultaneous expansion into domestic, US (sales office) and worldwide (Internet) markets. All in all the entire POM pattern of the case company leapfrogs certain stages of the stage-wise mainstream model (Luostarinen 1979), in particular related to product and market strategy.

The *corporate strategy* of MadOnion has been mainly a concentration one. Only during the short period when the business was still part of Remedy Entertainment the strategy had also elements of diversification. Apart from this, MadOnion concentrated on its core competence: experience and know-how in programming software, in particular enabling measurement of real performance of computers in the 3D. High pressure for global expansion due to the short product lifecycle and software industry nature drives the strategy of instant globalization. This requires, however, rapid building and acquiring of *resources* to the identified *competence gaps* related to managing such a process. Key resources in terms of knowledge and skills were the founders Risto Siilasmaa and Artturi Tarjanne as well as the management team. Also *co-operation* with key industry producers (e.g. Microsoft, AMD and Intel) and OEM partners (VNU Business Publications) becomes essential as anticipated by earlier research (see e.g. Alahuhta 1990, 120-125).

The *finance function* development for born global companies was proposed to proceed along a three-stage development as presented in Table 2. In the starting (I) stage MadOnion indeed received domestic seed finance from TEKES and the initial founders, which enabled it to carry out the product development. Whereas in the growth stage (II) it received funding from Conventum, a Finnish venture capital investor. As MadOnion not yet has achieved a fully global stage (III) it is still to be

seen what financing strategy it will follow. An IPO based on domestic or foreign capital market is under consideration. Although this development is very consistent with the one proposed in Table 2 it however deviated from the one of a traditional step- by-step model presented in Table 1. Born globals need to receive seed money from the very outset and can not rely on domestic bank finance or general export finance alone. Furthermore, venture capital finance is attractive as long as the terms are reasonable. (See also Sasi 2000).

## **SUMMARY AND CONCLUSIONS**

The study investigated a relatively new phenomenon in Finland: “born globals”, which are companies that have had to globalize their activities from the very outset of their establishment. They are facing strong pressures due to increased global competition and too small domestic markets for their often very specialized products. For these companies finance and managing growth is key for their success.

Based on a theoretical review of relevant theories, mainly the internationalization process (e.g. Luostarinen 1979), foreign direct investment (FDI) (see e.g. Dunning 1980), Industrial Organisation (IO) (Porter 1980, 1985), resource based approach (see e.g. Peteraf 1993) and finance related literature (see e.g. Sasi 2000) a theoretical framework was constructed (Figure 3). The main constructs for further analysis were determined to be: (1) the internationalization pattern, (2) corporate strategy, (3) corporate characteristics and capabilities, (4) finance and (5) external environment (institutions, industry). The main contribution of this study is deemed to be the integration of the various theories into one single framework and drawing preliminary suggestions based on these.

The empirical investigation was carried out as an explorative single case study on MadOnion. This method can be justified by the scarcity of research in the area. The analysis of the data revealed the following main results discussed more in the earlier chapter. First, the internationalization process of born globals does not follow the mainstream stage pattern but rather leapfrogs certain stages. Second, this puts extreme requirements on organizing the resources both internally (founders, management team) and externally (co-operation). Third, finance cannot be carried out through traditional debt but must rely in start stage on seed money (governmental promotional funds and founders) and in the growth stage on venture capital investors (both domestic and foreign) given reasonable conditions. Globalization may require an IPO in later stage given the market conditions are favorable. These results are of both theoretical importance as contributing to the very scarce research on the topic, but also of managerial value due to their guidelines provided to managers of these born globals.

The study concludes by suggesting more studies in this interesting research area.

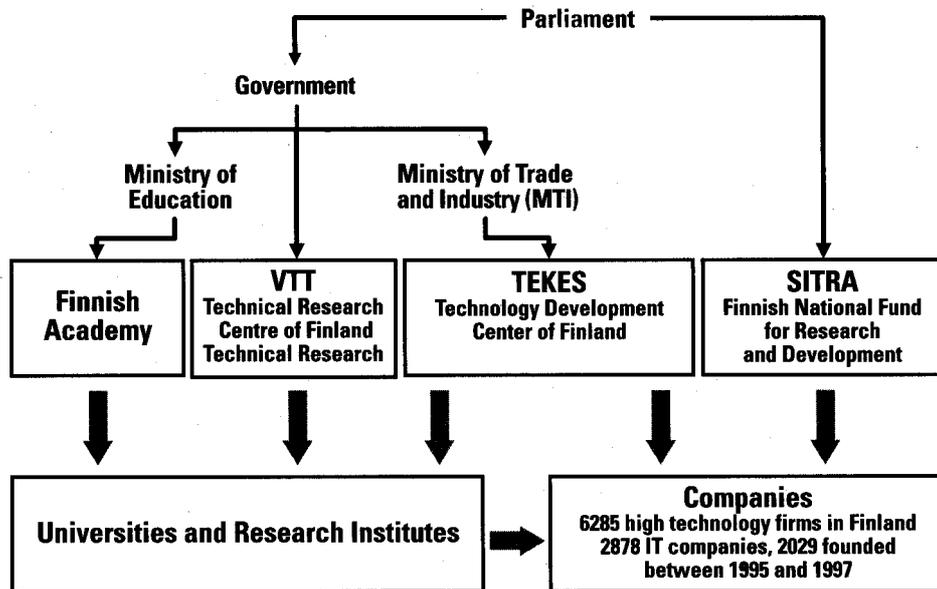
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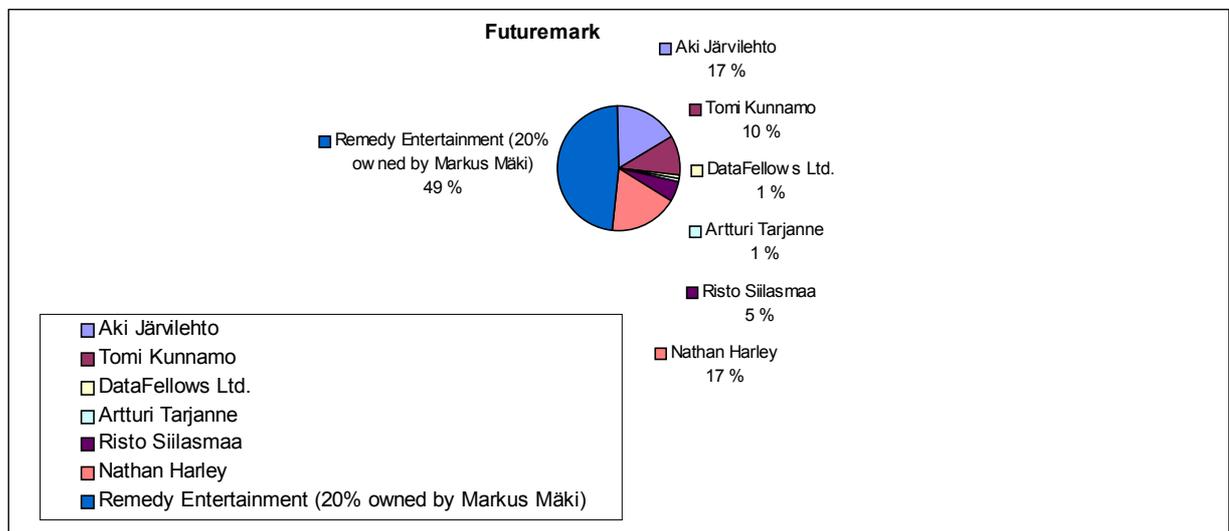
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Appendix 1: Government support of research and development in Finland



Source: Cardwell, Mäkelä, Jokinen & Kumpulainen (1999)

Appendix 2: Futuremark's Ownership.



Appendix 3a: Financial on some Internet Content Company Comparable Analysis<sup>26</sup>

	America Online	Yahoo	Excite @Home	Infoseek	C/Net	TicketMaster CitySearch	Online Sportsline	Lycos
<b>C1998 Forecasts</b>								
C1998E Average # of Users (MM)	11,5	23,5	15,0	12,5	6,5	2,5	3,0	25,0
Marketing Cost/New User	\$ 104,32	\$ 6,22	\$ 9,61	\$ 17,99	\$ 4,03	\$ 8,72	\$ 2,66	\$ 3,20
Annual Net Income Per User	\$ 23,10	\$ 0,58	\$ (10,04)	\$ (2,13)	\$ (0,84)	\$ (9,28)	\$ (12,93)	\$ (1,61)
Market Capitalization Per 1998E User	\$ 912,51	\$ 1 622,72	\$ 1 066,67	\$ 150,06	\$ 529,92	\$ 835,05	\$ 224,66	\$ 174,74
Avg. 1998E User Market Capitalization Per 1998E Revenue	29,7x	155,8x	79,1x	23,2x	69,8x	52,x	22,1x	48,8x
C1998 P/E	590,1x	2430,8x	NM	NM	646,6x	NM	NM	NM
<b>C1999 Forecasts</b>								
1999E Average # of Users/Month (MM)	15,4	64,6	41,3	14,0	9,8	3,1	6,0	43,8
Annual Net Income Per User	\$ 57,43	\$ 2,05	\$ (0,45)	\$ (6,45)	\$ (5,25)	\$ (15,35)	\$ (10,41)	\$ (1,67)
Market Capitalization Per 1999E User	\$ 429,63	\$ 590,08	\$ 387,88	\$ 133,98	\$ 353,28	\$ 668,04	\$ 112,33	\$ 99,85
Avg. 1999E User Market Capitalization Per 1999E Revenue	20,2x	74,3x	39,2x	12,6x	37,9x	22,8x	11,8x	24,4x
C1999 P/E	202,x	483,5x	NM	NM	-78,1x	NM	NM	1149,2x

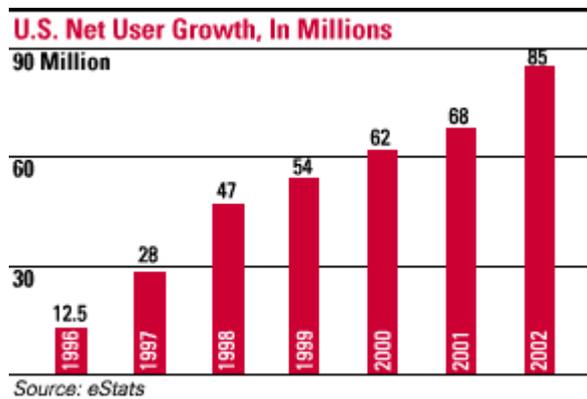
Appendix 3b: Examples of Internet firm market capitalization, revenues and users<sup>27</sup>:

Company	Alloy Online	Amazon	Autoweb.com	Beyond.com	CDnow	Digital River	eBay
<b>Market Capitalization (in mil) 9/9/1999</b>	\$191,2	\$21 513,5	\$217,1	\$564,5	\$403,6	\$505,3	\$18 406,9
<b>Number of Ending Registered Users</b>	1 500 000	13 300 000	2 318 405	2 000 000	2 957 000	1 580 000	6 899 200
<b>Total Revenue/User</b>	\$14,25	\$105,49	\$12,19	\$64,46	\$53,93	\$41,49	\$31,52
<b>Annual Net Income Per User</b>	\$(8,74)	\$(45,37)	\$(8,09)	\$(65,11)	\$(38,75)	\$(13,95)	\$2,18
<b>Market Capitalization Per Avg. 1999E User</b>	127x	1618x	94x	282x	137x	320x	2668x
<b>Market Capitalization Per 1999E Revenue</b>	8,9 x	15,3 x	7,7 x	4,4 x	2,5 x	7,7 x	84,6 x
Company	Egghead.com	eToys	Garden.com	Global Sport	Network Solutions	ONSALE	Preview Travel
<b>Market Capitalization (in mil) 9/9/1999</b>	\$226,5	\$5 362,4	\$210,5	\$386,4	\$1 286,0	\$293,9	\$235,3
<b>Number of Ending Registered Users</b>	1 418 000	995 000	778 000	NA	5 421 000	1 850 000	8 900 000
<b>Total Revenue/User</b>	\$131,06	\$103,05	\$10,36	NA	\$31,72	\$182,77	\$3,26
<b>Annual Net Income Per User</b>	\$(37,32)	\$(104,49)	\$(36,66)	NA	\$3,88	\$(29,28)	\$(3,82)
<b>Market Capitalization Per Avg. 1999E User</b>	160x	5389x	271x	NA	237x	159x	26x
<b>Market Capitalization Per 1999E Revenue</b>	1,2 x	52,3 x	26,1 x	96,6x	7,5 x	,9 x	8,1 x
Company	Priceline.com	Value America	Average				
<b>Market Capitalization (in mil) 9/9/1999</b>	\$11 713,9	\$563,2					
<b>Number of Ending Registered Users</b>	4 118 560	1 000 000					
<b>Total Revenue/User</b>	\$109,50	\$178,34					
<b>Annual Net Income Per User</b>	\$(13,98)	\$(143,88)					
<b>Market Capitalization Per Avg. 1999E User</b>	2844x	563x	271x				
<b>Market Capitalization Per 1999E Revenue</b>	26,0 x	3,2 x	22,062 5x				

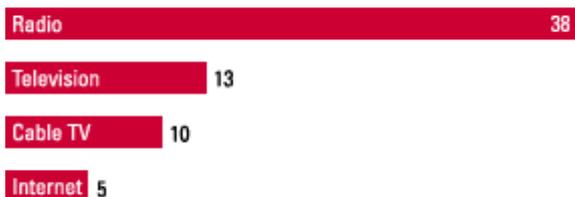
#### Appendix 4: IPO: s by Internet firms<sup>28</sup>:

Date went public:	Company name	Proposed offer price (USD)	First day open/close (USD)	Offering Amount (USD) million	Sales (USD) million	Income (USD) million	Emplo yees
July 22, 1998	Cyber Merchants Exchange, Inc (CMEE)	8.00	8.75/NA	20	0.1	(0.6)	15
June 25, 1997	3Dfx Interactive, Inc. (TDFX)	9.00 to 11.00	13.25/14.38	33.0	202.6	21.7	247
July 13, 1999	CommTouch Software Ltd. (CTCH)	15.00 to 17.00	21.00	48	0.4	4.4	45
July 7, 1998	musicmaker.com , Inc (HITS)	12.00 to 14.00	20.25/23.94	117.6	0.1	(4.7)	15
July 26, 1999	Freerise plc (FREEV)	20.17 – 23.27	32.00/32.13	362.3	4.4	(1.7)	16

#### Appendix 5: Figures of Internet Growth



#### Years to Reach 50 Million Americans



Source: Morgan Stanley; eStats

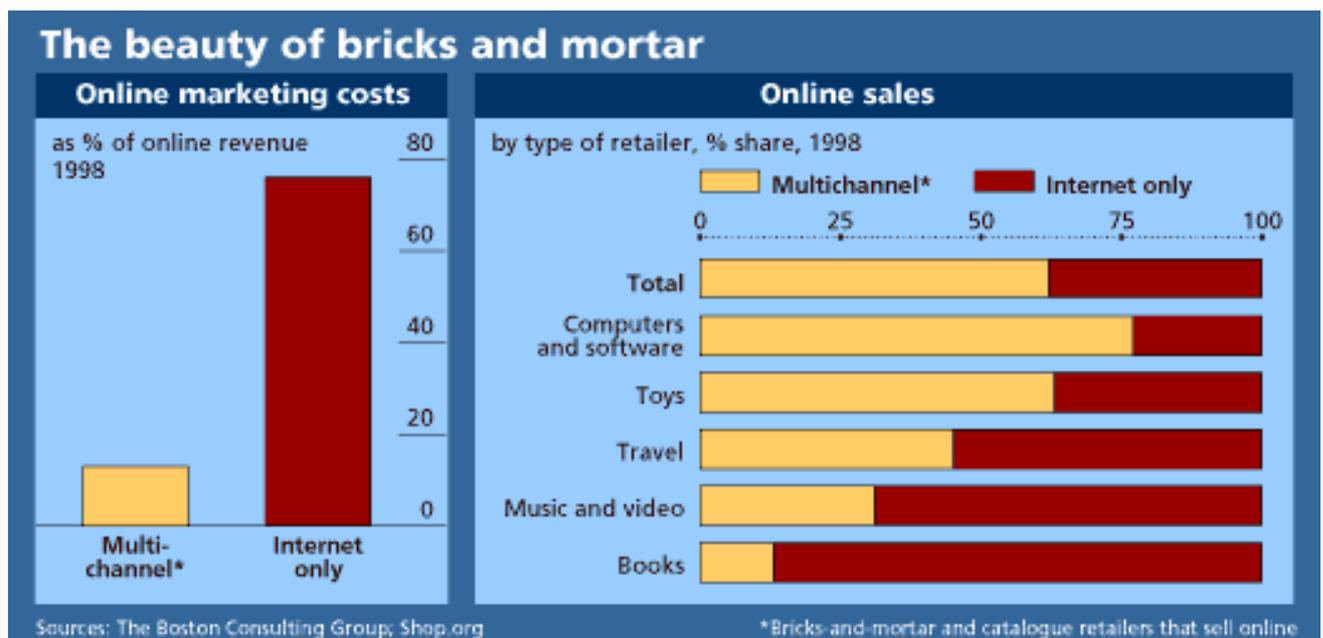
Appendix 6: Online households in Europe<sup>29</sup>:

1996	1997	1998	1999*	2000*	2001*	2002*	2003*
3,3 %	5,5 %	9,5 %	14,1 %	18,1 %	22,9 %	27,4 %	30,8 %

Appendix 7: Growth estimates in Internet users (in millions):

Year	1997	1998	1999*	2000*	2001*	2002*
US Internet Users	28	47	54	62	68	85
European Internet Users	24	34	48	63	75	90
Total	52	81	102	125	143	175

Appendix 8: Online marketing costs and sales



<sup>6</sup> Language, culture, level of education etc.

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<sup>7</sup> I.e. geographically, economically and culturally close / distant countries.

<sup>8</sup> Li and Guisinger (1992) showed that FDI from sector service companies is negatively related to the cultural distance between the home and host country, but is positively related to market size and liberalisation.

<sup>9</sup> Large quantitative data banks collected in the Finland's International Business Operations (FIBO) program have confirmed this. Prof. Reijo Luostarinen established FIBO in 1974 to study the dynamics of internationalisation of Finnish industrial companies operating abroad and foreign companies operating in Finland.

<sup>10</sup> The American capital market accounts for 40% of the global capital markets (see Penttilä 1999).

<sup>11</sup> Source: Finnish Venture Capital Association

<sup>12</sup> Matias Myllyrinne, one of the writers of this article, conducted the interviews.

<sup>13</sup> Kauppalehti & Helsingin Sanomat

<sup>14</sup> bisnes.fi, Uuden talouden aikakausilehti "Netti-imperiumi (lähes) takataskussa ("An Internet Empire (almost) in the Back-pocket") 7-8/1999

<sup>15</sup> Based on web publications by Ovum Ltd.

<sup>16</sup> Bill Gates, "The Road Ahead" (1996), Penguin Books

<sup>17</sup> IDC, 1998

<sup>18</sup> Futuremark's partners in development include: Intel, AMD, Number Nine Visual Technology, Guillemot, Videologic, 3dfx, JPA, Rendition, nVidia, ELSA, 3Dlabs, NEC, Matrox, Cyrix, Hercules, Creative, Dell, Siemens, Compaq, Gateway Diamond and others.

<sup>19</sup> Establishment of such a standard platform may have been beneficial to the industry players e.g. Ericsson and Nokia in the regulated area.

<sup>20</sup> Based on a study conducted by Culminatum Oy, Finnish Foreign Trade Association, Tietotekniikkaliitto in co-operation with SFK Finance Oy and Tekes

<sup>21</sup> Detailed History of the Prosoft and Coming to America Business Development Engagement by Ilkka Kallio

<sup>22</sup> "IPO (or initial public offering) refers to the first issuance of stock by a corporation seeking to raise capital... The main role of the investment banks is to underwrite the IPO by creating a syndicate of investment banks who buy the entire issue and resell the stock to investors." J.J. Clark, J.T Gerlach and G. Oson, *Restructuring Corporate America* (Dreyden Press, 1996)

<sup>23</sup> Bionx in 1997

<sup>24</sup> Bank of Finland Statistical Bulletin, Direct investment in Finland's balance of payments 16.11.1998

<sup>25</sup> Invest in Finland Bureau

<sup>26</sup> Extracted from company reports and BRS estimates

<sup>27</sup> Extracted from sources of BancBoston Robertson Stephens (any misrepresentations or inaccuracies are entirely the authors responsibility)

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<sup>28</sup> Main source of information: Hoover's Online "IPO Central"

<sup>29</sup> Appendix 5 and 6 compiled from data by Jupiter Communications, Datamonitor, bisnes.fi, Helsingin Sanomat and Morgan Stanley Dean Witter. Discrepancies have been smoothed out by the authors – any and all mistakes or omissions are the authors' responsibility.