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Chapter IV

How e-Entrepreneurs Operate in the Context of Open Source Software

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Abstract

The Internet has become an integral part of our everyday lives and it is often difficult to imagine how we ever functioned without it. This chapter presents experiences of two entrepreneurial companies, one of which has survived the 'dot-com bubble burst.' The chapter identifies current and future online business environments especially in light of open source software (OSS) being accepted globally. Unlike proprietary software (such as Windows), OSS comes with its internal implementation details (source code) visible both to its developers and users, along with the freedom to change and redistribute this source. The significant implications of this unique style of software distribution for e-entrepreneurs are examined.
Having a flexible strategic plan; possessing management skills; providing excellent service; and having patience are some of the recommendations provided by interviewed e-entrepreneurs. When made part of the decision-making process, these recommendations would enhance current and future e-entrepreneurs in sustaining their business.

Introduction

The aim of this chapter is to explore the usage of OSS in e-entrepreneurship and to identify the attributes and skills necessary for an e-entrepreneur. E-entrepreneurship is defined as the notion which principally uses the Internet to strategically and competitively achieve vision, business goals, and objectives. E-entrepreneurs use the World Wide Web (WWW) to interact and complete virtual transactions both with other businesses (B2B) and their consumers/customers (B2C).

The notion of an e-entrepreneur has recently gained recognition amongst both academics and practitioners. An e-entrepreneur has many similarities with that of an ‘entrepreneur,’ especially with respect to the attributes and traits required to be successful. Concurrently, the major differences between the two are primarily in the resources (such as infrastructure and setup costs) required to start the business.

Over the last two decades, most businesses have experienced substantial change brought about as a result of globalisation and the Internet. Maintaining a competitive advantage to simply survive is a continued battle for many businesses. The Internet, however, has provided companies with numerous opportunities irrespective of the nature of the products and services offered to customers. Many companies now make use of the Internet and provide customers through their Web site information such as store opening hours, store locations, contact details, and listing of their products and services. However, for a majority of these businesses a large proportion of the sales revenue is still generated through activities conducted at the physical stores. One example is Telstra, which in addition to having nationwide physical stores also does sales and online billing (Telstra, 2004).

The number of companies performing their business activities through the Internet is increasing rapidly while still maintaining a physical store presence to enable customers to ‘see and feel’ their products before making a purchasing decision. Satisfying the needs of conventional customers who prefer to complete ‘face-to-face’ transactions is recognised by many businesses. One example being the Borders bookstores (Borders, 2004). Then, there also are companies
who only have a virtual presence and complete all their advertising, marketing, and transactions through the Internet. Amazon.com (Amazon.com, 2004) is a perfect example of this type of organisation. Brand recognition, customer service, and customer satisfaction are the main ingredients for any company, whether operating solely as ‘bricks and mortar,’ ‘online,’ or a mix of the two (Mottl, 2000).

The concept of ‘entrepreneurship’ has been in existence and researched by academics for some time. Due to the lack of literature in the area of e-entrepreneurship, the authors have sought guidance and direction from the entrepreneurship literature to realise the following objectives:

- Identify attributes of e-entrepreneurs.
- Identify the similarities and differences between entrepreneurship and e-entrepreneurship.
- Identify if being an e-entrepreneur is more advantageous than simply being an entrepreneur.
- Examine open source software in the context of e-entrepreneurship.

Chief executives of two e-entrepreneurial organisations were interviewed to obtain insights into the concept of e-entrepreneurship. Some of the issues explored in the interviews included:

- attributes of an e-entrepreneur,
- role played by open source software (OSS) in the information technology sector,
- impact of OSS on existing and future e-entrepreneurs, and
- role played (if any) by government in supporting e-entrepreneurs.

The next section presents an overview of the literature examining the dot-com crash, entrepreneurship, and open source software (OSS). This is followed by the section that describes the research methodology used to conduct the interviews. Case studies of the two companies interviewed is then presented identifying the various aspects of being an e-entrepreneur with respect to the current technological environment including OSS. The last section presents the conclusions and future research directions.
The Dot-Com Crash: Did It Change the World?

The arrival of the 21st century was accompanied by the ‘dot-com crash’ with hundreds of companies around the world laying off thousands of employees and filing for bankruptcies. Competition amongst the remaining companies, however, has not diminished. Companies that have survived have merely “shifted their value propositions to meet (or chase) new marketplace needs” (Spiegel, 2002, p. 30). Success stories of companies that have survived and moreover thrived following the crash are no less amazing (see Anonymous, 2003; Spiegel, 2002).

A number of parties have been blamed for the ‘dot-com crash’ that include but are not restricted to venture capitalists, investment banks and brokerages, and the Federal Reserve Bank (Mills, 2001). Another factor that has been attributed to the dot-com crash was that the majority of these businesses were established and run by young entrepreneurs who lacked the “essential experience in planning, organising, and managing businesses” (Foster & Lin, 2003, p. 456). These arguments also have been substantiated by The New York Times and The Industry Standard studies (Infante, 2001) where lack of human resource planning has been noted as a contributing factor leading to sexual harassment and legal suits against the companies, further crippling them following the crash (see also Dvorak, 2001). Duck (2004, p.14) listed seven mistakes that resulted in the crash: “too many competitors; short-term mentality; undisciplined growth; unrealistic revenue projects; inexperienced management; underestimated costs of establishing a national brand; and lack of customer-centered focus.” It is the authors’ view that as opposed to the traditional models, entrepreneurs and investors alike failed to foresee long-term funds allocation and put in place contingency plans.

The ‘dot-com crash’ has not meant that the Internet is no longer used for undertaking business transactions, rather it is being used more than ever before. Whether a company started using e-technologies before or after the crash, it is imperative that they offer security to their customers and avoid hackers from their Web sites. Conry-Murray (2001) and Dvorak (2001) have highlighted security issues that companies should address to protect their customers such as debugging their sites regularly, minimum use of cookies, and not putting too many advertisements on their Web sites.

Over the past decade there has been a substantial increase in the uptake of the Internet by businesses primarily as a marketing tool. The Internet has enabled even small businesses with limited resources to instantly communicate their products and services to their target markets and audiences globally. Worldwide companies are being encouraged to join this phenomenon. For instance, speakers
at the Dubai Strategy Forum mentioned a number of attributes required to improve economic performance. This included the need for accepting information technologies and a "strategic structure that wipes out bureaucracy and encourages entrepreneurialism, where managers manage, innovators innovate, and the teams are rewarded for their successes" (Anonymous, 2002, p. 1).

The next section identifies the attributes of entrepreneurs and reviews the relevant literature in the area of e-entrepreneur(ship).

Entreprenuership and Its Relationship to e-Entrepreneurship

The concept of entrepreneurship has been evident in economics and sociology studies since the early 18th century (Becker & Knudsen, 2004). A number of entrepreneurship definitions have been mentioned in the literature. Mulcahy (2003, p. 165), while citing the *Oxford Dictionary* defines an entrepreneur as "a person who undertakes or controls a business or enterprise and bears the risk of profit or loss." Thompson and Randall (2001, p. 290) describe entrepreneurs as those individuals who "sense opportunities and take risks in the face of uncertainty to open new markets, design and develop new and improved products and processes" (see also Legge & Hindle, 1997; Kuratko & Hodgetts, 2001).

A number of traits and skills that entrepreneurs possess are cited in the literature. According to Chris Dyson, a business analyst, there are nine traits that depict a person's entrepreneurial characters. These traits include: "personality, integrity, initiative, commitment, drive and determination, directiveness, confidence, self-direction, selling, and leadership" (cited in Tams 2002, p. 399). Cherwitz and Sullivan (2002, pp. 24-25) similarly comment that an "intellectual entrepreneur" is depicted by having attributes such as "realistic and attainable vision, taking risks and seizing opportunities, using available resources to achieve the vision by using collaboration, teamwork, and innovative strategies" (see also Jablonski, 2001, p. 376). From these definitions, it can be inferred that successful entrepreneurs need to possess attributes such as vision, opportunity-seeking, leadership, and management skills.

As highlighted earlier, for this chapter, the authors have defined e-entrepreneurship as a concept which principally uses the Internet to strategically and competitively achieve vision, business goals, and objectives. Entrepreneurs have been defined as those individuals who use the World Wide Web (WWW) to interact and complete virtual transactions both with other businesses (B2B) and customer (B2C) (see Thompson & Stickland, 2003). E-entrepreneurs have come under focus after the dot-com crash that resulted in the closing of hundreds of businesses and thousands of people left unemployed.
Practitioners, consultants, academics, and governments are investigating the causes behind this crash that left many other industries dependent on information technology crippled for months. Contingency measures are now being put in place to avoid similar crashes in the future. A study of 42 entrepreneurs based in the Greater London Business area who survived the dot-com crash was conducted during the last quarter of 2002 by the London School of Economics and Political Science (Steinberg, 2004). Using a triangulation method, the study found that businesspeople were “in the process of jointly developing a new [under]standing of what success and decision-making means via e-business networks” (Steinberg, 2004, p. 4) and, accordingly, developing coping strategies to avoid similar downfalls in the future.

One of the factors that contributed toward the demise of many e-entrepreneurial companies was the lack of human resources and communication between sellers and customers. To address such issues and provide potential e-entrepreneurs with an understanding and practicalities of the business world, many multinational organisations are now working with their prospective employees with the aim of providing them with an in-depth understanding of business operations. “Media entrepreneurship” is one such program that has been launched by Hewlett-Packard (Canada) Ltd. (Bolan, 2002). The program primarily uses Linux as being open sourced, allowing users (students) to acknowledge that there are no limitations in software development. Robert Miller, national business development manager responsible for education and healthcare at HP, commenting on the program said (Bolan, 2002, p. 19):

The dot-com boom/bust saw a lot of technologically astute people become empowered with vast amounts of capital funding, but they lacked the business sense or financial management skills to fully exercise their plans. Some of them were smart enough to bring in business people that had that kind of savvy, but it was a very awkward culture mix because there were two totally different kinds of mindsets.

Globally, companies and individuals are being encouraged to embrace the Internet as a means of developing a business advantage. For instance, the e-Business Forum Working Group D5 (WG D5) in June 2003 identified the key challenges (including those encountered in communication and policy formulation) to encourage Greek companies to enter the area of e-business (Neofotistos & Yagoulis, 2003). WG D5 consulted with a number of Greek private and public sector companies involved in e-business and provided a number of recommendations to smooth the process of conducting business through the Internet. These included being aware of issues of privacy, protection of personal information, promoting communication, and the training the e-entrepreneurs (Neofotistos & Yagoulis, 2003).
An individual’s prior understanding and knowledge in business studies and cultural background affects how much new knowledge and information is required to develop a collaborative business plan. This finding was realised by Foster and Lin (2003) when exploring the impact of individual students’ learning in e-business and e-commerce environments. By using cognitive perspective in the study of students from different cultural backgrounds, Busenitz and Lau (1996) found that people from some cultures produced more entrepreneurs than others (see also Thornton 1999). Similar results have been found in a recently completed study across eight countries including Australia, Slovenia, Mexico, North America, Finland, Scotland, South Africa, and Kenya (Morrison, 2000). Business plans of new ventures in New Zealand in 2000 were compared to identify the percentage of Internet usage as part of the e-entrepreneurship competition based on the Mckinsey model (McQueen, 2004). At the end of the phase two of the competition, it was found that individuals with pervious IT background, education, business experience, or personal interest had a much higher Internet component in their business plans than participants with traditional business experience such as those for the fields of accountancy, retail, entertainment, and games.

Open Source Software (OSS) vs. Proprietary Software

Proprietary Software Model

In the recent past, much high-profile software (including Microsoft products such as Word and Windows XP) have been distributed under a license that treats the software as a ‘black box.’ The software is supplied in ‘compiled’ or ‘binary’ form, meaning that a computer can read and execute it directly. However, programmers are unable to study the internals of the program. They are forbidden to understand in detail how the program works, they are not permitted to modify its working and they can redistribute neither the software in its original form, nor in any derived or modified form. Typically, a single company or an individual holds copyrights on proprietary software (Anonymous, 2004). These copyrights are used in conjunction with licensing agreements to deny the “freedom” or “openness” to modify and redistribute the software. “Proprietary software is software that is not free or semi-free. Its use, redistribution, or modification is prohibited, or requires you to ask for permission, or is restricted so much that you effectively can’t do it freely” (FSF 2004).
From the point of view of the software vendor, the proprietary software model utilises restrictive licensing and secrecy to safeguard intellectual property (IP). It is possible that the development of the software could be regarded as entrepreneurship.

However, from the point of view of an e-entrepreneur looking to leverage existing technology, proprietary software may not seem like an attractive option, since modification and redistribution of existing proprietary software is forbidden. Furthermore, providing key services related to deployed proprietary software may not be possible due to the unavailability of the internal source code. Another problem is what is commonly referred to as ‘vendor lock-in.’ A proprietary software vendor by definition is the only organisation with the legal capacity to improve and enhance their proprietary software products. Hence, an e-entrepreneur wishing to deploy proprietary software is “locked in” to the vendor. No other organisation or individual (including the e-entrepreneur) can provide improvements or custom modifications. For instance, Microsoft is the only organisation that can provide security updates and bug fixes for the proprietary Windows operating system. In effect, any user of Microsoft Windows faces vendor lock-in. Unless and until Microsoft decides to issue a security update or a bug fix, users must helplessly use the software in whatever condition it is in. This argument is developed further under the discussion of OSS below.

Free and Open Source Software Model

When referring to OSS, the authors have used the Open Source Initiative (OSI) definition (OSI, 2004a). OSS involves access to the underlying source code. In addition, for a license under which software distributed is to be considered open source, it must permit redistribution of the software without requiring a royalty. Redistribution must be permitted in source as well as compiled (ready-to-run) form. Modification of the software and creation of derived works must be permitted. There are some other clauses that must be satisfied for a particular software package to qualify as OSS (OSI, 2004b). However, the criteria are arguably the most fundamental and, to someone not familiar with the OSS paradigm, perhaps the most revolutionary. Many organisations and Web sites use the term “free software” (FSF 2004) whose meaning and interpretation is very similar to OSS, with ‘free’ implying freedom to access and modify the source as well as redistribute unmodified and modified versions. Strictly speaking, the definition of ‘free software’ might preclude certain software from being considered “free” even though it might be considered OSS. Since all ‘free’ software would be considered OSS, we will use that term for simplicity and to avoid the confusion that comes from ‘free,’ meaning ‘at no charge.’ Interestingly, while it is possible that OSS and ‘free’ software can be obtained for no or
very little cost, e-entrepreneurs should note that it is entirely possible for OSS and ‘free’ software to be ‘commercial’ (i.e., a source of revenue). For instance, Red Hat produces an open source product called Red Hat Enterprise Linux, an open source operating system that is sold by annual subscription. Subscribed customers are entitled to receive ongoing security updates, errata fixes, and new features as they become available for the duration of their subscription.

Research Methodology

In this chapter, we have adopted the exploratory methodology (see Peil et al., 1982; Spencer, 1982) to identify the trends of how OSS has been and would impact the entrepreneurs as the usage of Internet and other technological methods to conduct business continues to increase. Conducting interviews as a method of exploratory research has been accepted in academia. For instance, Murray (1996) used case study methodology to identify the role of venture capital investments in newly established technological firms. Conducting interviews as a research methodology offers a numbers of advantages: giving flexibility to both interviewers and interviewees in setting up a mutual time; increasing the interviewers’ control on the direction of the questions and an opportunity to further explore issues; providing undivided attention of the interviewee; and, last but not the least, providing insight into non-verbal observations such as body language (see May, 1993; Burns, 1998; Peil et al., 1982; Spencer, 1982; Reddy, 1987; McNiff, 1988; Yin, 1994).

As previously mentioned, e-entrepreneurship is a new and under-researched area, hence, the authors were working in unfamiliar terrains. Case study as a research methodology has been accepted when attempting to overcome the uncertainty of having clear measuring instrument (see Wallace, 1984; McCutcheon & Meredith, 1993; McGuire, 1995; Palmer & France, 1999; Corbett & Cutler, 2000).

Chief executives from two entrepreneurial organisations were interviewed in September 2004 for their experiences of setting up, running, and maintaining their businesses in light of growing technological changes. According to the Australian Bureau of Statistics (ABS) classification, Company A can be classified as “micro” with only four employees, while Company B can be classified as “small” with 25 full-time employees (see Steinberg, 2004). The focus of the interviews was on the role of OSS in today’s entrepreneurial world where considerable focus is being placed on functions of the Internet for completing business transactions. After receiving consent from the interviewees, the interviews were tape-recorded and subsequently transcribed and written up as case studies.
These were then sent back to the interviewees for verification of the content, and any changes as required, were accordingly made. This step was undertaken to reduce limitations (e.g., generalisation, reliability, information overload, validity, rigour) accompanied by the case study methodology (see McNiff, 1988; McGuire, 1995; Burns, 1998; Kitazawa & Sarkis, 2000).

Please note that to protect the confidentiality of the interviewees and their respective organisations, their names have not been disclosed and are referred to here as Company A and Company B, respectively. Nonetheless, as far as possible, direct quotes from the interviewees have been incorporated in the following sections.

Case Study Findings

Company A

With its head office currently based in regional New South Wales (NSW), Australia, the company was established and registered as a partnership business in early 2003 and then become a proprietary limited company in January 2004. The company is “focused on developing and deploying Web commerce and Linux-based network solutions” (Company A Web site) and has successfully secured and completed projects in both the open source area and commercial world projects for both Australian and foreign-based companies including in the UK and the United States. The company’s open source content management product has been ranked in the top 2% of the active projects at the SourceForge dot-net site which has over 8,000 projects and downloads listed on its Web site (Company A Web site). Even though the company and its members have a strong background and focus on Linux, it also provides software solutions for pocket PCs, the Palm Operating System (Palm OS), and Microsoft Outlook.

The mission and vision of Company A, in addition to generating and increasing its revenue, is to move toward the area of “embedded media.” Interviewee A considers embedded media to “employ devices and solutions on single chip computers running on open source software.” Each of the Company A directors have expertise in areas of programming, administration, and management, respectively, and are on the path of expanding the company.

The motivation and flexibility offered by working for oneself was one of the driving forces for the interviewee to establish his own company. The interviewee also wanted to have the flexibility to adjust quickly as changes in the external environment and technology took place without going through the bureaucratic

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levels often found in a large organisation. Technology itself is also the passion of the company. This is still a motivating factor for all the personnel involved, which is steadily pushing the company forward. The interviewee believes that this is true of other companies such as Adobe and Apple, where he feels that the vision of the company and the passion of its technologists had kept them going despite management changes.

One of the themes that intrigued the interviewers was how the concept of OSS that involves freely distributing your knowledge can result in generating business for the company. Under an open source license the 'source code' is distributed along with the ready-to-run version of the software product. The interviewers were keen to ascertain how this apparent giving away of intellectual capital could result in profit for the person/organisation involved. It appears that OSS is gaining momentum and acceptance around the world, and these issues are becoming more relevant, especially for e-entrepreneurs.

To answer the query, interviewee A commented that the writers of a program are generally accepted as having the authoritative knowledge. To elucidate his point he gave the following example: If a program is released as OSS, the writer not only shares, but also demonstrates, his or her knowledge in a manner that can be subject to scrutiny by experts. In addition, other organisations that require tailoring of the program to their specific needs may contact the writer to do the customisation for them.

This is where dollars come into the picture. The interviewee has had similar experiences. A London-based company contacted the interviewee when they wanted him to make changes to their program source code so that it was compatible with the company's accounting system. Since the company's experts had the source code of the product available to them, they could, in theory, do the customisation themselves. However, this would involve them first becoming familiar with the internal details of the software and then modifying it. Cost-benefit analysis by the company showed that it was easier and more economical for them to ask the interviewee to utilise his knowledge and expertise to deliver the modified code. The interviewee estimates that the work took him approximately 20 hours to complete while his customers might have had to spend several man-days to achieve the same result. So, the interviewee was able to acquire highly specialised, lucrative business without having invested in marketing or publicity services. The client, on the other hand, was able to procure a software system that fitted their needs in less time and for less money than if they had done it by themselves. So, it was a win-win situation for both parties involved.

In interviewee A’s view, the Internet, due to its ubiquitousness and near universal accessibility, can be very effectively used as a marketing medium and MySQL AB, the popular open source database product vendor, is a classic example. In less than a decade, the MySQL database server has become internationally
recognised and widely used, including in customised forms. High-profile clients include Sony, Suzuki, and Sabre Holdings (MySQL, 2004).

It should be noted that not all the software produced by Company A is OSS. Some software is released under the “general public license” (GPL) (Derekgnu, 2004) and qualifies as OSS. In other cases, clients may purchase software under a commercial licence agreement” from Company A. This agreement allows the client to use the product and to view the source code and covers the provision of regular service by Company A such as providing further customisation and enhancements. Under this license, the clients are not allowed to modify the source. Essentially, this is Company A’s strategy to be able to effectively support their clients. If too many modifications are made to the code, Company A would have to extensively study the modified version before being able to provide enhancements. It also can be seen as a precaution taken by Company A to avoid legal repercussions arising from claims of failing to provide adequate support as per the licence agreement of the customised program. However, if the buying organisation changes the source code without obtaining prior consent from Company A, the latter is under no legal obligation to be able to support the changed version of the code. Of course, the client is free to approach Company A and/or other software solution providers to collaborate on customised versions subject to additional costs.

During discussions with Interviewee A, an interesting point emerged: Company A does produce open source software but also utilises open source software tools. Company A has obtained commercial services from Red Hat Linux related to their open source Linux-based operating system. They also are developing some software for embedded systems which may turn out to be a derived and open modification of existing open source software.

If an individual is contemplating to become an entrepreneur or change himself or herself from an entrepreneur to an e-entrepreneur, they have to first consider a number of alternatives and subsequently take appropriate decisions. One needs to decide whether they would be deploying new software or leverage the existing software. Further considerations regarding licensing agreements (OSS or proprietary or a mix of both) also would be required.

In views of Interviewee A, “Open source [should be considered] as a serious alternative for people [who] are trying to do [something new]. Statistically, more than 50% of the Web servers in the world run open source software, which is generally […] Apache, […] the most popular Web server in the world. MySQL is the best or the most popular database for Web-based projects.” Company A does still utilise proprietary software, such as MYOB for its accounting needs since it helps them conform to the appropriate standards and legislation. MYOB runs on the proprietary Microsoft Windows operating system. Except in instances where the clients request that supplied programs remain closed source,
Company A generally licenses its software as OSS and believes that other organisations should do the same.

Interviewee A commented that the decision whether or not to go OSS for their software is a business decision and dependent on its vision, current position in the market, current/existing new code development, and future plans. One needs to keep in mind that like any other material product, software and code have their own life cycle and the business decision should incorporate the potential life of the code, accordingly.

Interviewee A also made two points of direct relevance to e-entrepreneurship. First, as an e-entrepreneur, if you are trying to develop a novel solution, you can focus on the entrepreneurial aspects by using existing, reliable, open source software to avoid "re-inventing the wheel." Second, as a provider of innovative IT solutions, an e-entrepreneur faces a more level playing field since organisations are not "locked-in." Hence, they can turn to the e-entrepreneurs to provide support, maintenance, and enhancement of OSS.

The interviewers also were interested to know the support, if any, provided by the government to Company A and whether being based in a regional area it was eligible for any specific government funds. Interviewee A indicated that he had approached the state government for assistance and there had been some progress. The response, however, has not always been very speedy which sometimes is a challenge for small, struggling firms looking for assistance as they may not be operating after a few months. The problem is sometimes further compounded by the bureaucratic structure of the governments. The difficulty experienced by regionally based organisations is convincing the officials of their innovative ideas who are sometime reluctant to provide capital for new ideas that may be regarded as being too risky. A classic example is trying to get funds for OSS projects as the question raised by government officials is the same as the authors: How can one make money by giving away their knowledge and expertise?

**Company B**

The company has been providing innovative, competitive solutions based on open systems and open source technology to its customers since the late 1980s. The company aims to "develop strong, ongoing relationships with its clients and long-term partnerships, based on mutual growth and respect with industry vendors" (Company B Web site). Services provided by the company fulfill customers' needs in areas of: consulting; application development; and training in software programs such as Unix, Linux, Windows systems administration and network management, and Web-based solutions to name a few. In addition to serving
number of small and medium-sized Australian-based customers, Company B also has successfully completed projects and provided training to a number of large organisations including Hitachi, Telecom Australia, Kodak Australasia, University of Melbourne, Mobil Oil Australia, CSIRO, RACV Insurance, Rockwell Aereospace, ANZ Bank, Ericsson Data Australia, and VDO Instruments (Company B Web site).

When the interviewee first started working in the computer industry, not only was the industry in its infancy with huge-sized computers, a much smaller percentage of people had access to computers as compared to today. The majority of people involved in the industry at the time were young males generally categorised as ‘geeks.’ Only large professional organisations such as insurance companies and banks were using computers. The interviewee’s introduction to the potential for online collaboration and the spirit of OSS occurred in the late 1980s. At the time, only a small team of professionals had access to the Internet. He recalls participating in an online newsgroup where he would ask questions about the C++ programming language and on occasion receiving advice from Bjarne Stroustrup — the creator of C++. However, the state of the technology at the time meant that only technically skilled people could take advantage of this online community and near-instantaneous communication. Interviewee B realised that there was a “great business opportunity” in this area if people at large could access the Internet using tools that they could learn to work with relatively easily. Unfortunately, initial feasibility studies indicated that the level of capitalisation available was not sufficient to fund the infrastructure needed to realise such an opportunity. The way to make an entry into the field was by doing consulting work based on the emerging Internet technologies and the related open standards and software.

One of the areas in which Company B has competitive advantage is in the area of OSS as it was one of the pioneering companies. The company also has a very high reputation in providing superior client service and catering to clients’ specific needs. Hence, the company receives many of its projects through referrals as has happened in one of its recent projects when an Australian University on recommendation from another university contacted the company to tailor its student database to comply with the federal government’s reporting guidelines by using the ERP system. In this instance, the company made use of existing codes from “open source framework called Open for Business,” along with their expertise in programming to successfully complete the project in less than half of the time and cost than if the company had to write the source code from scratch. By using existing codes on the OSS, the company can reduce the price of their products and accordingly is more competitive than its counterparts. By having access to codes and research and development (R&D) at their disposal, the company also is able to provide prompt service as compared to other large software companies who may not have their respective service offices in
Australia. The company does not bind its clients into a lifetime contract and the latter have full access to their codes that they can decide to move to another vendor/company if they wished without being penalised/disadvantaged in any way.

Working toward the “betterment of the mankind” by sharing his knowledge and expertise with others while operating in an exciting, dynamic sector are the motivations for Interviewee B to remain as an e-entrepreneur. One of the challenges encountered by the company and others in the information technology sector is when trying to market their products to third parties and businesses. It has been noted that most technology experts do not have marketing and business skills that can often disadvantage them in the marketplace.

Interviewee B and his company had different experiences while interacting with the government sector. At the time of the interview, Interviewee B had been working with the federal government to create a document/database that would provide access to all government “agencies on the procurement of open source software.” The document would explain legal ramifications if the third party decides to take up the OSS modules from the document. The database also would act as a networking site for individuals and organisations who wish to safely use OSS modules. The federal government is consequently working to “remove impediments towards the adoption of open source.” At the state government level, the focus is still at industry development. The New South Wales (NSW) government recently announced a US$40m Linux project which is one of the largest in the world.

Company B had been in operation long before the dot-com crash, and the authors were interested in understanding how the company had survived it as opposed to many other unfortunate competitors. Interviewee B noted that unlike other new companies emerging at the time with hundreds of people being employed in the company within weeks, the number of employees had remained more or less the same in Company B. Many people contemplating to expand their wealth also had invested huge funds in their newly established companies. Company B, however, did not receive any such funds. This does not imply that Company B’s products and services were any less reliable or competitive. Nonetheless, its experience had cautioned them against investing or accepting impulsive projects and funds alike. Thinking and operating strategically as well as employing experienced staff saved the company while other businesses vanished within days after the dot-com crash. In an attempt to capture the already saturated market, new information technology companies spent huge amount of resources and was another reason for their failing: not conducting sufficient market and competitive analysis, a prerequisite for establishing and running any type of business.
Interviewee B cautioned existing and new entrepreneurs of being aware of globally existing patents for various programs and software codes as even without their knowledge the programmer could be held liable for potentially plagiarising other patented softwares. He proposed that for emerging economies and businesses to be successful, it was essential that the software patent system be either made redundant or more flexible with clear guidelines with a database for searching all the existing patents.

When asked about the future of e-entrepreneurship, Interviewee B commented that this was going to expand in the coming years. To emphasise his point, he gave the example of the music industry. Until very recently, popularity in the music industry was gained by singing face-to-face to a wider audience and generally it took years to get a reputation and make money. In this current era, however, by using the technology and the Internet, the singer can make hundreds of copies of the music on CD and simultaneously distribute it worldwide capturing the global music market. This would not have been possible using the traditional manufacturing and distribution system.

Interviewee B strongly believes that for existing and future e-entrepreneurs and information technology companies it is essential that laws relating to patents should be changed, otherwise the progress could come to a standstill. Entrepreneurs also need to be aware and cautious of the situation and take comprehensive legal consultation and protection.

Discussion

For an e-entrepreneur, the software tools used are likely to be the enabling factor of the novel service being provided. In fact, the entrepreneurial product may be software or a combination of hardware equipment and software. Given that such is the case, how should various entrepreneurs decide whether to use software solutions and/or which model to use for development?

To become a successful entrepreneur, it is essential that a person learns from the experience of others and avoids making the same mistakes. The reoccurring themes within the literature and interviewees complement each other. Halloran (1991), for example, discussed the 20 commonly experienced pitfalls which should be avoided, including: having unrealistic expectations; short-sighted financing arrangements; missing the target market; buying costly and ineffective advertising; and inconsistent and chaotic management.

Explaining the similarities and differences between an entrepreneur and an e-entrepreneur, Interviewee B viewed that both have similar attributes and skills.
Both need to be able to “visualise future potential [that is] above and beyond just the vision for making money.” One major difference between the two is that while working in the information technology sector, an e-entrepreneur requires comparatively less funds and infrastructure when starting a business and, consequently, less total investment dollars. Once a comprehensive market and competitor analysis has been undertaken and the service that would be delivered has been finalised, only access to the Internet is required to start the business, which can be done from any location.

Andal and Yip (2002) postulate that companies should combine traditional and new-economy bases of competitive advantage into their business models in order to be successful in e-business. The generally accepted “e-bases” (Andal & Yip, 2002, p.1) include community effects, first mover advantage, fulfillment/delivery, technology, teamwork, and scalability. They also suggest that some e-business start-ups failed to implement these advantages effectively or found that they needed to be augmented with traditional bases of competitive advantage. For instance, the e-base first mover advantage should be combined with traditional product/service advantages. Getting to the market first with a novel product or service can result in significant benefits such as in the case of Amazon.com and Yahoo. Also, while the use of new and emerging technologies is considered an e-base of competitive advantage, realistically, most technology can be easily replicated. Despite this, some companies, notably Google, have been able to convert technology into an asset and sell it.

The interviewees’ comments indicate that they are at least intuitively aware of such implications. Both Interviewees A and B perceived a business opportunity in connection with an emerging technology, namely, embedded devices and the Internet, respectively. At the same time, they also realised that over-committing themselves merely on the basis of new technology did not make business sense, and they relied on other sources of revenue such as consulting work and Web development to acquire the infrastructure and capital to develop their e-entrepreneurial ideas.

Interviewee B mentioned that the fact that they were the pioneers in the industry of open source solutions was a major source of competitive advantage, thus, underscoring the first-mover e-base of competitive advantage. However, Interviewee B regards their use of OSS as another — and perhaps less traditional source of competitive advantage. By candidly disclosing to their clients the fact that a solution is based on open source software, the clients are reassured that they can, should the need arise, go to other vendors for maintenance, support, and development. There is also an undercurrent of transparency at work; when a company agrees to provide an OSS solution, their entire system is potentially subject to scrutiny by their clients. This may give the clients a sense of confidence; a vendor supplying a completely open solution that can be verified
by independent technical staff must surely believe in the technical quality of their product.

A possible interpretation of the comparative ease with which certain technological functionality can be replicated is that the intrinsic value of the software that provides such functionality does not amount to much. In cases like these, OSS offers the opportunity for an e-entrepreneur to focus on services that are enabled by or based on technology rather than wasting resources developing technology which will soon be replicated and widely available anyway. Certainly, it is still possible to try and sell technology, as Google has done. But this involves ensuring that one’s technology is constantly evolving at a rapid enough pace to consistently stay ahead. As pointed out by Interviewee B, such research and development (R&D) can be prohibitively expensive for e-entrepreneurs, particularly in the Australian market where capitalisation can be harder to come by than, say, in the United States.

Teamwork amongst a diverse mix of people with varied skill sets and experience is another commonly cited e-base of competitive advantage (Andal & Yip, 2002). Apart from the contributions from team members within the organization, making software available in open source form allows participation from the wider community. One of Interviewee A’s open source projects has built up a virtual community of users, some of whom are able to contribute by asking questions and reporting errors that enabled Company A to enhance the quality of their product. In some cases, they are even able to offer “patches” — snippets of software code that add functionality or repair an error. Interviewee B also is aware of this effect and mentioned that Company B is an organization that tries to contribute its expertise and knowledge to the improvement and enhancement of OSS that they deploy. Interviewee B considers the process a way of “bartering IP.” In this sense, releasing software developed by an e-entrepreneur as OSS is not giving away something at no charge, it is an offer to exchange and share expertise, knowledge, and time with the possibility of mutual benefit to the developer(s) of the software and the wider community. Successfully trading IP with the global community is potentially a very powerful way of harnessing the synergy arising from a team of diverse backgrounds and abilities.

Based on the understanding developed from the experiences of the interviewees, the authors have identified the following three key requirements for being a successful e-entrepreneur in the field of OSS.

1. **Being Technically Competent**

   Both interviewees recognised the critical importance of technical ability. Interviewee B mentioned the depth of knowledge required and the “wizards” on Company B’s staff. Interviewee A also is emphatic on the need
to be "technically sound." By definition, e-entrepreneurial activities are strongly dependent on the underlying technology. The e-entrepreneur must not only be thoroughly familiar with the state of the art of the relevant technology but also possess a deep understanding of the underpinning principles in order to be able to analyse trends and foresee opportunities. Interviewee B does caution that in the context of Company B, high quality technical ability is often found in people who are unable to liaise well with customers, and it can be a challenge to find staff that strike the right balance between being "tech" and "suit." Hence, the latter can act as a marketing challenge when "tech experts" need to explain their product in layman's language to their customers.

2. Taking the Customer Service Perspective

Interviewee A, while emphasising technical ability of the product, insisted that the focus should be on what the technology can do for the consumer. Ideally, the technology should be transparent and the customer should see the benefits of the technology without needing to understand the details. In many cases, they should not even have to care whether the solution is open source or not. What should be clear to the consumer is what the technology can enable them to do and what the e-entrepreneur can make possible for them via the services related to the technological product. These views hold for Interviewee A's e-entrepreneurship plans in embedded media - small, portable devices which must, by their very nature, be consumer specific. They are also relevant to Company A's online content management system products. The base product itself is available to everyone, but the true source of revenue comes from consumers wanting services based on the existing product. These services include maintaining the customers' online presence and customisation of the base product to deal with customer-specific requirements.

Interestingly, while Company B operates in a slightly different arena, the customer service and technology transparency issues are the ones that they strongly identify with. For instance, they have a product called the small business server. This is meant to be a turnkey solution that can be set up quickly and easily. It provides small businesses the most commonly needed functionality such as Internet connection sharing and acceleration, e-mail, anti-virus, fire walling, and file and printer sharing. It so happens that the software installed on the server is all OSS. However, in Interviewee B's experience, the customer does not necessarily care — or need to know — that this is the case, as long as they are instructed on how to use and administer it. Further, Interviewee B asserts that the open source nature of the software in this product ensures that they have full access and complete control over all aspects of the software functionality, thus placing them in
a position to provide maintenance and service as long as the customer is willing to pay for such services.

**Being Clear on the Reasons for Going OSS**

Neither interviewee recommends OSS as a panacea. It is clear from both their interviews that a number of factors influence their choice of whether a solution is made OSS or not. In fact, while doing some consulting work, Interviewee B recalls being specifically asked to provide proprietary software-based solutions, which Company B was comfortable providing. Hence e-entrepreneurs should not perceive OSS as the next “bandwagon” or something to be done purely out of ideological reasons. The interviewers, as well as some existing literature (see Cusumano, 2004), caution against this. Still, there can be solid business reasons for focussing on OSS as evidenced by the activities of big business such as IBM, Sun, Red Hat, and Novell (Mahoney & Naughton, 2004). In fact, both Companies A and B produce or have produced offerings and services based on proprietary and open source software. One or more of the following reasons have been compelling enough for both Companies A and B to go open source:

*To harness the distribution and marketing power of the Internet* Interviewee A decided to release Company A’s content management system under an open source license over the Internet. The idea was to make it easy and obligation free for prospective customers to download and use the product. If they were technically inclined, they also could inspect the source and assure themselves that the product was technically sound. While there are a large number of people who have chosen to use this for free, they have at least become aware of the existence of the product and Company A. Further, some of the users have requested services and support for which they have paid Company A. Interviewee B made the observation that in order to get commercial entities to try out one’s software, the fact that it is open source gives them further incentive. This is because a potential customer is ensured that they can make some use of the software even if the original vendor is not readily available because they have the code and can modify it to suit their purposes, if the need arises.

*Avoid re-inventing the wheel.* When the functionality of the product and the services are paramount (such as Company B’s turnkey product), the software itself is the means to an end. Therefore, it makes sense for an e-entrepreneur to make use of the readily available OSS rather than having to devote valuable resources to rebuild what has already been done (and often done well). For e-entrepreneurs seeking to move quickly and offer novel services, this can be a major motivation. Interviewee B finds that by
avoiding a lot of duplicated R&D, they are able to provide cost-effective solutions.

- **Interaction with the community.** Interviewee A acknowledges that Company A has indeed benefited from the questions, suggestions, and contributions of the online community that uses their open source content management product. Interviewee B views his Company B’s building solutions based on existing OSS as bartering IP. Company B benefits from the IP of the developers of existing OSS and in turn feeds back expertise to these open source projects.

- **Get an edge over proprietary software vendors.** An e-entrepreneur may have an idea for a new product or service that can be enabled by a software package (or, indeed, the product may be a software package itself). It is often the case that the e-entrepreneur would struggle against the big businesses that offer similar products/services based on proprietary software. By releasing their product as OSS, the e-entrepreneur can get the attention of some potential customers who are deterred by the higher prices or the closed nature of the proprietary vendors. These potential customers could become a source of revenue based on custom modifications and other support-related activities. Of course, if there are already a number of OSS solutions available, then the e-entrepreneur should try to come up with a different idea.

Apart from the discussed business reasons, a strong ethical undercurrent did seem to underlie some of the issues outlined by the interviewees. For instance, Interviewee A saw releasing a proprietary product as OSS after it had reached its end of life as one way of letting customers know that they were not being left in the lurch. By granting access to software that Company A had previously developed under a proprietary license, users of that software would be able to continue to use and maintain the product well after Company A declared it as discontinued, if they so wish. For Interviewee B trying to “make the world a better place” is more important than “making a buck.”

Another common factor is the passion for technology and the excitement that comes from developing new technology or watching the technology evolve by following and perhaps collaborating with the open source software community. As a result of these findings, we agree with Mahoney and Naughton (2004) when they say that for some companies, OSS can be a strategically valuable weapon. However, the idealistic tendencies of both interviewees would cause us to stop short of agreeing completely with them when they say that it is difficult to find the “ideals of freedom, volunteerism, and a shared community of values in today’s world of Monetized Open Source.”
Conclusion

In this chapter, we have examined the increasing usage and growing acceptance of open source software within the technological world. E-entrepreneurship is a growing field and the experiences of two e-entrepreneurs trying to survive in this competitive field were presented. The underlying attributes and skills necessary for an e-entrepreneur are very similar to that of becoming an entrepreneur. These include: being a visionary; the ability to develop short- and long-term strategic plans; providing leadership; developing flexible structures; and remaining responsive to changing environmental and market demands. Presented next are the recommendations we have elicited from the interviewees that can enable e-entrepreneurs to be successful in their ventures.

Flexibility in Strategic Planning and the Work Environment

There is a need for maintaining flexibility when doing business irrespective of the organisational size. Especially in this technologically-dominated business world, the organisation needs to have a flexible structure so as to be able to respond to the ever-dynamic and ever-changing environment. At the same time, long-term strategic decisions should be made which reinforce the vision of the company.

Provision of High Levels of Service

A high emphasis needs to be placed on providing regular and outstanding service to clients. A company’s reputation (communicated though “word-of-mouth”) plays a major part in obtaining repeat business from existing clients and attracting new clients.

Developing Basic Management Skills

A successful e-entrepreneur must acquire basic management skills and attributes such as leadership, negotiation, and business planning. Furthermore, a balance needs to be maintained between the technical demands and the business demands of the company, especially those relating to people management—customers, suppliers, and employees. Motivating employees will remain a key task for managers regardless of the type of organization.
Taking the Long-Term Perspective

Establishing a new business requires significant commitment in terms of effort and financial resources over a significant period of time. Hence, returns in the short-term should not be the motivating factor. Building a robust and stable business requires patience. One way of maintaining motivation over a long period is to ensure that all individuals involved keep an open mind and enjoy the journey that can provide numerous challenges and highly satisfying outcomes.

Listening to Technologists

In order to maintain a competitive advantage, it is imperative that managers regularly communicate with their technical personnel since they are ones who will have firsthand knowledge of what is happening in the technological world.

This chapter has contributed to our understanding of OSS and e-entrepreneurship. The literature highlights the need for further research in this area, particularly to do with small businesses with Internet usage (Steinberg, 2003). Gaps in the existing literature in the area of OSS and e-entrepreneurship needs to be filled with more studies. One way this could be initiated is by more qualitative studies incorporating both in-depth case studies and focus-group discussions exploring experiences of e-entrepreneurs in the current technological environment. The experiences of entrepreneurs who have now become e-entrepreneurs also need to be further explored.

References


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Web site 1, Company A (Date accessed: September 15 2004)
Web site 2, Company B (Date accessed: September 12 2004)


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**Endnote**

1 Netcraft (www.netcraft.com), in fact, reports a 67.92% market share for the open source Apache Web server in October 2004, which is a bare 0.07% change since October 2003.

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**Acronyms Used**

- **ERP** enterprise resource planning
- **IP** intellectual property
- **MYOB** Mind Your Own Business (accounting software package)
- **OSS** open source software
- **SAP** “Systeme, Anwendungen, Produkte in der Datenverarbeitung,” meaning “Systems - Applications - Products in data processing” [url:wiki_sap]
- **SQL** structured query language