Intellectual Property Protection in Software Enterprises

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INTRODUCTION

Enterprises are facing challenges in protecting their intellectual property (IP) due to the rapid technological changes, shortened lifecycles, and the intangibility of products. The IP protection granted by the national intellectual property rights (IPRs) legislation does not correspond very well with the needs of enterprises operating in a rapidly changing business environment (Andersen & Striukova, 2001; Bechina, 2006). The most valuable assets of knowledge intensive enterprises are the knowledge and skills embodied in human capital, which cannot be protected using the traditional and formal IP protection (Coleman & Fishlock, 1999; Kitching & Blackburn, 1998; Miles, Andersen, Boden, & Howells, 2000).

The challenges for IP protection in the context of knowledge intensive small enterprises lie in creating business environments that support the knowledge sharing and creation, innovativeness, and IP protection. In particular, the challenges are related to the identification of such formal and informal protection methods which improve the business process. The aim of knowledge management is to stimulate innovation and create knowledge. Knowledge management allows knowledge with critical and strategic characteristics in an enterprise to be located, formalised, shared, enhanced, and developed.

The purpose of this study on information security management is to explore how small and medium-sized enterprises (SMEs) protect their IP in software business. This study investigates how strategic IP protection supports the knowledge sharing and innovation creation and explores the critical phases of IP protection in small software enterprises. This study also describes and develops management, using the approach of knowledge management and applying the spiral of knowledge creation in software development.

The article is organised as follows. The IP protection of enterprises operating in software development is introduced in the background section. The main attention of the article concentrates on IP protection, which is analysed using the framework of knowledge management. IP protection is investigated in the various phases of knowledge creation in software development. Thereafter some future trends are described. Finally, the results of the study are summarised and discussed in the concluding section.

BACKGROUND

This article investigates IP protection in the software business from the perspective of an entrepreneur or a manager who wants to maximise the profits of the enterprise. The empirical data of the study consists of 17 independent owner-managed software enterprises in Finland and the UK located in the metropolitan regions of Helsinki and London. Multimedia technology is an essential target market of these networked enterprises. The data was collected using a sampling technique by which the sample was collected by using one respondent to suggest other suitable respondents. The chosen design for interviews was the semistructured and open-ended format to avoid variation in the responses and to facilitate the comparability of the information.

Although the importance of informal IP protection methods and strategies has been acknowledged in several studies (Coleman & Fishlock, 1999; Kitching & Blackburn, 1998; Miles et al., 2000), only a small number of empirical studies have been done in this particular area. The main finding of earlier studies is the importance of skills embodied in human capital that cannot be protected using the traditional methods of IP protection. A substantial part of the creative activity is not patentable, because of its intangible nature.

This implies new challenges to those responsible for IP protection.

Patents protect innovative and useful products, processes, and programs. Software-related inventions have been patentable for years in the USA. American enterprises are more patent conscious than their European counterparts. In Europe, software is not regarded as an invention and therefore it is not patentable. However, the countries belonging to the European Patent Convention (EPC) have agreed that software is patentable if it is technical in nature. In addition, technical devices or processes which include integrated software may be patentable. Apart from that, national patent offices have adopted their own practices. For example, the British Patent Office is very restrictive and defines narrowly what may be patentable. Copyright has formerly been the main protection method for software enterprises, but the role of patenting in IP protection increased in the 1990s, when the United States Patent and Trademark Office (USPTO) started to grant patents even to software products. However, the extreme complexity of software products causes problems. Often many patents are needed to cover a specific product or a specific type of implementation (Kahin, 2003). However, the program is still not patentable if it does not include a technical component.

Many small knowledge-intensive enterprises prefer informal means to protect their IPs. In some sectors technical means of protection may simply be more effective than legal protection. Kitching and Blackburn (1998) conclude from interviews with the managers of 400 SMEs in four different industrial sectors (software, mechanical engineering, electronics, and design) that SMEs have realised the importance of IPRs and know-how in managing their assets. They make very little use of the formal methods of protection requiring registration. They prefer informal protection methods, because these are effective, inexpensive, and within the control of the enterprise. The main method of maintaining confidentiality is working with customers, suppliers, and employees who can be trusted (Coleman & Fishlock, 1999).

The traditional alternative to patenting is simply to keep the invention a trade secret. The advantage of this strategy is that there are no patenting costs involved. However, pure secrecy does not work well in cases of purely technological inventions, because they can easily be reverse engineered and copied by competitors. The opposite strategy to secrecy is simply to publish (Bruun, 2003). This strategy avoids any blocking by competitors of the technology in question. For example, IBM and Zerox Corporation have used the publication strategy for defensive reasons. Bruun distinguishes between concepts of 'publishing' and 'discrete publishing.' The aim of the latter is to destroy the novelty of the invention without really going more public than necessary. According to Bruun, the novelty of an invention can be destroyed by taking the document of an invention from a library where it is considered to be available to the public even though no member of the public may be aware of the document. The successful combination of secrecy and publicity is an option to protect the IP of the enterprise. However, in the case of discrete publishing the enterprise must prove in a possible dispute that the invention has been made available to the public and the invention described so carefully that other specialists in the field can also build it.

Large enterprises have relative material advantages, but small enterprises seem to have organisational advantages such as flexibility and the ability to respond quickly to the changing demand in the market. The utilisation of formal protection methods, such as patents, requires resources in terms of money and time. The need for patenting increases gradually with the size of the enterprise, suggesting that the patenting process requires a certain level of resources (Blackburn, 1998). Enterprises which are able to respond quickly to changing market demand must be organisationally flexible and have efficient internal communication (Mogee & Reston, 2003).

It can be summarised that SMEs are active in protecting their products using a variety of mechanisms. Methods of IP protection, especially patents, have attracted considerable interest and there are numerous studies available on the legal forms of IP protection. However, only a small part of IP can be protected by legal forms of protection. Typically IP cannot be protected in the software development business due to patentability issues, the complex nature of the product, and the need to make a full disclosure when applying for a patent. These enterprises have other means to protect their IPs. The literature acknowledges the importance of informal protection methods and strategies, especially in SMEs. Sufficient attention has not been paid to the identification and conceptualisation of the informal methods used in development processes.

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