Chapter 3: Literature Review

3.1 Introduction

There are a host of studies in the past on intellectual property infringement. However, most of these studies focus on software piracy and very few on other ODPs piracy. Judging from the widespread occurrence of ODPs (inclusive of software) piracy, it is about time to turn our attention specifically to this form of piracy. Holm's (2003) research is similar to this study. He investigates if economic theory can explain variations in piracy behavior between individuals. He found that individuals with a low net valuation of original when a copy is available are more prone to engage in piracy than individuals with higher valuation. His results suggest that individual piracy behavior is significantly more intense for subject with i) low net valuation of original ii) computer skills iii) is male.

3.2 Demographics of Software Pirates

Concerning the demographic of software pirates, previous research seems to agree that male are more engaged in piracy than female (Holm, 2003; Sims et al, 1996; Moores and Dhillon,2000; Rahim et al,1999). Putting it another way, Salomon and O' Brien (1991) found that female engage in less piracy than male. Graduate students (typically older individuals) are also found to pirate across more software types than undergraduate students, (Sims, et al, 1996) probably due to the fact that older students are more experienced with computer. In contrast, earlier study by Salomon and O' Brien (1991) found that younger students pirate more software than their older counterparts.

3.3 Effects of Computer Skills

Previous studies find that individual with computer skills and more personal computing experience are more engaged in software piracy (Holm,2003; Sims et al,1996; Rahim et al ,1999.) This may be because greater degree of computer skills leads to lower cost of obtaining and handling copies. Oz's (2001) research results find that people who are more computer literate are more likely to engage in software piracy. In a study of 71 Information Systems (IS) professionals and 250 professional from other professions, he found that IS professionals are less ethical with respect to software piracy and hacking, although they are founded to be more committed to their organizations than the other professionals and not less ethical regarding professional opinions that exceed one's knowledge. Therefore it is reasonable to assume that they are more sophisticated in duplicating software and accessing IT sources.

3.4 Reasons to Pirate Software

Various studies in the past also seek to identify the underlying reasons or motivations for individuals to pirate as well as to purchase pirated software. Cheng et al (1996) found that 3 most important reasons to pirate software is the notions that respondents perceive that *software is too expensive, cannot afford the software* and *want to try out software*. His findings suggest that a higher software price charge by publisher actually makes piracy more desirable. Similarly, a study by Limayem, Khalifa and Chin also found that facilitating condition such as availability of software and inappropriate anti piracy measures had a significant effect on piracy. Moores and Dhillon (2000) found that there is strong agreement from respondents in terms of buying software due to high

cost of legal software, high availability of pirated software, and the low censure for buying.

3.5 Model of Software Piracy

An assortment of studies also tried to develop a model of software piracy. Limayem, Khalifa and Chin use behavioral theories in the elaboration of a model that can identify key factors influencing software piracy and conduct a longitudinal study to test the validity of the proposed model. They found that while facilitating condition and habits had a significant effect on piracy, intentions did not lead to software piracy. Intentions, however, was significantly influence by perceived consequences and social factors. Peace and Galleta (1996) utilized the reference discipline of Expected Utility Theory (EUT) to study the effects of software cost, financial punishment level, and punishment probability on the computer-user's decision to copy software illegally in an organizational setting. They found that software cost, financial punishment level, and punishment probability are all significant determinants of individual decision to pirate. Peace et al (2003) refines and builds on the previous attempts to develop a model of software piracy by integrating Theory of Planned Behavior with factors identified from expected utility theory and deterrence theory. They found that software piracy intention was predicted by the individual's subjective norms, his/her level of perceived behavioral control and attitude toward piracy. Severity of punishment, certainty of punishment and software cost, in turn, has direct effects on the individual's attitude toward software piracy.

3.6 Effectiveness of Protection Policies

Another type of research has tried to examine protection policies. For software whose value to users increases with the expansion in the user base, software protection strategies can be more harmful to the firms than piracy (Conner and Rumelt,1991; Givon et al, 1995). Individually, Conner and Rumelt (1991) found that with the absent of network externality, increased software protection raised both price and profit. However, with the presence of network externality, their model suggest that even when substantial piracy exists, it is possible for increased protection to harm both the manufacturer and the buying customer. This is because protection drives some would-be pirates to forego obtaining the product, thereby diminishing the total number of program users. As such, their model suggests that even with significant piracy, a policy of no protection might be optimal i) if protection acts chiefly to push pirates out of the user base rather than into the buying camp, and ii) if the network externality is strong. Therefore, full protection can be expected where the network externality is weak or where deterred pirates become buyers rather than do without. Gopal and Sanders (1997) study the strategies of software publishers in their effort to reduce software piracy and its effect on the economic performance of software publishers. Their results suggest that preventive controls do not increase publishers' profits, while deterrent controls can have positive effect on profitability. However, preventive and deterrent control can both effectively eliminate piracy.

Novos and Waldman (1984) analyze the effect of increased copyright protection in a model where consumers vary only in terms of their cost of obtaining a copy. They found that an increase in copyright protection does indeed decrease the social welfare

loss due to underproduction but show that there is no tendency for an increase in copyright protection to increase the social welfare loss due to underutilization once the cost of obtaining a copy is taken into account. Yoon (2001) also arrives at the same finding, which suggests that increase in copyright protection decrease the social welfare loss due to underproduction, but may increase or decrease the social welfare loss due to underutilization. However, unlike Novos and Waldman, he view the underproduction-underutilization problem of copyright protection in terms of quantity as opposed to quality and removed the restriction imposed in the earlier study that consumers' costs of unauthorized reproduction are always higher than original producers marginal cost.

3.7 Effects of Piracy

3.7.1 Negative Effects of Piracy

Johnson (1985) examines the efficiency and distributional aspects of copying for personal use. He concluded that unauthorized copying unambiguously reduces producer returns but that product price can rise or fall as a result. He found that (unlimited) copying redistribute income away from the owners of creative work. Although copying induce greater consumption, there is also a reduce incentive to generate new products.

3.7.2 Positive Effects of Piracy

While industry claims that piracy leads to a great amount of monetary loss and impede economic growth by discouraging business development of new industries, some study found that software piracy can actually be beneficial to the producer of originals. Zagorsky (1990), argued that a vague figure of lost revenue often overestimates bottom-line damage, because pirated software has a positive effect on future sales. Pirates who like the product often buy future release to access more features. For certain types of

software characterized by positive consumption or network externality, Conner and Rumelt (1991) have argued that software piracy may not be harmful. In the presence of network externality (Katz and Shapiro, 1986), piracy leads to increases in the utility of the software since it expands the number of individuals using it. Software piracy permits the shadow diffusion of software parallel to its legal diffusion in the marketplace, thus increasing its user base over time (Givon et al, 1995). In specific, software pirates may influence potential software users to adopt the software, and some of these adopters may become buyers. Through word-of-mouth interactions, pirates may influence the potential users to adopt software, and some of these adopters may purchase the software. Applying their model to study the diffusion of spreadsheets and word processors in the United Kingdom, their results suggest that although six of every seven software users utilized pirated copies, these pirates were responsible for generating more than 80% of new software buyers, thereby significantly influencing the legal diffusion of the software.