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Triandis' theory of interpersonal behaviour in understanding software piracy behaviour in the South African context.

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Introduction

Over the last decade the world has witnessed rapid advancements and growth, predominantly in the field of information technology (IT) (Cronan & Al-Rafee, 2008). This has resulted in the expansion and rapid progression of the software industry, as it has needed to stay on the cutting edge of this ever growing and innovative information age (Gopal & Sanders, 2000). Advances in the internet and other digital technologies have opened up new methods of doing online business; however these channels have become abused and misused in the form of piracy of digital data (Holsapple et al., 2008; Cronan & Al-Rafee, 2008). As the software industry has expanded over the years, so has the criminal activity of software piracy.

Typically, the unauthorised copying of computer software is referred to as 'software piracy'. However, it is imperative to note at the outset that the term 'software piracy' is loaded with heavily negative connotations. Numerous terms are used to describe 'software piracy'. Terms include the unauthorised copying of software, softlifting or counterfeiting. However, the majority of published literature makes use of this highly loaded and emotive term, and as a result, the term 'software piracy' will be used throughout this research referring to the unauthorised copying of computer software.

Software piracy is defined as the 'unauthorised use or illegal copying of computer software' (Limayem, Khalifa & Chin, 2004) or the unauthorised use, duplication, distribution or sale of commercially available software (Moores & Dhillon, 2000). Software piracy has increased globally according to the Sixth Annual BSA-IDC Global Software Piracy Study (2008). The BSA-IDC study found that the piracy rate had increased by 3% worldwide, from 38% in 2007 to 41% in 2008 (BSA & IDC, 2009). The cost of piracy (monetary losses) has increased across all regions of the world, by a greater or lesser degree. In 2008 the global monetary value losses of unlicensed software was $53.0 billion, an increase of $5.1 billion from 2007 where monetary losses sat at $47.9 billion (BSA & IDC, 2009). According to the BSA (2009) for every $100 of legitimate software sold, another $69 is pirated.

The manner in which the IDC calculates software piracy rates is based on "the total number of pirated software units" in a specific year divided by "the total number of software units installed" within that same year within a specific country (BSA & IDC, 2008, p.17). Therefore, the piracy rate is determined as the percentage of total software installed that was not legally acquired. The IDC calculates the number of pirated software units by calculating the value of software industry losses (BSA & IDC, 2008). However, the manner in which software piracy rates are calculated by the IDC raises questions regarding the accuracy of their measurements due to the lack of detail provided regarding their methodology. As a result, it is imperative to understand that the IDC's published piracy rates are in fact estimations, and may not be an accurate indication of piracy rates.

Even though many countries around the world are experiencing gradual decreases in their software piracy rates, the unauthorised coping of software is still a major concern for software developers, businesses and the global economy (Beruk, 2000; Shin, Gopal, Sanders & Whinston, 2004). As a result, it becomes imperative to ascertain why some people pirate software and why others do not engage in this form of criminal activity. The BSA (2009) has suggested that lowering piracy rates will lead to an increase in employment, economic growth and tax revenues which will inevitably lead to overall economic prosperity (BSA & IDC, 2009).

The Sixth Annual BSA-IDC Global Software Piracy study indicated that software piracy rates in South Africa and Zambia were 35% and 82% respectively (BSA & IDC, 2009). However, recent research conducted in South Africa and Zambia indicated that the intentions to make unauthorised copies of software were actually higher in South Africa compared to Zambia (Matthews, 2008). Therefore, if Zambia's software piracy rate is higher than South Africa's, but South Africa's piracy intentions are higher than Zambia's, what then are the objective factors present in the external environment that enable this behaviour to be performed with either ease or difficulty even when there is a strong intention (i.e. what are the intervening factors between intentions and behaviour)?

Therefore the aim of this research is to employ a slightly modified version of Triandis' (1977) Theory of Interpersonal Behaviour as a theoretical framework in

order to ascertain what specific facilitating conditions either enable or impede individuals from making unauthorised copies of computer software. This research report will begin with a discussion on software piracy followed by an overview of the current literature within this area of psychological inquiry. Triandis' Theory of Interpersonal Behaviour will then be examined followed by the research question and eight hypotheses. The next section will outline the method that was undertaken to address the research question and hypotheses. Specifically this section will discuss the study's research design, sampling technique and sample, procedure, the various instruments used, the manner in which the data was analysed and the various ethical considerations. The results section will present the outcomes from the various statistical analyses run on the data. The last chapter of this research report will discuss the results in relation to previous research and Triandis' Theory of Interpersonal Behaviour. This chapter will also include a discussion on the practical implications of the results, the limitations of the current study and directions for further research within this area. The above chapters will be followed by a conclusion of this research study.

Chapter 1: Literature Review

The following chapter will discuss the psychological phenomenon of software piracy, firstly with regards to what is classified as piracy and the extent of software piracy today. Past theoretical approaches used in the study of software piracy will then be discussed along with the numerous findings that have arisen as a result of these approaches. Triandis' Theory of Interpersonal Behaviour (TIB) will then be presented as the theoretical framework for this study. Following this, the most recent and only study on software piracy making use of Triandis' TIB will be discussed including the limitations of this particular study. Each variable to be included in the study will then be presented in a clear and concise manner. Lastly, the variables to be analysed in this research will be presented in the form of a research question and eight hypotheses.

1.1 Software Piracy

Software, as a desired and needed tool for almost all businesses, governments and individuals, is expensive to produce and develop, although it is inexpensive and easy to duplicate and distribute (Goode & Cruise, 2006). Making unauthorised copies of software can be done by copying, downloading, sharing, selling or installing multiple copies of the software onto personal or work computers. The Business Software Alliance (BSA) states that making or downloading unauthorised copies of software is breaking the law, regardless of the number of copies made or people involved (BSA, 2009).

Computer software comes with a licensed agreement that clearly states the number of times the software can be installed on a computer. Violations of this licensed agreement are considered to be software piracy (Zamoon & Curley, 2008). The majority of software licence agreements permit the buyer to load the software onto one computer and make a single backup copy. What the majority of people fail to realise is that when they purchase a software package, they are in fact purchasing a licence to use it (BSA, 2009). The licence is what gives the buyer the right to use the software under certain restrictions that are imposed by the copyright owner, referred to typically as the software publisher. One does not become the owner of the copyright when purchasing software (BSA, 2009; Hsu & Shiue, 2008).

Computer software is viewed as intellectual property from both ethical and legal perspectives (McGowan, Stephens & Gruber, 2007). The development of software is creative work which requires innovative ideas, capable programmers, writers and graphic artists. Therefore, like most creative work, computer software is protected by copyright laws, which are designed to protect this intellectual property (Shin, Gopal, Sanders & Whinston, 2004). Copyright infringement not only affects the copyright holders, but also weakens the manufacturers' intentions to invest in research and development for new and existing software (Hsu & Shiue, 2008).

The purpose of copyright laws is to provide the owner with the exclusive rights to the software package (BSA, 2009). Copyright infringement occurs when the purchased software is copied, distributed or installed in ways that violate the licensed agreement (El-Sheikh, Rashed & Peace, 2005). Therefore, when these laws are breached the person may be held liable under civil and criminal law. The BSA (2009) states that making unauthorised copies of software can lead to other negative consequences that stretch beyond the legal. These include an increased exposure to viruses, corrupt disks, and defective software, no warranties, the lack of available technical support, and ineligibility for software upgrades that are provided to licensed users (BSA, 2009). Software developers have tried to develop software protection devices in order to prevent the unauthorised duplication or installation of software; however software crackers have consistently cracked these programmes. It has been argued that software crackers who are determined to bypass copy-protection will always find the time and the way to do it (Goode & Cruise, 2006).

The most common forms of software piracy include; softlifting, unrestricted client access, internet piracy, sale of manufacturing plant overruns, hard-disc loading, Original Equipment Manufacturers' (OEM) Unbundling, commercial use of non-commercial software, counterfeiting, CD-R piracy, and renting (Software and Information Industry Association [SIIA], 2009). People pirate a variety of software packages; for example software programming packages, business applications, desktop applications and databases (Word processors), specialist software (statistical and architectural drawing packages), security packages, reference packages, operating systems, and gaming software (BSA, 2009).

Software is incredibly important and essential to all businesses, governments and consumers, as it is one of the most valuable technologies of the information age (Shin, et al, 2004; El-Sheikh, et al, 2005). However, due to the fact that software has become such a vital productivity tool today, the illegal copying and distribution of it has rapidly increased and continues to persist at high levels globally (BSA, 2009).

The unauthorised copying of software has become one of the most crucial issues for the development of the software industry (Tang & Farn, 2005). Software piracy costs the software industry billions of dollars in lost revenue each year, including consumers who do not pirate software but have to pay extra for it in order to cover the enormous losses incurred by software developers (El-Sheikh, et al, 2005; Gupta, Gould & Pola, 2004). Software authors and publishing companies lose enormous amounts in revenue when pirated software is used instead of legal software (Goode & Cruise, 2006).

Based on the IDC's forecast, $20 billion will be added in industry revenues, if the global piracy rate was to be lowered by one percentage point each year over a period of four years. If the computer software share were the same as it is for computer hardware, the software market would grow by $40 billion a year, indicating the severity of this ever-increasing phenomenon of piracy (BSA & IDC, 2009). Emerging economies currently account for approximately 45% of the global computer hardware market. However, surprisingly they also account for less than 20% of the legal computer software market. Therefore, high levels of software piracy are occurring in emerging economies (BSA & IDC, 2009).

According to the Sixth Annual BSA-IDC Global Software Piracy Study (2008), 44% of software was legitimately paid for, 15% was free or open-source software, and 41% was pirated software globally (BSA, 2009). Software piracy is becoming a continuous threat to the growth of national and global economies (Liao, Lin & Liu, 2009). Reducing the amount of pirated software globally will result in huge economic benefits. For example, it could generate hundreds of thousands of new jobs, billions of dollars invested in economic growth, as well as increasing tax revenues to support local programs and services within specific countries (Liao et al, 2009).

The global economic recession that began in 2008, has had an important impact on the software piracy rate in terms of changing exchange rates and decreased consumer and business spending power. Near the end of 2008, it was noted that business and consumer buying patterns had begun to change due to the economic crisis, as spending power decreased and the effective price of software increased (BSA, 2009). The Seventh Annual Piracy study is more likely to see the results of this, as consumers will be holding on to their computers for longer periods leading to an increase in piracy as older computers are more likely to have unlicensed software. The economic crisis also has the potential to limit piracy, in terms of an increase in inexpensive 'netbooks' sold with legitimate pre-installed software, reduced prices from vendors, and an increase in the use of software asset management programs that have the potential to reduce overall information technology costs (BSA, 2009). Therefore, the impact that the economic crisis will have on the global software piracy rate will be partly positive and partly negative.

The software piracy rate in South Africa has dropped by a percentage point each year since 2004 (where it peaked at 37%) to 2007. However, there has been a 1% rise in software piracy on computers from 2007 to 2008 (BSA & IDC, 2009). Therefore, South Africa's software piracy rate in 2008 increased to 35% (from a low of 34% in 2007), which resulted in a rise in industry losses from $294 million in 2007 to $335 million (R3.1 billion) in 2008. According to the BSA-IDC forecast, reducing the software piracy rate in South Africa by 10 percentage points over the next four years will have a "multiplier effect" in terms of economic growth and benefits. This reduction is estimated to generate 1200 jobs, R480 million in tax revenues and an additional R6 billion in terms of spending power of consumers in the local information technology sector (BSA, 2009).

Having noted this, South Africa has one of the lowest proportions of software piracy compared to the rest of Africa and the Middle East. The lowest piracy countries (all near 20%) include the United States, New Zealand and Japan. The highest piracy countries (all over 90%) include Armenia, Bangladesh and Zimbabwe. Therefore, South Africa's software piracy rate (35%) is ranked in the lower regions in comparison to the rest of the world. However, piracy in South Africa still costs the local software industry R3.1 billion in lost revenue which is the highest monetary

amount for any African country (BSA, 2009). Therefore, it is evident that the use of pirated software and the resulting industry revenue losses is a serious global problem and is becoming increasingly difficult to deal with due to the ease with which software products can be duplicated (Hsu & Shiue, 2008).

1.2 Previous Research on Software Piracy

Software piracy has been explored over the last couple of decades using many different theoretical approaches in order to ascertain why it is that some people engage in software piracy while others do not. The most recent theoretical approaches conducted to explore the criminal behaviour of software piracy post-2000 are Bandura's Social Cognitive Theory (Matthews, 2008; Rogers, 2001), Deterrence Theory (Peace, Galletta & Thong, 2003), moral attitudes (Siponen & Vartiainen, 2007), Triandis' Theory of Interpersonal Behaviour (Limayem et al., 2004), Routine Activity Theory and Rational Choice Theory (Holsapple et al., 2008), and Equity Theory (Douglas, Cronan & Behel, 2007) to name but a few.

Researchers have tried to ascertain what specific factors motivate or deter people from engaging in software piracy. As a result, the majority of research post-2000 has focussed on the economic, cultural, demographic, legal, and psychological reasons for why some people pirate software and others refrain from engaging in this ever-increasing globalized criminal behaviour.

Numerous studies have looked at a variety of economic factors and their subsequent effect on software piracy rates. A study conducted by Shin, Gopal, Sanders and Whinston (2004), found that the more affluent a country, the less their need is to pirate software, therefore the Gross Domestic Product (GDP) per capita is inversely related to a nation's software piracy level. Consistent with this, Andres (2006) and Husted (2000) found that higher levels of economic development are correlated with lower levels of software piracy. However, Bagchi, Kirs and Cerveny (2006) found that whilst a country's GDP is an important factor, the impact that it has on piracy rates is diminishing. The results of their study indicated that the GDP had a significant impact on piracy rates in 1996 (explained 63% of the variance); however it was found not to have the same impact in 2001 or 2003. A study conducted by Gopal and

Sanders (2000) found that the effect of GDP on piracy rates is more significant in countries with less than $6,000 GDP per capita. Several studies have found that the excessive cost of original software is one of the economic factors behind the high global piracy rates (Siponen & Vartiainen, 2007; Lau, 2006; Eisend & Schuchert-Guler, 2006). Moores (2003) found that increased personal wealth has resulted in a natural decline in global software piracy rates. This is consistent with Yang, Sonmez, Bosworth and Fryxell's (2008) study, where they found that income per capita is the most influential factor on software piracy. Husted (2000) found that the lower the level of income inequality (the larger the middle class in a country), the higher the rate of software piracy.

Kovacic (2007) maintains that it is most likely that an individual who cannot afford the software would be more prone to buy the pirated copy than the original due to either low individual or household income. Gopal and Sanders (2000) stated that it is misleading to assume that lower levels of income justify software piracy because in developing countries software is used by a smaller proportion of individuals; therefore if the individual is able to afford the hardware, they have no excuse in pirating the computer software. However, they do emphasize that this argument is highly debatable. As stated above, many studies have emphasised the cost of software as a significant determinant of piracy, however Bagchi et al (2006) stated that the decrease in the relative price of software has lessened the need for individuals to engage in piracy. However, we are still experiencing a subsequent rise in the global piracy rate. Therefore, it becomes evident that other factors may be involved that are contributing to high global piracy rates.

Cultural factors have been found to play an important role in understanding the different and increasing global software piracy rates. Software piracy viewed as a global pattern of corruption is difficult to control as the perception of right and wrong, both morally and legally seems to vary extensively from culture to culture (Robertson, Gilley & Crittenden, 2008). Most research makes use of Hofstede's (1997) well-known cultural model to ascertain the relationship between culture and software piracy.

The most frequently used variable in this body of research is Hofstede's individualism/collectivism conceptualisation. Shin et al (2004) explored the relationship between culture and income on software piracy rates. Their findings suggested that in a collectivistic society software is viewed as a resource to be shared with the community as it increases their overall welfare. As a result, software piracy is higher in high-collectivistic nations due to the fact that the sharing of resources is viewed as a virtue (Shin et al, 2004). These findings are consistent with an earlier study by Husted (2000) and later studies conducted by Bagchi et al (2006) and another by Yang, Sonmez, Bosworth and Fryxell (2008) who all found that a high collectivistic rating was positively related to software piracy, and a high individualism rating was related to having a significant negative impact on software piracy. The reason behind this is that most collectivistic societies tend to exist in third world or developing nations. As a result, the software producers in foreign countries are seen as out-groups. In these societies, individualism is lower and therefore when software is purchased by an individual it is expected to be shared with the rest of the in-group. The noted problem with the above research using Hofstede's cultural model is that most countries have both individualism and collectivism sub-cultures, and so it becomes increasingly difficult to ascertain the degree of these differences in explaining a country's piracy rate, as no one country is fully individualistic or collectivist.

The majority of research focusing on demographic variables has found that age and gender are good predictors of software piracy behaviour. Mishra, Akman and Yazici (2006) conducted a study looking at software piracy among IT professionals in organizations in Turkey. Their findings suggested that age, gender and experience have a significant impact on software piracy. A study conducted by Moores and Dhillon (2000) confirmed the typical view of the software pirate as male, as they found a significant difference between males and females in the frequency with which they purchase pirated software. Eisend et al (2006) confirmed that males have higher intentions to pirate software than females and as a result males were found to pirate more often than females. Their findings also indicated that younger individuals pirate more software than their older counterparts. A more recent study by Van der Byl and Van Belle (2008) found a non-significant difference between male and females attitudes towards software piracy, which could be attributed to technology becoming

more gender-neutral, due to the changing usability profile. The study also found that younger individuals were more prone to engage in software piracy than older individuals which is consistent with other research.

Many researchers have postulated that the possibility of legal consequences resulting from piracy behaviour has had a differential impact on whether people will engage in software piracy or not. A study conducted by Eisend et al (2006) on counterfeit purchases found that the perceived magnitude of consequences and social consensus reduced piracy intentions. However, a study conducted in Taiwan looking at consumers willingness to pay for non-pirated computer software found that prosecution risk did not significantly increase willingness to pay for software products, as individuals who used pirated software were found to not be at a high risk of being prosecuted (Hsu & Shiue, 2008). Kovacic (2007) indicated that legal systems and regulations have recently been identified as one of the major contributors to the variations in piracy rates between countries. Therefore, piracy rates are related to the individual's perception of whether or not they will get caught if they pirate, and if caught, whether they will be successfully prosecuted (including the severity of the legal consequences enforced within a country). This perception has the potential to influence whether or not individuals will engage in software piracy behaviour.

Psychological variables have been considered in studies of software piracy in order to ascertain their influence on why it is that some people pirate and others do not. However, for the purpose of this study the psychological variables that will be given attention to are the ones related to the Theory of Planned Behaviour (TPB) as the TPB is closely related to Triandis' Theory of Interpersonal Behaviour (TIB).

A study (using the Theory of Planned Behaviour) conducted by Peace et al (2003) found that individual attitudes, subjective norms and perceived behavioural control were all significantly related to the intention to pirate software, implicating attitudes as the strongest predictor (Peace et al, 2003 as cited in Hinduja, 2007), whereas Cronan et al (2008) found attitudes were not the best predictor of intentions. Contrary, in part, to the above research, a recent study conducted by Liao et al (2009) using the Theory of Planned Behaviour found that attitudes and perceived behavioural control were significant antecedents of behaviour, however subjective norms were not found

to be a significant predictor of piracy intentions. This non-significant relationship was also found in Cronan and Al-Rafee's (2008) study looking at factors that influence the intention to pirate software. However, a study looking at the willingness to pay for non-pirated software found that social norms had a strong positive influence on willingness to pay for software products (Hsu & Shiue, 2008). Past piracy behaviour (habit) and moral obligation were examined alongside other variables in a study conducted by Cronan and Al-Rafee (2008) looking at factors that influence piracy intention. Past piracy behaviour was found to significantly increase the individuals' intention to pirate software in the future. Moral obligation was found to influence intentions, as the more a person felt guilt or moral obligation toward piracy the lower their intention would be to engage in piracy.

As stated above, the majority of research pertaining to software piracy has previously focussed on economic, cultural, demographic, legal and psychological factors to try and explain software piracy. However, limited studies have tried to understand why people pirate and how they justify their behaviour. As a result, the purpose of this research is to ascertain what specific facilitating conditions are present within the external environment that enable the act of piracy to be performed with either ease or difficulty, when there is a strong intention (i.e. what are the intervening factors between intentions and behaviour?). The aim of this research is to employ a modified version of Triandis' (1977) Theory of Interpersonal Behaviour as a theoretical framework in order to ascertain what specific facilitating conditions either enable or impede individuals from making unauthorised copies of computer software.

1.3 Triandis' (1977) Theory of Interpersonal Behaviour (TIB)

Triandis' (1977) Theory of Interpersonal Behaviour (TIB) belongs to a school of cognitive models, namely that of Ajzen and Fishbein's (1975) Theory of Reasoned Action and Ajzen's (1991) Theory of Planned Behaviour (Milhausen, Reece & Perera, 2006). The Theory of Reasoned Action and the Theory of Planned Behaviour state that the key determinant of behaviour is an individual's intention to perform a specific act. The original model, Theory of Reasoned Action, was revised and modified, as it did not include behaviours over which people have incomplete volitional control. Therefore, the Theory of Planned Behaviour stated that intention

can only lead to behaviour if the particular behaviour is under volitional control (if the person can decide at will to perform or not to perform the behaviour (Ajzen, 1991)). The Theory of Planned Behaviour model consists of 'attitudes towards the behaviour', 'subjective norms', and 'perceived behavioural control' which in turn influence intention which in turn influences the performance of behaviour.

Triandis (1977) goes beyond these theorists in his tri-level TIB model by adding habits and the presence of facilitating conditions that either enable or hinder the performance of a particular behaviour (Milhausen, Reece & Perera, 2006). Fishbein's model differs from Triandis' TIB, in the sense that Fishbein was interested in accounting for the most variance with the fewest variables, whereas Triandis is interested in accounting for the most variance in total, because even a small amount of variance may be socially important, if the behaviour in question is critical (Triandis, 1977). The two models have three specific differences. Firstly, the TIB takes into account habits and facilitating conditions as intervening between intention and behaviour, while Fishbein emphasises that behaviour is a direct function of intentions. Secondly, the TIB considers roles, self-image, and interpersonal agreements, which are not considered in the Fishbein model. Fishbein states that the influence of the above factors will be felt through the individual's attitude toward the behaviour. Thirdly, the TIB uses affect towards behaviour as a separate factor, whereas, Fishbein assumes that affect is the sum of the perceived consequences multiplied by the value attached to these consequences (Triandis, 1977).

Ajzen's (1991) Theory of Planned Behaviour has been used widely in understanding a variety of unethical human behaviours and many studies have demonstrated the model's strong predictive power (Sutton, 1998). Yet, numerous studies (Milhausen, Reece & Perera, 2006; Pee, Woon & Kankanhalli, 2008; Montano, 1986; Valois, Desharnais & Godin, 1988) have also indicated that Triandis' Theory of Interpersonal Behaviour (TIB) is a more comprehensive model and has additional explanatory value than other behavioural models (TRA and TPB), yet it has been overlooked and as a result used less frequently. The TIB includes all aspects of the Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour (TPB) models, and includes additional components that add to its predictive power, namely that of *habits, facilitating conditions* and *affect* (Limayem et al., 2004; Woon & Pee, 2004). Previous

research making use of Triandis' TIB has found that including factors such as habit increases the model's predictive power over other models such as the TPB (Bamberg & Schmidt, 2003: as cited in Woon and Pee, 2004; Thompson, Higgins & Howell, 1991, 1994).

Triandis' TIB has been used and applied in numerous contexts regarding behaviour in studies post-2000, including Internet abuse in the workplace (Woon and Pee, 2004), sexual behaviour at a Mardi Gras (Milhausen, Reece & Perera, 2006), non-work related computing in the workplace (Pee, Woon & Kankanhalli, 2008), predicting students' car use for university routes (Bamberg & Schmidt, 2003), telemedicine adoption by physicians (Gagnon, Godin, Gagne, Fortin, Lamothe, Reinharz & Cloutier, 2003), and predicting undergraduate condom use (Boyd & Wandersman, 2006), to name but a few.

Triandis (1977) stated that interpersonal behaviour is a multifaceted and complex phenomenon, due to the fact that in any interpersonal encounter, a person's behaviour is determined by what that person perceives to be appropriate in that particular situation. This behaviour is subsequently determined by what others pressure them to do, the extent to which the individual enjoys or dislikes the behaviour, and the consequences that are perceived to be associated with the particular behaviour including the extent to which the person values these consequences (Triandis, 1977). Previous behaviours are primarily interpreted according to what is assumed to be the cause of these behaviours. The entire social setting, including aspects of an individual's personality, has the power to influence and modify interpersonal relations (Triandis, 1977). Triandis' TIB is predominately used to gain a comprehensive understanding as to what determines behaviour or what factors cause behaviour in general. The TIB is useful in explaining and understanding complex human behaviours predominately those behaviours that are influenced by their social and physical environments (Milhausen, Reece & Perera, 2006).

Triandis (1977) stated that *intentions* are formed as a result of the key role that is played by both social factors and emotions and then overtly argued that *behaviour* was primarily a function of the intention to engage in the act (comprised of perceived consequences, affect and social factors), habits (frequency of past behaviour), and

facilitating conditions which he considered to be the present situational constraints and conditions. The tri-level model (see Figure 1) developed by Triandis (1977) states that the first level is concerned with the way personal characteristics and prior experiences shape personal attitudes, beliefs and social factors related to the behaviour. The second level explains how cognition, affect and social determinants and personal normative beliefs influence the formation of intentions with regards to a specific behaviour. The third level states that intentions regarding the behaviour, prior experience and situational conditions predict whether or not the person will perform the specific behaviour in question (Milhausen, Reece & Perera, 2006).

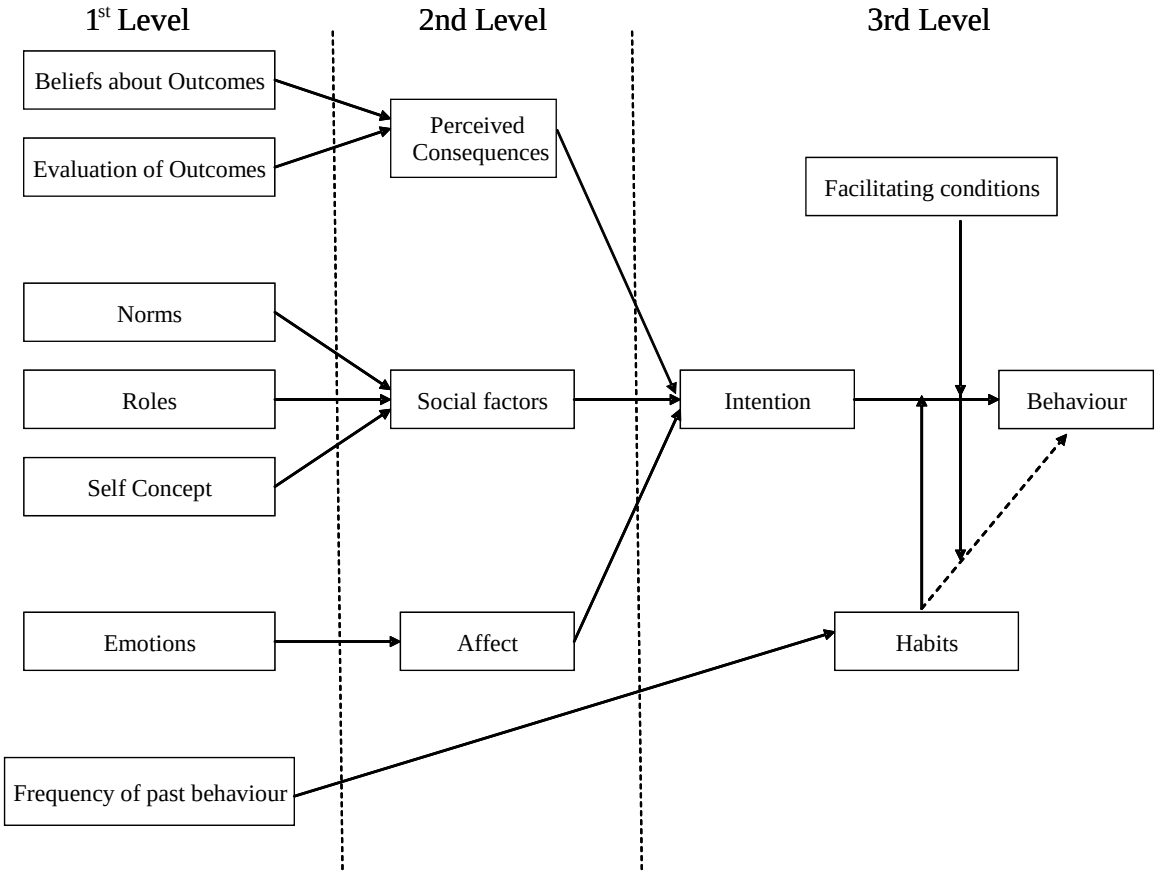

Figure 1: Modified Diagrammatic representation of TIB (Egmond & Bruel, 2007).

The TIB model, as shown in Figure 1, starts with examining the behaviour itself and from that point works backwards, identifying the other determinants of behaviour. The theoretical concepts that make up the model of interpersonal behaviour will be discussed in this manner.

1.3.1 Model of Interpersonal Behaviour

Acts (Behaviour)

The first of the concepts that make up the TIB model is what is referred to as acts. At a basic level, a particular act is conceptualized as a socially defined pattern of muscle movements which differ in terms of duration, intensity, frequency and the possibility of occurrence (Triandis, 1977). Specific acts, for example hitting a person or taking off one's hat are too brief, are subject to too many influences and too numerous to constitute the appropriate primitive terms of good theory (Triandis, 1977). Behaviours of this nature do not have meaning in themselves, due to the fact that they acquire meaning only from the contexts in which they occur. According to Triandis, behaviour in any situation is a function partly of the intention, partly of habitual responses, and partly of the situational constraints and conditions present in any particular situation in which a behavioural response is initiated (Egmond & Bruel, 2007: Jackson, 2005). The frequency of a particular behaviour is partly determined by how natural the act (software piracy) is for the individual. Behaviours that are natural for an individual have different determinants to those behaviours that rarely occur and that the individual is not prepared for (Triandis, 1977). In terms of behaviour, Triandis states that a person is neither fully deliberative nor fully automatic, neither fully autonomous nor entirely social. Behaviour is influenced by moral beliefs, but the impact of these is moderated both by emotional drives and cognitive limitations (Egmond & Bruel, 2007).

Goals and Intentions

Goals and intentions refer to the second aspect of the model. Behaviours (acts) are characteristically the result of the particular goals and intentions that an individual has. A goal "is an outcome of a sequence of specific acts" (Triandis, 1977, p.5). However, a behavioural intention "is a cognitive antecedent of an act" (Triandis, 1977, p.5). Triandis (1980) stated that, "intention represents an individual's conscious plan or self-instruction to carry out a behaviour" (cited in Woon & Pee, 2004. p 81). Intentions are considered as either specific or general. Behaviours are connected to specific intentions, as the pattern of behaviour is organized, sequential, and is specific

to a particular goal. Any specific intention is normally the manifestation of a number of different general intentions (Triandis, 1977) as intentions are influenced by rational thought, and social, normative and emotional factors (Martiskainen, 2007; Jackson, 2005).

Norms

Norms are defined as the "beliefs that certain behaviours are correct, appropriate, or desirable and other behaviours are incorrect, inappropriate, immoral or undesirable" (Triandis, 1977, p.8). Norms are the social rules about what should or should not be done (Egmond & Bruel, 2007). Particular norms that an individual holds are predominately a function of the societal group to which the individual belongs. As a result, some norms are weak whilst others are particularly strong; some norms apply to all people whilst other norms only apply to certain people in particular situations. Breaking a norm can result in certain consequences; however these consequences are diverse and vary between groups and individuals (Triandis, 1977).

Roles

Roles refer to sets of behaviours that are considered appropriate for people holding particular positions in a group (Triandis, 1977). Roles and role behaviours are defined differently in different societies. Many traditional societies shape their different roles in order for them to become consistent so that role conflict is avoided (Triandis, 1980). However, in modern societies roles are constantly changing and individuals find themselves belonging to a variety of groups that make conflicting demands upon them, resulting in role conflict (Triandis, 1977).

Self-image

Self-image falls in line with norms and roles; however self-image refers to "a person's ideas about who he or she is" (Triandis, 1977, p.9). Self-esteem, referring to how valuable a person feels they are; and the ideas an individual has regarding what behaviours are correct, appropriate or desirable all form part of the 'ideas' that a person holds regarding who he or she is. If an individual thinks of him/herself as

moral, their behaviour is likely to be of a high moral standard unlike an individual who does not have a thought of that nature (Triandis, 1977). Self-concept refers to the idea that a person has of him/herself as mentioned above, however it also refers to the goals that are appropriate for the person to pursue, and the behaviours that the person does or does not engage in (Egmond & Bruel, 2007).

Affect

Affect toward a particular behaviour refers to the emotions an individual feels at the thought of a particular behaviour (in this study, software piracy). Affect represents an emotional state that the performance of a particular behaviour evokes for that individual (Gagnon, Sanchez & Pons, 2006). Affect refers to an individual's feelings of elation, pleasure, distaste or discontentment with regards to the particular behaviour in question (Triandis, 1977). These emotions can either be positive (pleasant) or negative (unpleasant) and either strong or weak (Triandis, 1977). Behaviour may be associated with pleasant stimulation or with disgust, anxiety or distress.

Perceived Consequences

Perceived consequences refer to the subjective probability that certain consequences will follow on from a particular behaviour and that the outcome generated will either hold a positive or negative value for the individual (Woon & Pee, 2004). Triandis (1977) states, that the connection between behaviour and perceived consequences is not always strong. What an individual perceives to be a consequence of their behaviour and the actual consequence that occurs as a result of that behaviour, may differ to a lesser or greater degree (Triandis, 1977). Individuals attach value to consequences, which refers to how good or bad a person would feel if the anticipated consequence were to happen (Limayem et al., 2004). When individuals engage in certain behaviours, they do not always react to the positive outcomes with the same enthusiasm, nor do they get equally upset when the behaviour results in negative outcomes (Triandis, 1977). The following section will discuss the relation between habit, intention and facilitating conditions in determining behaviour.

1.3.2. Relations among Concepts

Triandis (1977) states, that the above concepts are related to one another and to the probability that a particular behaviour will occur.

Determinants of the probability of an Act

The probability that a particular behaviour will occur is determined by three factors; habit (the strength of previous behaviour in producing the target behaviour), behavioural intention (the intention to engage in the particular act), and facilitating conditions (the presence or absence of conditions that facilitate the performance of a particular behaviour) (Triandis, 1977; Osbourne & Clarke, 2006).

In Triandis' TIB model, he strongly emphasises the importance of past behaviour on the present situation (Jackson, 2005). As a result, habit to act is measured by the number of times the behaviour has already been performed by the individual in the past. Intention refers to the actual behavioural intention a person has to engage in a particular behaviour (Triandis, 1977). Facilitating conditions refer to the ability of the person to actually carry out the behaviour, the individuals' arousal to carry out the act, and the person's knowledge of how to carry out the target behaviour (Osbourne & Clarke, 2006). Triandis (1977) states that if a person knows the weight carried by habit and intentions, he or she will be able to gauge the probability of a particular behaviour occurring. Habits and intentions are therefore able to predict the probability of an act, and each variable makes an independent contribution to the prediction.

Triandis (1977) maintained that the potential to engage in a particular behaviour is higher the greater the weight exerted by habit. A habit is considered strong for a number of reasons; the person may engage in the behaviour naturally or the individual may have received positive, large and frequent reinforcement for performing that behaviour in the past; and may have developed the expectation that behaving in this way would lead to reinforcement (Triandis, 1977). The potential to carry out a particular behaviour is proportional to the behavioural intention which corresponds to that act. Habits and intentions are dependent on the ability of the individual to carry out the particular act (Egmond & Bruel, 2007). It is imperative to understand that the

weight of habit is contingent on whether the behaviour in question is over-learned or automatic as opposed to deliberate requiring the cognitive processes of thought and planning. Therefore, the weight of habit will be larger when the behaviour is more deliberate (Triandis, 1977). Behavioural intention requires the activation of cognitive processing of information, which takes more time to do, than the activation of habits. Theoretically, behavioural intention and habit are related, because if intentions are relatively constant over time, they will inevitably cause the same behaviour over and over. Habit reflects the frequency of this behaviour. As the behaviour becomes repeated more frequently, habit increases and becomes a more accurate predictor of behaviour than intention (Triandis, 1977). When behaviour is new and unlearned, intention is solely responsible for the behaviour, whilst when the behaviour is old and over-learned and has been performed numerous times, the behaviour is then said to be under the control of habit. Habit is also deemed to be in control of the behaviour when the individual is highly emotionally aroused (Triandis, 1977).

The social situation and individual differences also play a role in the strength of habit. When the current social situation resembles situations in which the behaviour has occurred in the past, the weight of habit will be larger (Triandis, 1977). The weight of intention is also contingent on the social situation and on individual personality differences. When the social situation is new and the behaviour has not yet become automatic or over-learned, the weight of intention will be larger compared to the weight in situations that are familiar (Triandis, 1977).

Situations characterized by high levels of uncertainty, threat or anxiety lead to individuals experiencing elevated levels of arousal. In situations of this nature, the weight of habit becomes much larger than that of intention. Arousal increases the weight of habit further, so that for over-learned behaviours, arousal will lead to the improved performance of that particular act (Triandis, 1977). When an individual comes into contact with an entirely new behaviour, the weight of habit is seldom significant. However, when arousal increases the weight of habit, it interferes with the new behaviour and as a result performance of that behaviour weakens (Triandis, 1977).

Triandis (1980) stated that facilitating conditions include the individual's ability to perform the act, their level of arousal in regard to the act, the difficulty of the act, the individual's possession of the knowledge required to perform the act, and the environmental factors present that increase the probability of the behaviour (cited in Osbourne & Clarke, 2006). At any level of habit or intention, the absence or presence of facilitating conditions will have an affect on whether or not the behaviour will be performed. Therefore, if the situation does not allow the individual to carry out the behaviour, habit and intention will have limited relevance (Gagnon, Sanchez & Pons, 2006). As mentioned earlier, when habit has a high/strong weighting the execution of the target behaviour is highly probable. In this instance, facilitating conditions are enabling the behaviour to take place. The objective factors in the environment are conducive to pirating software and are therefore allowing the target behaviour to be executed with ease. However, if the external objective factors in the environment hinder or impede the behaviour from being executed, it is then that the high/strong weighting of habit will be obsolete in the sense that the facilitating conditions will prevent the behaviour from being executed.

As mentioned, an individual must have the ability or skill to carry out the behaviour that he or she has the desire to perform (Triandis, 1980). For example, an individual who has the desire to make unauthorised copies of software needs to possess the required skills to actually perform the behaviour. Facilitating conditions predominately refer to any environmental conditions that make a particular behaviour easy to accomplish, for example the availability of the needed resources or lack of security measures in place that enable an individual to easily engage in a particular behaviour (Osbourne & Clarke, 2006). The environment, in which people find themselves, increases the probability of certain types of behaviours and decreases the probability of others. Triandis (1977) strongly states that facilitating conditions need to be assessed in order to effectively predict behaviour. Triandis (1980) stated that facilitating conditions directly affect the actual behaviour rather than intentions because one might have the intention to perform a certain act, but the environment may not support the behaviour in question and as a result would not be able to be executed (cited in Osbourne & Clarke, 2006).

The determinants of Behavioural Intention

The intention to perform a particular behaviour is determined by three factors: social factors, affect in regard to the behaviour, and perceived consequences of the behaviour including the value attached to the consequences (Triandis, 1980).

Social factors are the norms, roles, and general behavioural intentions that form as a result of the interactions between an individual and the people around them. Triandis (1977) includes 'contractual arrangements' under social factors, which are made by an individual with other people including how a person considers a particular behaviour to be consistent with their own self-concept. Perceived social pressure to or not to engage in a particular behaviour affects the intentions to perform an act (Limayem et al., 2004).

Triandis (1977), states that all the factors (to be discussed below) are included under social factors as they all form part of the social component. *Rules of behaviour* determine some of the variance of behaviour in many social situations. Behaviour in social situations that individuals encounter on a daily basis is predominately governed by a set of rules that dictate how they should behave (Triandis, 1977). *Contractual arrangements* are normally rather specific. An arrangement can be as simple as two people arranging to meet at a certain time. Arrangements become the goals that guide a specific chain of behavioural intentions (Triandis, 1977). Therefore, in light of the above example, behavioural intentions such as walking to the car, starting the ignition, driving to the meeting place and so on are all done before meeting at the specified arranged time. *Self-monitoring* is "self-observation and self-control guided by situational cues to social appropriateness" (Triandis, 1977, p.14). Individuals often decide, prior to social encounters, the 'line' they want to take in presenting themselves to other people. As a result, individuals make sure that their behaviour sticks closely to the 'line' that they have previously decided on. Individuals differ with regard to their self-monitoring. People high in self-monitoring are good at learning what is socially appropriate in new situations; they have superior control over their emotional expressions and are able to use their abilities more effectively in creating the impressions that they desire (Triandis, 1980). The *self-concept* refers to "self-attributed traits and behaviour patterns" (Triandis, 1977, p.14). Certain

behaviours are typically felt to be more consistent with an individual's self-concept than others. For example, the behaviour of 'typing an article' may be more consistent with an individual's self-conception than the behaviour of 'hitting somebody'. An individual's behavioural intention will follow from these self-attributed traits. Therefore, self-conceptions have the power to either facilitate or impede an individual's particular behavioural intention (Triandis, 1980). Our self-concept is strongly influenced by how people around us think of us. This is communicated to us in the way that people act around us, which indicates that we are one thing rather than another. The memory that an individual has of their past behaviour is another contributing factor to their self-concept (Triandis, 1977). An individual's self-concept is the theory that the individual has constructed about himself or herself, referred to as self-theory. An individual's belief about the correctness of behaviour can be a powerful predictor of whether or not they will engage in that particular act (Triandis, 1977). Miniscule changes that occur in a person's self-concept have the potential to change or alter behaviour. Most people behave in ways that are consistent with their self-concept. For example, if an individual conceptualises him/herself as a 'bad' person, they will be more prone to engage in behaviours that are typically characterised as 'bad'.

The strength of social factors reflects the clarity of the norms, roles, self-concept and interpersonal contracts. The weight that social factors will have is reflected in the extent to which the person believes that they will be exposed if they deviate from the norm, reflecting the strength of the individual's moral development (Triandis, 1977). Therefore, if the individual's behaviour is under surveillance, the weight of the social component will be large. When a person's behaviour is covert, it will have a smaller social weight than when it is overt. Surveillance of an individual's behaviour is linked to perceived social pressure, which refers to the person's perception of whether most people important to them think that the behaviour should be performed or not (Limayem et al., 2004).

Affect associated with behaviour refers to the particular assembly of emotions that become activated at the thought of the behaviour (Limayem et al., 2004). "Cues associated with any behaviour, including special cues such as the cognitive representation of the behaviour as a behavioural intention, become associated with

certain pleasant or unpleasant outcomes" (Triandis, 1977, p. 16). Behaviours that elicit a particular emotional response may also elicit a variety of behaviours that are consistent with that specific response. There is an association between emotion and behaviour because the thought of the particular behaviour (conditioned stimulus) becomes associated with the emotions attached to pleasant or unpleasant events (unconditioned stimuli) (Triandis, 1977). The affective components strength is dependent on the intensity and frequency of associations of the behaviour with positive or negative events (Triandis, 1980).

Perceived Consequences are an inevitable outcome of engaging in any behaviour. When a particular behaviour leads to a certain outcome and this occurs frequently, the connection between behaviour and the perceived consequence becomes stronger (Osbourne & Clarke, 2006; Triandis, 1977). The value of perceived consequences is dependent on the subjective probability that a particular consequence will follow the behaviour, including the value of that consequence to the individual (Gagnon, Sanchez & Pons, 2006). Human behaviour is predominately goal-directed, we predominately engage in behaviours with the aim of attaining a particular goal that holds a specific value that we desire. Perceived consequences are activated when an individual focuses on a goal; however, the behaviour may not take place if the social factors and affect toward that behaviour are larger or have a greater impact on the individual than the perceived consequences (Triandis, 1977). A particular behaviour may be perceived to lead to a high valued goal; however the individual may experience higher levels of negative affect with regards to the behaviour in question or pressure from his or her peers to refrain from engaging in the behaviour. As a result the behaviour may not take place (Triandis, 1977). This idea of perceived consequences is similar to what Bandura (1977) termed outcome expectations in his Social Cognitive Theory (SCT). Outcome expectations refer to an individual's perceptions of the specific outcomes that will be generated as a result of behaviour (Bandura, 1977). Bandura (1986) stated that individuals are motivated to engage in a particular behaviour when they have anticipated the possible outcomes of that behaviour prior to its execution and the outcomes are of a high value to the individual. As a result, the anticipated outcome acts as an incentive to behave in a certain manner (Peters, 2009). The strength of perceived consequences or outcome expectations is high when the behaviour is frequently and consistently connected with consequences

and when these consequences have a high perceived value, which is either positive or negative (Osbourne & Clarke, 2006). The actual consequences of behaviour serve as feedback (reciprocal exchange), modifying the above components that determine behaviour. Therefore, behaviour has the potential to change attitudes (Triandis, 1977).

Triandis (1977) states that one of the problems surrounding the relationship between attitudes and behaviour is that different researchers have measured attitudes in varying ways. Behavioural intention is the best measure for predicting behaviour, however, since behavioural intention is related to affect, one needs to also consider the studies in which the affect toward the behaviour was measured as suitable for the illustration of the relationship of attitudes to behaviour (Triandis, 1977). Distinctions between different aspects of the attitude concept are somewhat unclear. However, according to Bandura's SCT (1984) an individual's cognitions play an important role in influencing behaviour, and as a result an individual's attitude towards the target behaviour is vital. The reason being that attitudes can be conceptualised as either favourable or unfavourable towards a particular behaviour, influencing whether or not it will be performed (Bandura, 1984). Triandis (1977) states that *attitude* is a nonexpert's concept and should be used by social scientists in a loose way, as nonexperts use it. Therefore, Triandis (1977) maintains that an attitude is "an idea charged with affect, predisposing action" (Triandis, 1977, p.200). This definition includes belief, affect, and behavioural intentions toward the attitude object. In Triandis' (1977) TIB, he uses the concept of attitude loosely because most researchers do not distinguish affect from behavioural intention and often include elements of both when measuring attitude. Taking Triandis' view into account, research has shown that a person's attitude towards behaviour (software piracy in this case) is affected by the cognitive beliefs that the person holds regarding the outcomes that will follow from that behaviour (Al-Rafee & Cronan, 2006). The TIB model predicts that, when habit has a high weighting or when facilitating conditions make the behaviour impossible to carry out, attitudes will then be unrelated to behaviour.

Numerous models and theories have been proposed to understand what influences the adoption of certain behaviours. Triandis' TIB encompasses many of the behavioural determinants found in other psychosocial theories, for example Ajzen's TPB and Bandura's SCT (Gagnon, Sanchez & Pons, 2006). All three theories have proven their

effectiveness in predicting and explaining a variety of human behaviours in differing contexts. These theories are similar and conceptually overlap, however, SCT and TPB have been used more frequently in the study of behaviour than has Triandis' TIB. The TIB includes all aspects of the TPB model, however it includes additional components that add to its predictive power, namely that of *habits* and *facilitating conditions* (Limayem et al., 2004; Woon & Pee, 2004). Previous research making use of Triandis' TIB has found that including factors such as habit increases the model's predictive power (Bamberg & Schmidt, 2003: Woon & Pee, 2004; Thompson, Higgins & Howell, 1991, 1994). As seen above, the TIB has proven its predictive capabilities in explaining and predicting behaviour. The question then arises of why it has not been used in research to the same degree as these other psychosocial models.

Several major criticisms have been launched at Triandis' TIB. Godin (2008) stated that the TIB is used less frequently by researchers due to the fact that researchers prefer parsimonious (less complex) models. Generally, the more complex a model is, the less it is used in empirical research (Martiskainen, 2007). The TIB contains more variables and constructs that were initially not given much attention within other similar models (facilitating conditions and habits). Another reason why the TIB may be used less frequently is that Triandis does not provide clear guidelines for the operational definition of the variables within his model, unlike the TPB for example. The operational definitions of the variables within the TIB are left to the researcher without clear specifications from Triandis. For example he does not specify the rules for measuring facilitating conditions in reference to a particular behaviour. Godin (2008) states that many researchers were previously unaware that important concepts such as facilitating conditions were apart of the TIB, as many of Triandis' concepts were incorporated into the TPB as an extended TPB. However, Triandis was one of the first to specify that facilitating conditions have a moderating effect on the intention – behaviour relationship, and that as the influence of habit increases in reference to behaviour, the role of intention weakens. Within the above noted criticism of Triandis' TIB, one needs to appreciate the continued valuable predictive power of the model with regards to behaviour (Godin, 2008).

Triandis (1977) stated that the capacity of his model to predict behaviour is limited by certain conditions. When the components of the model are consistent, behaviour can

be predicted very well. However, when the components are inconsistent, the difficulty by which behaviour is predicted increases. Culture also plays a role, as behaviour can be over-determined by the predictor variables or predictors can be in conflict with one another, which results in prediction error. Prediction of behavior is more accurate when intentions are highly specific; however prediction is difficult when the individual is not highly committed to a certain position (Triandis, 1977).

1.4 Application of Triandis' TIB in Software Piracy Research

The most recent and only published study on software piracy making use of Triandis' TIB was conducted by Limayem, Khalifa and Chin (2004), which looked at factors motivating software piracy. The study used a subset of Triandis' model as other factors (history, culture, ecology, and social situation) were not included as they did not directly influence the two predominant factors that the study was researching, namely that of intentions and behaviour. Limayem et al (2004) hypothesised that these factors did not relate directly to intentions and behaviours. However, there was no indication that the factors excluded from the model were based on empirical investigations, but rather on the authors' choices. Limayem et al (2004) stated that while these factors may influence software piracy intentions and behaviour, they argued that they would not be able to add extra explanatory power in the predictive sense when the more immediate factors were included in the model. Limayem et al (2004) stated that factors such as personality, biological and genetic factors were excluded from the model as they did not seem to have well-established measures and were not immediate antecedent factors to intentions and actual behaviour.

Limayem et al's (2004) study consisted of three stages, belief elicitation, a survey of intentions and beliefs, and a survey of piracy behaviour. The purpose of the belief elicitation stage was to gain a list of formative items measuring the specific perceived consequences, facilitating conditions, and social factors that impacted on intentions and behaviours. There was a three-month period between survey two and three, therefore making it a longitudinal study. The results of the study indicated that perceived consequences and social factors had a substantial impact on intentions. Social factors were more influential on intentions than affect. Results also indicated that habits reinforced affect with regards to software piracy. Habits and facilitating

conditions significantly affected software piracy behaviour. However, contrary to expectations, intentions did not have a significant influence on behaviour (Limayem et al., 2004).

Limayem et al (2004) acknowledged possible limitations pertaining to their research, namely that of the possibility of participants under-reporting their actual piracy behaviour and the lack of generalizability as a student sample was used. The survey used to assess software piracy behaviour focussed on whether or not the participant had pirated and if so what quantity of software they had pirated three months prior to filling out the first questionnaire; however it failed to assess the act of giving the pirated software to someone else. Limayem et al (2004), suggested that future research should explore the type of software being pirated and the context in which the piracy was occurring as well as the development of a more elaborate model that incorporated additional antecedent factors beyond intentions (Limayem et al., 2004).

1.5 Variables and structural model used in the current research

Perceived Consequences

The cognitive or attitudinal element of the model refers to the evaluation of the possible perceived consequences of engaging in the behaviour. Triandis (1980) stated that all behaviours are perceived as having potential outcomes that are either of a positive or negative value including the probability that the outcome will occur (Woon & Pee, 2004) and induce a specific consequence or potential outcome (Limayem et al., 2004). Triandis (1977) maintains that attitudes or potential outcomes influence an individual's intention to perform a certain behaviour, namely that of the unauthorised copying of software.

Social Factors

Social factors are a composite of norms, roles and self-concept and together have the power at a societal level to influence an individual's intention towards a particular behaviour (Limayem et al., 2004). Triandis (1980) stated that, "social factors refer to the individual's internalization of the reference groups' subjective culture, the specific

interpersonal agreements that the individual has made with others in specific social situations" (Woon & Pee, 2004.p 81). Social factors and emotions play an important role in forming intentions towards a particular behaviour (Jackson, 2005). It is this social pressure that has an effect on intentions of whether or not an individual will perform a specific behaviour. Therefore, it is the social pressure at the societal level that has the potential to influence a person's intention to engage in certain behaviours (Limayem et al., 2004).

Affect

Triandis (1977) stated that affect refers to the pure emotion of joy, elation, pleasure, depression, distaste, discontentment, or hatred an individual feels with regards to a particular behaviour. Affect is included in Triandis' TIB model as he states that literature shows a significant relationship between an individual's affect towards a particular behaviour and their subsequent intention to perform that particular act (Limayem et al., 2004).

Intentions

Triandis (1980) stated that, "intention represents an individual's conscious plan or self-instruction to carry out a behaviour" (cited in Woon & Pee, 2004. p 81). Intentions represent the degree to which an individual is willing to try and invest in the particular behaviour or the amount of effort one is willing to exert in order to perform a particular act. Numerous studies hypothesize that intentions are usually precise predictors of behaviour (Woon & Pee, 2004; Limayem et al., 2004). In Triandis' view, intentions are immediate antecedents of behaviour (Milhausen, Reece & Perera, 2006). Triandis (1980) stated that behavioural intention refers to the instructions that people give to themselves to behave in particular ways in certain situations (cited in Osbourne & Clarke, 2006).

Habit

Triandis (1980) stated that a habit refers to behaviour that has become automatic and therefore occurs without self-instruction and deliberation. Habitual behaviour is a

form of automatic and routine behaviour; it refers to behaviour that individuals repeat due to the fact that the behaviour is either easy, comfortable or rewarding (Egmond & Bruel, 2007). When behaviour is habitual, the individual does not engage in reasoning of what may be the best thing to do, as the actual behaviour becomes the individual's goal in itself rather than the imagined expected outcomes associated with the target behaviour (LaRose et al., 2005). Triandis' TIB states that the influence of prior experience (habit) is strongest when behaviour parallels closely to a previous behaviour and when that previous behaviour occurred frequently (Milhausen, Reece & Perera, 2006), including the ability of the individual to have the know-how to accomplish specific tasks and behaviours (Limayem et al., 2004). It is through repetition that a 'loop' of automatism develops (Egmond & Bruel, 2007). Triandis (1977) strongly emphasized the effect of habit in influencing behaviour and a variety of studies (Cronan, & Al-Rafee, 2008; Woon & Pee, 2004) have shown its effectiveness in predicting future behaviour. A habit is the general tendency an individual has towards making unauthorised copies of software based on prior experience as it is concerned with a lack of thinking and reasoning processes with regards to the target behaviour.

Included in the notion of habit is deficient self-regulation which refers to a state of inadequate self control over behaviour (LaRose, Mastro & Eastin, 2001; LaRose & Kim, 2006). Bandura's (1991) self-regulation mechanism of SCT describes how individuals observe their own behaviour, judge the behaviour according to personal and societal standards, and then self-administer incentives to change their behaviour (cited in LaRose, Lai, Lange, Love & Wu, 2005). However when self-regulation is deficient, target behaviours (pirating software) may increase, predominately as a result of habit. As mentioned, the deficient self-regulation conceptualization includes the notion of habit and the repetition of behaviour without active self-instruction (LaRose & Kim, 2006). The connection between self-reactive outcomes and deficient self-regulation is important because it is implicated in the formation of unregulated, repeated, habitual behaviour. In extreme circumstances when excessive use causes serious consequences, such behaviour can be referred to as addictive (LaRose & Kim, 2006). Habit, usually understood in terms of the frequency of past behaviour, can be used to explain additional variance in behaviour. The inclusion of deficient self-regulation within the concept of habit leads to habit being conceptualised as a mental

process rather than as an association between measures of past and probable future behaviour (Peters, 2009). Habit is viewed as an automatic recurring behavioural pattern that follows a set cognitive schema (LaRose et al., 2005). In this view, behaviour incorporates both conscious and unconscious processes. Triandis (1977) states that "when the behaviour is institutionalized or routinized - that is, when it has a significant habit component - adding this information to the information about behavioural intentions greatly increases the predictability of the behaviour" (Triandis, 1977, p.206).

Facilitating Conditions

Facilitating conditions are defined as the objective factors within the environment that observers agree will enable certain behaviours to be performed with ease (Triandis, 1977). Facilitating conditions form a crucial part in Triandis' TIB as an individual may have the intention to perform a certain act, however may be unable to do so as their environment prevents the act from being performed. Triandis (1977) stated that facilitating conditions directly affect the actual behaviour instead of the intentions as one may have the intention to perform a particular behaviour, but if the environment does not support this behaviour, it will probably not be executed (Osbourne & Clarke, 2006). Facilitating conditions can either enable or impede the actual act of piracy. Examples of relevant facilitating conditions may include;

- Inappropriate measures in place to prevent the use of unauthorised copies of software
- Insufficient software protection to prevent the unauthorised copying of software
- Lack of awareness and educational campaigns to prevent the use of unauthorised copies of software
- Access to all the physical resources needed to make unauthorised copies of software

This research study has incorporated the concept of *need* as a motivating factor under facilitating conditions. The *need* to engage in the unauthorised copying of software may be attributed to individuals being required to have certain software to do their

job. The price of software which is an objective factor in the environment may also facilitate or impede an individuals' need to make unauthorised copies of software. If software was priced lower than it currently is, people may refrain from pirating. In this context, the concept of *need* refers to an external need or requirement for the job not the intrinsic need of the individual. Examples of relevant questions pertaining to the included concept of *need* incorporated under facilitating conditions may include;

- Making unauthorised copies of software as software is unaffordable and certain software is needed for the requirements of the job
- Making unauthorised copies of software due to the belief that software is overpriced

Therefore, this research study has included *need* under facilitating conditions to ascertain if it will provide any insight into whether or not people will engage in the act of software piracy. The research has therefore made use of a modified version of Triandis' TIB in order to gain an understanding of software piracy behaviour. Triandis' concept of facilitating conditions has been elaborated to include the concept of *need*, which may seem obvious, that could be used to gain an understanding of whether it has a substantial impact on impeding or facilitating piracy behaviour.

Behaviour

Behaviour refers to the actual physical act of performing a particular behaviour in the immediate past – within the last three months (Woon & Pee, 2004). Behaviour tested within the last three months is used within this research as it has proved to be an effective time frame used in a previous study (Garbharran & Thatcher, in press). Execution of behaviour in the immediate past is theoretically different from a habit (LaRose & Kim, 2006). For example, copying software may not occur in the context of deficient self-regulation but rather as a conscious cognitive process of needing a certain software package at a specific point in time (it may be cheaper to copy or obtain a pirated copy of a software package currently needed by the individual as an external requirement not an intrinsic need). Habit refers to an individual who makes copies of software that he/she may not currently require; however engages in the behaviour as a result of unconscious processes, deficient self-regulation, occurring

without self-instruction and deliberation, rendering the behaviour automatic and therefore repetitive (LaRose et al., 2005).

In the case of this research study, behaviour refers to an individual actively engaging in making unauthorised copies of computer software. Due to the fact that the research is cross-sectional in nature, behaviour refers to the individual engaging in the physical act of making unauthorised copies of computer software in the immediate past (i.e. the last three months). Therefore, habits will determine how frequent the behaviour has been in the past as a result of deficient self-regulation (behaviour that is not under the individual's self-control) and behaviour will ascertain whether the behaviour is taking place presently under conscious active decision-making processes. Triandis (1977) maintained that behaviour is dependent on habits, intentions and facilitating conditions.

The research will test for moderating effects of facilitating conditions and habits on actual software piracy behaviour. Moderators refer to variables that affect the direction and/or strength of the relations between an independent variable and a dependent variable (Baron & Kenny, 1986). The research will test for moderation effects (see Figure 1) of facilitating conditions on the relationship between intention and behaviour as well as effects on the relationship between habit and behaviour. The study will also test for moderation effects of habit on the relationship between intention and behaviour. The research will test for these possible moderating effects due to the fact that the effect of the independent variable on the dependent variable depends on the level of the moderator. The level of the moderator can either increase or decrease the direction and strength of the relationship. The reason why facilitating conditions and habits will be tested for their moderation effects is that moderation implies that the causal relation between two variables changes as a function of the moderator variable (Baron & Kenny, 1986). As mentioned previously, facilitating conditions and habits as possible moderators may possibly have the power to change the relationships displayed in Figure 1. The purpose of this research study is to explore some of the psychological mechanisms that may be able to explain software piracy behaviour. The knowledge gained from these findings is aimed at predicting which prevention strategies may be the most effective in combating this globalized criminal behaviour of software piracy.

1.6 Research Question and Hypotheses

Research Question

Will a modified version of Triandis' Theory of Interpersonal Behaviour model, give a good prediction of software piracy behaviour?

Hypotheses

1) There is a positive relationship between individuals' perceived positive consequences toward software piracy and their intentions to pirate software.

2) There is a positive relationship between positive social factors and intentions to pirate software.

3) There is a positive relationship between an individuals' positive affect toward software piracy and their intentions to pirate software.

4) There is a positive relationship between the intention to pirate software and piracy behaviour.

5) There is a positive relationship between habit and software piracy behaviour.

6) Facilitating conditions moderate the relationship between the intention to pirate and piracy behaviour.

7) Habit moderates the relationship between intentions and behaviour.

8) Facilitating conditions moderate the relationship between habit and piracy behaviour.

Chapter 2: Method

The following chapter will discuss how the research study was conducted. This chapter will specifically address the research design, sampling technique and sample. Following this the procedure, measuring instruments used and methods to analyse the data will be discussed. This chapter will conclude with a discussion regarding the ethical considerations of this study.

2.1. Research Design

This study has employed a quantitative, non-experimental and cross-sectional research design in order to gain an understanding of software piracy behaviour. The design is non-experimental as there is no control or manipulation of the independent variables, no control group or random assignment (Howell, 1999). Temporal precedence, covariation and non-spuriousness have not needed to be established as the research question and seven hypotheses are not causal in nature and so there is no need to establish casualty (Howell, 1999). A non-experimental design has been employed to enable inferences to be made regarding possible relationships between variables. The research design was also cross sectional in nature as the researcher observed the possible relationships between the variables at one point in time (Whitley, 2002).

2.2. Sampling Technique

In order to attain an appropriate sample for the research study, the researcher developed and designed an easy and accessible online software piracy survey. The survey was developed on an internet site, SurveyMonkey which allows people to develop professional online surveys easily and quickly. The sample consisted of a wide array of people who varied in terms of gender, age, race and occupation, including vast differences with regards to employment status, field of expertise and industry sector. The predominant sampling technique used in order to gain access to a sample was through IT Web. IT Web was launched in 1996 as a collection of information and news regarding the information and technology sector. It is the single

biggest online centre to find up-to-date news on the local technology industry (ITWeb.com). IT Web's monthly South African readership is over 85000 and more than 28000 individuals subscribe to their eNews newsletters (ITWeb.com). A link was posted on IT Web's website accompanied by a written description of the purpose of the research and what participation entailed. Due to the fact that IT Web provides news regarding the information and technology sector the majority of the sample consisted of individuals working within this industry or similar.

The survey was open for six weeks and ran from Friday the 10th of July until Monday the 24th of August 2009. During this time three different sampling techniques were employed that ran alongside the posted link to the survey on IT Web's website. Firstly, the researcher emailed the survey link (located on IT Web's website) to a variety of people working in different industries and as a result the survey link was subsequently forwarded on, inviting people to take part in the survey. Secondly, the survey link was posted on the University of the Witwatersrand's intranet accompanied by a short description of the purpose of the research, inviting individuals to take part in the study. Lastly, the researcher and the researchers' supervisor conducted a television interview (Maggs on Media) in which the research topic of software piracy was discussed broadly including details of the purpose of the study and inviting people to participate. The sampling techniques employed were not targeted at a specific group of people; as the purpose of the research was to explore the psychological phenomenon of software piracy behaviour in the South African context.

The non-probability sampling technique was employed in this study as it refers to the probability of a person being chosen for the research being unknown (Whitley, 2002). The methods used to attract the sample for this study are evidence of this sampling technique. Non- probability sampling technique was used to obtain a convenience sample, a sample from which it is convenient to collect data (Whitley, 2002). Due to the sensitive nature of this research, this sampling technique ensured that the sample only contained anonymous volunteers. However, the drawback to making use of this technique is that according to Rosenthal and Rosnow (1991) individuals who volunteer to participate in research possess certain characteristics. As a result of this, the sample could contain people who are slightly different from those who did not choose to take part in the study. Due to the fact that this research study explored the

criminal behaviour of pirating computer software, this sampling technique has proven to be most appropriate for this research in the sense that it has enabled only volunteers to participate, at their own discretion.

2.3. Sample

Three hundred and fifty individuals completed the online software piracy survey over a period of six weeks. However, forty participants were excluded based on two specific exclusion criteria. Firstly, participants were excluded if they only filled out the demographic section and the first two scales of the questionnaire (perceived consequences and affect scales). If the participant failed to fill out the remainder of the questionnaire they were then excluded. Based on this criterion, thirty three participants were excluded from the study. Secondly, participants were excluded if they completed the questionnaire, but did not presently live in South Africa. The reason for this is that the research was exploring software piracy behaviour within the South African context. Based on this criterion, seven participants were excluded from the study.

After the exclusion criteria were taken into consideration, the resulting respondent sample size was three hundred and ten. The respondent sample size attained is likely to be considered a good response number considering the sensitive nature of this study. The reason for this is that the participants may have had ethical and legal concerns associated with taking part in a study of this nature where the focus is on software piracy behaviour and this may have prevented them from participating in the study.

As mentioned earlier, the sample consisted of a wide array of people differing in terms of demographics, occupation and technology usage. In terms of demographics, the sample consisted of substantially more males (73%) as opposed to females (26%). Research has found that males are more prone to pirate software including the frequency with which they purchase pirated software (Moores & Dhillon, 2000) and that males have a higher intention to pirate and as a result were found to pirate more frequently than females (Eisend et al, 2006). As per the previous findings, the current

large proportion of males could have an impact on the results of this study due to the fact that males were found to pirate more than their female counterparts. In terms of age, the majority of the sample consisted of younger individuals predominantly within the ages of 18-28 (47%) and between the ages of 29-38 (33%). Previous research has found numerous links between age and software piracy. Research has found that younger individuals are more prone to engage in software piracy than older individuals (Van der Byl & Van Belle, 2008; Eisend et al, 2006). The majority of participants in terms of race were white (84%).

Occupations of the sample differed tremendously, for example

- Student (N=39), teacher (N=4), chef (N=1), artist (N=1)
- IT technician (N=31), project manager (N=12), software developer (N=18)
- Analyst (N=6), business owner (N=14), engineer (N=8), attorney (N=5)

The majority of the sample (70%) where engaged in some sort of full-time employment and experts in the field of information technology (IT) (51%). The participants worked in different industry sectors across a wide spectrum. The sample consisted mostly of South African citizens (97%) and most participants were currently located in the Gauteng region (68%).

With regards to technology usage, the sample was split almost equally between three categories in terms of computer use in years 10-15 years (31%), 15-20 years (27%) and more than 20 years (27%). The majority of the sample used a computer for approximately 5-10 hours per day (63%). The sample differed in terms of the frequency by which different software programmes were used (See Table 2) and (97%) of the sample had access to and made use of the internet at least once a day. The following tables provide more in-depth information regarding the demographic, occupational and technology usage of the sample. All the information provided in this section is used for descriptive purposes only.

Table 1

Demographic Descriptors of Sample

Sample N = 310

Variable	Frequency	Percentage	Missing Values
Gender:			
Male	227	73	2
Female	81	26	
Age in years			
18-28	147	47	1
29-38	101	33	
39-49	32	10	
49-59	20	7	
60+	9	3	
Race			
African	18	6	1
Indian	11	4	
Coloured	10	3	
White	261	84	
Other	9	3	
Employment Status			
Student	42	14	1
Full-time Employment	217	70	
Part-time Employment	11	4	
Self-employed	31	10	

Variable	Frequency	Percentage	Missing Values
Retired	4	1	
Unemployed	4	1	
Field of Expertise			
IT	159	51	1
Sales	12	4	
Marketing	12	4	
Legal	4	1	
Finance	17	6	
Human Resources	10	3	
Research	16	5	
Technical	23	7	
Administration	9	3	
Other	47	15	
Industry Sector			
IT	104	34	1
Aerospace & Defence	2	1	
Automotive	1	< 1	
Education & Research	30	10	
Engineering & Construction	23	7	
Financial Services	34	11	
Healthcare	8	3	
Life Sciences	7	2	
Manufacturing	5	2	

Variable	Frequency	Percentage	Missing Values
Media & Entertainment	16	5	
Mining	0		
Public Sector	4	1	
Retail	9	3	
Tele-Communications	20	7	
Travel & Transport	5	2	
Utilities	0		
Petrochemical	2	1	
Other	39	13	
South African Citizen			
Yes	301	97	1
No	8	3	
Regional Location by Province			
Gauteng	211	68	14
Western Cape	42	14	
Eastern Cape	7	2	
North West	3	1	
Mpumalanga	1	< 1	
Limpopo	2	< 1	
KwaZulu-Natal	30	10	

Table 2			
Technology Usage			
Sample N = 310			
Variable	**Frequency**	**Percentage**	**Missing Values**
Computer Use in Years			
Less than 1 year	1	< 1	0
1-5 years	3	1	
5-10 years	39	13	
10-15 years	97	31	
15-20 years	85	27	
More than 20 years	85	27	
Computer Use per Day			
1-5 hours	37	12	1
5-10 hours	198	64	
15-20 hours	67	22	
20+ hours	7	2	

Variable	**Never**	**At least once a day**	**At least once a week**	**At least once a month**
Software				
Frequency	159	75	34	30
Programming				
Percentage	51	24	11	10
Packages				
			Missing Values 12	

Desktop				
Frequency	1	268	29	10
Applications				
Percentage	< 1	87	9	3
			Missing Values 2	
Specialist				
Frequency	115	82	46	58
Software				
Percentage	37	27	15	19
			Missing Values 9	
Gaming				
Frequency	114	68	50	67
Software				
Percentage	37	22	16	22
			Missing Values 11	
Internet				
Frequency	0	302	5	2
Percentage	0	97	2	< 1
			Missing Values 1	

2.4. Procedure

The research procedure involved six stages. The *first stage* entailed obtaining permission from IT Web. As a result, a link to the survey was posted on IT Web's website accompanied by a written description of the purpose of the research.

The *second stage* of the procedure was to decide on an appropriate incentive in order to attract people to take part in the online survey. The researcher approached the Business Software Alliance (BSA) to ascertain whether they would be willing to provide an incentive for participation in the research that would be unrelated to computer software. As a result of this and after consultation with the BSA's board of directors, they decided to provide the researcher with an appropriate incentive which was in the form of two i-pod nano's.

The *third stage* of the procedure entailed developing and designing an easy and accessible software piracy survey on SurveyMonkey. The purpose of SurveyMonkey is to enable anyone to create professional online surveys quickly and easily (SurveyMonkey.com). The researcher then compiled the participant information sheet (See Appendix A), demographic questions and the seven relevant scales (See Appendix B) into one questionnaire. The participant information sheet contained information regarding what the research was about, what would be required of the participant should they choose to participate, clear and understandable information regarding anonymity and confidentiality as well as details regarding the possibility of winning an i-pod as a result of participation. At the end of the questionnaire, the participants could choose whether they wanted to enter the competition. If the participant was not comfortable with entering the competition they were able to exit the survey without filling out the competition information. Entry into the competition required the participant to enter either an email address, phone number or both.

The *fourth stage* entailed ensuring the online survey's readiness. Once all the elements were in place the survey was launched on IT Web's website on Friday the 10th of July. The participant was able to read a brief story written by an editor at IT Web regarding software piracy and the purpose of the research, and then encouraged to follow the link to SurveyMonkey and quickly and easily take part in the research by anonymously filling out the questionnaire. Short reminders of the survey's presence on the website were posted approximately every two weeks. As mentioned earlier, during this time three different sampling techniques were employed that ran along side the posted link to the survey on IT Web's website with the purpose of obtaining a larger sample size (the link was emailed out to a variety of people and subsequently forwarded on, the survey link was placed on the Wits University

intranet, and a television interview). The survey was open for six weeks and closed on Monday the 24th of August 2009.

The *fifth stage* of the procedure entailed choosing two winners of the i-pod nano's. The researcher made use of the random number generator located on the internet to ensure the fairness of the process. A participant's email address or phone number corresponded to a specific number; the two numbers generated by the random number generator linked to two participants whose contact details were attached to that number. These two participants' were then the subsequent winners of the i-pod nano's. The two participants who won the i-pods were located in Gauteng and KwaZulu-Natal respectively. The two winners were then contacted and the i-pods were delivered to them in a timely manner.

The *sixth and final stage* of the research process involved the results being reported back to the participants who took part in the study in the form of an executive summary. The executive summary was provided to IT Web who placed the summary on their website so that individual's who took part in the survey would be able to view the results.

2.5. Measuring Instruments

Measuring instruments refer to the various mechanisms used to measure each of the variables in the study. Self-report questionnaires were used to gather the data.

Biographical Information and Technology Usage Sheet

Biographical details were collected in order to effectively summarise the sample. The questions asked in the biographical part of the survey were sufficiently general so as to ensure the anonymity of all participants. The data obtained in this section was required for descriptive purposes only. The only question in this section that was used for alternative reasons was whether the participant currently resided in South Africa, as participants who do not live in the country were excluded as the study explored software piracy behaviour in the South African context. The questions in this section

were aimed at collecting information on the participant's gender, age, race, occupation, and employment status, field of expertise, industry sector, South African citizenship and regional location. The technology usage questions collected information on years of computer use, computer use per day and the frequency of use of computer programs (software programming packages, desktop applications, specialist software, and gaming software) and the internet. Before the participant continued with the questionnaire, a definition of software piracy was provided to ensure that the participants answered the questions with this clear definition of piracy in mind (See Appendix B).

Perceived Consequences Scale

Perceived consequences were measured using four items from Limayem et al's (2004) scale. Limayem et al's (2004) scale originally consisted of twelve items where they stated that all their scales' composite reliabilities were greater than 0.70. Limayem et al (2004) also provided support for convergent and discriminant validity. The researcher decided to only include four of the twelve items in Limayem et al's (2004) scale as it was felt that the other items did not add anything substantially different to what it is that perceived consequences relates to theoretically. The researcher decided that the four items chosen for this scale were relevant and adequately measured the important aspects of perceived consequences. An example of items that were not used from Limayem et al's (2004) perceived consequences scale includes:

Overcome challenge
Demonstrate competence
Improve my quality of life

The four items used were reworded for the current research. Limayem et al's (2004) scale items were reworded and added to as the original items were short phrases and therefore within the current research these items were re-phrased to be more comprehensive and to include the 'unauthorised copies of software' phrase. An example of an item that was reworded and added to for the purposes of the current research is:

Limayem et al's (2004) original perceived consequences item

Risk of being penalized

Modified item for the current research

I refrain from making unauthorised copies of software as the risk of being penalized is too high

Two further items were added to the scale by the researcher based on Triandis' (1977) Theory of Interpersonal Behaviour. The reason for this is that perceived consequences refer to the subjective probability that certain consequences will follow on from a particular behaviour and that the outcome generated will either hold a positive or negative value for the individual (Woon & Pee, 2004). Therefore the two items added were associated with existing laws and the probability of getting caught when pirating software. The two items added by the researcher were;

Existing laws do not deter me from making unauthorised copies of software.

I pirate software because the chance of me getting caught is minuscule.

The perceived consequences scale used in this study consisted of six items measured on a 4-point Likert scale (1=Strongly Agree, 2=Agree, 3=Disagree, 4=Strongly Disagree). On this scale the first, second and sixth items were reverse scored. High scores on the perceived consequences scale represent a positive, more favourable outcome belief toward making unauthorised copies of computer software.

<u>Affect, social factors and piracy intention scales</u>

Affect, social factors and piracy intentions were measured using scales developed by Peace et al (2003). A recent study looking at software piracy intentions on both South African and Zambian samples making use of these scales found the Cronbach's alpha for all three scales to be adequate. The South African samples' Cronbach alphas were as follows; attitude scale .80, social norms scale .72 and piracy intentions scale .87 (Matthews, 2008). The attitudes scale has four items, social norms scale three items and the piracy intentions scale three items. For the purpose of this research study, the researcher adapted these three scales in terms of question wording (from using the term 'software piracy' to using 'unauthorised copies of software') and changed from a

5 point Likert scale to a 4 point Likert scale. This change was initiated as a result of the pilot study conducted prior to the current research. The pilot study's response scale was a 5- point Likert scale where 3 was a neutral point, however as a result of the pilot the researcher noticed that many participants chose 'neutral' as a response, therefore all response scales were changed to a 4-point Likert scale with forced choice before this study began. The last question on the social factors scale was reworded, as the researcher thought that changing a specific word would create a better understanding of the question for the participant. The modified item is;

Original item

No one who is important to me thinks it is ok to commit software piracy.

Reworded item

People who are important to me think it is ok to make unauthorised copies of software.

The items on these scales that were reversed scored included the first two questions of the affect scale, the first and third questions of the social factors scale and the first two questions of the piracy intention scale.

On the affect scale, high scores represent favourable positive affect toward making unauthorised copies of software. An example of an item from the affect scale is:

To me, making unauthorised copies of software is:
Highly Unattractive 1 2 3 4 Highly Attractive

On the social factors scale, high scores represent social factors that are conducive to making unauthorised copies of software. An example of an item from the social factors scale is:

Most people who are important to me would look down on me if I made unauthorised copies of software:
Highly Likely 1 2 3 4 Highly Unlikely

On the piracy intentions scale, high scores represent high intentions to make unauthorised copies of software: An example of an item from the piracy intentions scale is:

I would never make unauthorised copies of software:
Strongly Agree 1 2 3 4 Strongly Disagree

Habit Scale

Habit was measured using Limayem et al's (2004) habit scale. The original habit scale consisted of six items and Limayem et al (2004) stated that all their scales' composite reliabilities were greater than 0.70. These items were reworded for the current research predominately from using the term 'pirating software' to using 'unauthorised copies of software'. An example of a reworded item includes:

Limayem et al's (2004) original habit item

I don't even think twice before pirating software

Reworded item for the current research

I do not think twice before making unauthorised copies of software

One of Limayem et al's (2004) habit items was not used in this study as it was repetitive and too similar to what the other items were measuring. As a result of this, the habit scale used in this study consists of five items measured on a 4-point Likert scale (1=Strongly Agree, 2=Agree, 3=Disagree, 4=Strongly Disagree). All items on this scale were reversed scored. High scores on the habit scale represent high habit strength towards making unauthorised copies of software.

Facilitating Conditions Scale

Facilitating conditions were measured using scale items from Limayem et al's (2004) study on software piracy. Limayem et al's (2004) scale originally consisted of five items where they stated that all their scales' composite reliabilities were greater than 0.70. The researcher used *three* of the five items for the purpose of this study. These three items were reworded for the current research as they were initially short phrases

and therefore within the current research these items were re-phrased to be more comprehensive and to include the 'unauthorised copies of software' phrase.

A further *eight* items were added to the scale by the researcher based on Triandis' (1977) Theory of Interpersonal Behaviour. *Four* items were added as facilitating conditions as they form a crucial part in Triandis' TIB as an individual may have the intention to perform a certain act, however may be unable to do so as their environment prevents the act from being performed. The added items focussed on additional objective factors in the environment that may be seen to facilitate or impede the target behaviour based on Triandis' TIB. The other *four* items added primarily focussed on the concept of *need* which was included under the broad term of facilitating conditions. The facilitating conditions scale used in this study consists of eleven items measured on a 4-point Likert scale (1=Strongly Agree, 2=Agree, 3=Disagree, 4=Strongly Disagree). All items of this scale were reversed scored. High scores on the facilitating conditions scale represent a facilitator and low scores on this scale represent an inhibitor. An example of an item for this scale developed by the researcher is:

> I make unauthorised copies of software because software companies do not have adequate measures in place to protect their software.

An example of an item developed by the researcher focussing on the concept of *need* is:

> I make unauthorised copies of software because I cannot afford it and need the software to do my job.

Piracy Behaviour Scale

Piracy behaviour was measured using Garbharran & Thatcher's (in press) behaviour scale based on software piracy. Garbharran & Thatcher's (in press) original behaviour scale consisted of six items. There were no internal consistency reliabilities provided. The current research study included all six items; however they were all adapted, modified and largely reworded. The behaviour scale was measured

on a 4-point Likert scale (1=Never, 2=Seldom, 3=Often, 4=Very Often). The behaviour scale requested the participant to answer this scale only in reference to the last three months. The reason for this is that behaviour refers to the individual engaging in the physical act of making unauthorised copies of computer software in the immediate past. The immediate past refers to behaviour taking place under the individual's self-control (not occurring in the presence of deficient self-regulation as with habit). The "last three months" measure of behaviour was used to ascertain whether the behaviour was taking place presently (or at least in the immediate past) under conscious active decision-making processes. No items in the piracy behaviour scale were reverse scored. High scores on this scale represented a high level of piracy behaviour and subsequently low scores represent a low level of piracy behaviour. An example of an item from the piracy behaviour scale is:

> In the last 3 months:
> *Original item*
> I have allowed people to copy software I purchased.
> *Item reworded for the purpose of this research*
> I have allowed my friends and colleagues to make copies of the software that I have purchased.

The above item was reworded to include 'friends and colleagues' as opposed to 'people' so as to make the question more personal and clear for the participant.

Pilot Study

The researcher conducted a pilot study in order to validate the modified scales, as items were used from Limayem et al's (2004) and Garbharran & Thatcher's (in press) study on software piracy, as certain items were modified and new items added to the scales. Items were also reworded and changed on the affect, social factors and piracy intentions scale that were originally developed by Peace et al (2003). The purpose of the pilot was to ascertain whether the modified and new items fitted into the items already present in the scales of each variable. The pilot study's response scale was a 5- point Likert scale where 3 was a neutral point, however as a result of the pilot the researcher noticed that many participants chose 'neutral' as a response, therefore for

the actual study the response scale was changed to a 4-point Likert scale with forced choice, as there was no 'neutral' response option. The researcher conducted the pilot study over a period of a week. The pilot study consisted of ten people and the researcher administered the questionnaire to individuals who worked in the information technology sector (Predominantly Graphic Designers). The pilot study's sample consisted of six males and four females. In terms of race, the majority of the sample were white and the most common age groups were 18-28 (five people) and 29-38 (four people). All participants were involved in full-time employment and presently living in South Africa.

The pilot study was also conducted to ascertain the average time a participant would take to complete the survey. An accurate estimate would lead to more people being willing to participate. As a result of the pilot, the approximate time to complete the survey was reported as ten minutes.

2.6. Methods of Analysis

Various statistical techniques were employed to analyse the data collected. Before any analyses were run, missing values were dealt with in a systematic manner. If a participant did not answer any of the items on a scale, that particular scale total was omitted. However, if on a particular scale the participant failed to answer one or two items, a mean substitution was carried out which involved imputing the mean of the scale score where the specific item response was missing. In terms of imputation, there was minimal data missing, fewer than twenty two imputations were made from a sample of three hundred and ten. The sample size of the research (310 participants) was considered large enough to conduct all relevant statistical analyses with the aim of answering the research question and seven hypotheses.

Descriptive Statistics

Demographic descriptors and technology usage were calculated for the sample in terms of frequencies, percentages and missing values. These descriptive statistics were employed for the purpose of describing the sample.

Distribution analysis

The distribution of the variables in a study is crucial due to the fact that most statistical tests assume normal distribution (Huck, 2008). The distributional shape of the data was looked at in terms of skewness, kurtosis and a histogram. The measure of skewness should ideally be between -0.5 and +0.5 however it is termed acceptable if it is between -1.0 and+1.0. The measure of kurtosis is acceptable if it is between -1.0 and +1.0. The histogram should ideally be bell-shaped indicating normal distribution (Huck, 2008). The results of the distribution analyses will be presented in the results chapter.

Internal consistency reliabilities

It is imperative to test the internal consistency reliability of the scales used in this research study. The researcher used pre-existing scales that were however, reworded, modified and added items to these scales. Testing for reliability is important as it refers to the consistency across the parts of a measuring instrument (Huck, 2008). A scale is said to have high internal consistency reliability if the items of a scale 'hang together' and measure the same construct (Huck, 2008). The most commonly used internal consistency measure is the Cronbach Alpha coefficient. It is viewed as the most appropriate measure of reliability when making use of Likert scales (Whitley, 2002). No absolute rules exist for internal consistencies, however most agree on a minimum internal consistency coefficient of .70 (Whitley, 2002). Cronbach's alpha coefficients were determined for all seven scales and will be reported in the results section.

Correlation

Correlation refers to the relationship between two variables and the measure of the degree or strength of this relationship is represented by the correlation coefficient (Howell, 1999). Correlation is concerned with whether there is a relationship between two sets of scores and how strong or weak that relationship is, presuming that a relationship does in fact exist (Huck, 2008). Pearson's correlation coefficients were calculated between the following variables:

- Perceived Consequences and software piracy intentions,
- Social factors and software piracy intentions,
- Affect and software piracy intentions,
- Intention and software piracy behaviour,
- Habit and software piracy behaviour

Correlation coefficients (*r*) are represented between -1.00 and +1.00. Correlations can be positive indicating a direct relationship or negative indicating an indirect or inverse relationship between two variables (Huck, 2008). A strong relationship exists when the *r* is high and falls closest to -1.00 or +1.00. If the *r* falls close to 0.00 then a weak relationship between the two variables exists. An *r* falling between the two points would be considered a moderate relationship (Huck, 2008). Pearson's correlation coefficients were used to establish whether there are statically significant linear relationships between the above variables, due to the large sample size and that all variables are at least interval (Huck, 2008).

Moderated multiple linear regression

Moderated multiple linear regression was run in order to ascertain whether facilitating conditions and habit act as moderators in the TIB model. Based on the TIB theory, mediation effects were not tested for and therefore the researcher did not strictly follow Baron and Kenny's (1986) criteria. Baron and Kenny's (1986) criteria for moderation were used to guide the researcher in testing for the possible moderation effects of habit and facilitating conditions, however their criteria were not followed in terms of firstly testing for mediation effects. Three separate moderating multiple regressions were run in order to address the three hypotheses that look at whether habit and facilitating conditions act as moderators in the TIB.

Moderators can be defined as third variables that affect the direction and/or strength of the relationship between the independent (predictor) and the dependent (criterion) variable (Baron & Kenny, 1986). In this case, the effect of facilitating conditions and habit would affect the direction and/or strength of the relationship between the independent and dependent variables. "Specifically within a correlation analysis

framework a moderator is a third variable that affects the zero-order correlation between two other variables" (Baron & Kenny, 1986: 1174). A moderator effect within this framework is said to occur where the direction of the correlation changes. According to Baron and Kenny (1986) a moderator hypothesis is supported if the interaction (Path C) is found to be significant. They state that there may possibly be significant main effects for the predictor and moderator variables (Path A and B) but these are not directly relevant conceptually to testing the moderator hypothesis (Baron & Kenny, 1986). The moderation hypotheses tested are represented in Figure 2.

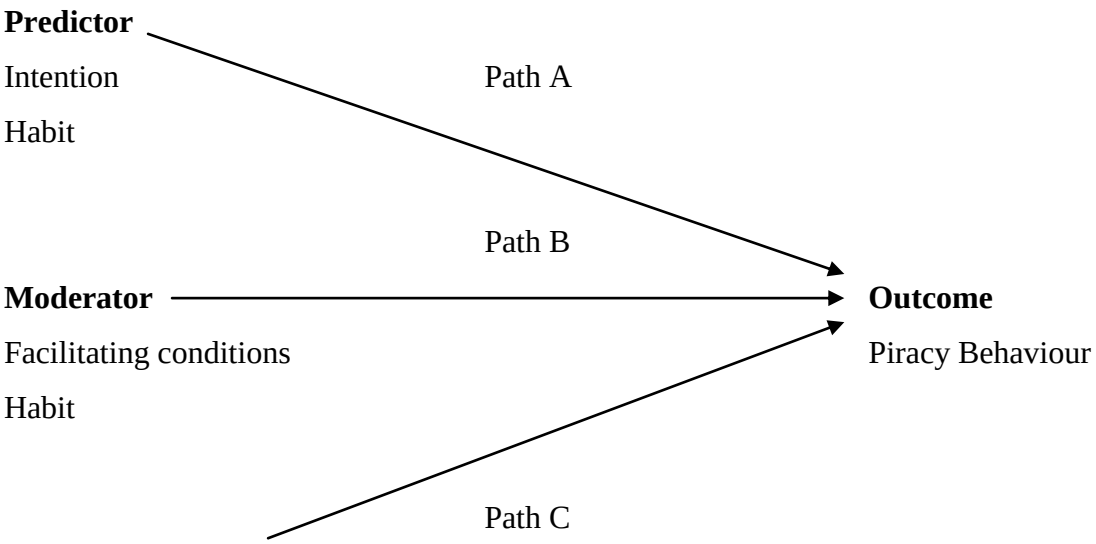

Figure 2: Moderator Model

2.7. Ethical Considerations

The aim of this research was to ascertain whether a modified version of Triandis' (1977) Theory of Interpersonal Behaviour as a theoretical framework would provide any insight into what specific facilitating conditions either enable or impede individuals from making unauthorised copies of computer software. Due to the sensitive nature of this research study there were a variety of ethical considerations

that needed to be addressed. The proposed research was submitted to the Psychology ethics committee as well as the Ethics Committee of Human Subjects of the Faculty of Humanities, through which an ethical clearance certificate was granted. Permission was then granted from IT Web to access a subset of the sample via IT Web's distribution list.

Participation in this research study was on a voluntary basis, in order to protect the participants' autonomy by giving them the choice of whether or not to participate in the research. This included the freedom to decide about participation in the research free from any coercion or excessive inducement and the freedom to withdraw from the research without penalty (Whitley, 2002). Participants were informed of the exact nature of the study, as well as potential risks and benefits of participation (Whitley, 2002). Completion of the questionnaire was regarded as consent to participate in the study.

The participants were informed that no harm would come to them as a result of participation or refusal to participate in the study. The participants were informed of the advantages of participating in the research in the form of a chance to win one of two i-pod nano's (sponsored by the Business Software Alliance, BSA) via a random draw. They were also informed that there were no disadvantages for choosing not to participate in the research. The participants were also given access to the researchers' and the researchers' supervisor email addresses should they have had any queries. The research did not deceive the participants in any way. A participant information sheet (See Appendix A) was made available to each participant introducing them to the researcher, stipulating the purpose of the research, what it entails and involves and what would be required of the participants if they decided to participate in the research. This information was presented in a manner that was completely understandable to each and every participant. Due to the sensitive nature of this study, confidentiality of data and participants was assured as only group data were reported in the research report. This was assured through no participants' names, IP addresses or email addresses being recorded. Entering the competition at the end of survey required participants to provide their email address, contact number or both. However, these personal details were kept in a separate file and were not at any time linked to

the participants' survey data. Therefore, at no time was it possible to make any link between participants' contact details and their individual survey responses.

Due to the fact that this research study was concerned with software piracy behaviour, it was imperative to guarantee the participants' anonymity so that they could not in any way be traced or pin-pointed as a result of participation. SurveyMonkey allowed the researcher to collect anonymous survey responses. This was done through the Web Link collector service available from SurveyMonkey (SurveyMonkey.com). The Web Link collector does not track email addresses or IP addresses on a response. Therefore, the survey administrator (researcher) was unable to identify the respondent. Participants' answers to the questions were only looked at in relation to other participants, therefore only group data were reported in the final research report. Responses were therefore anonymous and confidential. The privacy policy of SurveyMonkey states that they will not use any data collected for their own purposes. Therefore, the data collected by the researcher was kept private and confidential.

Participants were informed that the results of the research were to be made available in the form of an executive summary, where only group data were reported. The executive summary was emailed to IT Web and then placed on their website so that the individuals who took part in the study would be able to view the results in their own capacity. Participants were also informed that the results would be reported in the researchers' research report and that there may possibly be publications.

Chapter 3: Results

The following chapter presents the results from the statistical analyses run on the data. The results will be presented in terms of four main sections. The first section presents the results of the internal consistency reliabilities calculated for all seven scales. The second section addresses the distribution analyses run on all scales', and provides information on the various transformations run on the scales that were found to not be normally distributed. The third section presents the results of the numerous correlations run on the data and multiple backward stepwise linear regression. This chapter ends with the results of the moderated multiple linear regression, to ascertain whether facilitating conditions and habit act as moderators in the TIB model. The eight hypotheses will be addressed under the correlations/multiple backward stepwise linear regression and moderated multiple linear regression result sections.

3.1. Internal Consistency Reliabilities

Cronbach alphas were calculated for all seven scales in order to ascertain their internal consistency as it is the most appropriate measure of reliability when making use of Likert scales (Whitley, 2002). The results of the internal consistency reliabilities are presented in Table 3. This is presented in terms of the number of items in each scale and their subsequent Cronbach alpha coefficient. As is evident in Table 3, all the scales Cronbach alpha coefficients are above .70, which is typically considered a good internal consistency. Even though all the scales items were modified and/or reworded for the purposes of this research study, the alpha levels of the majority of the scales were found to be .80 or above, indicating that the scale items 'hang together' well and measure the same construct. The measure of perceived consequences consisted of six items and had the lowest alpha level .76 which is still considered adequate, in comparison to the other six scales. Social factors, affect, habit, facilitating conditions and behaviour had alpha levels around .80 and above. The intention scale consisting of three items was found to have the highest alpha level of .92.

Table 3		
Cronbach's Alpha Coefficients		
Measure	**Number of Items**	**Cronbach Alpha**
Perceived Consequences	6	.76
Social Factors	3	.85
Affect	4	.87
Intention	3	.92
Habit	5	.87
Facilitating Conditions	11	.80
Behaviour	6	.81

3.2. Distribution Analysis

The distribution of the variables is crucial due to the fact that the statistical tests used in this study assume normal distribution of variables. The distributional shape of the data was looked at in terms of skewness, kurtosis and a histogram. The distributional shapes of the seven variables are reported in Table 4, in terms of the mean, standard deviation, skewness and kurtosis.

As seen in Table 4, the distribution of both habit and behaviour are highly (positively) skewed to the right, which means that pirating software is not a habit for the majority of the sample and that most people who took part in the study do not engage in software piracy behaviour. Due to the fact that the statistical tests performed on the data assume normal distribution, the researcher performed various transformations on both the habit and behaviour scales. These transformations were found to make no difference in terms of making the data more normally distributed. Three transformations were performed on the data; a log transformation on behaviour, cube root and arcsinsrqrt transformation on both habit and behaviour. The researcher is aware that it is a limitation that both these scales are highly positively skewed and not

normally distributed, however numerous transformations were attempted and were found to be unsuccessful.

Table 4

Distribution Analysis

Measure	N	Mean	SD	Skewness	Kurtosis
Perceived Consequences	310	2.59	.62	-.15	-.23
Social Factors	310	2.56	.63	-.25	-.12
Affect	310	2.13	.63	.04	.32
Intention	304	2.63	.80	-.35	-.26
Habit	302	1.78	.62	.63	.36
Facilitating Conditions	291	2.49	.53	-.24	.11
Behaviour	291	1.52	.50	1.18	1.69

3.3. Correlations and Multiple Backward Stepwise Linear Regression

Correlations were run on perceived consequences, social factors and affect to ascertain their individual relationship to piracy intention in order to determine whether there is a relationship between the measured variables and how strong or weak the relationship is, presuming that a relationship does in fact exist. The results of the correlations are designed to address the first three hypotheses.

> Hypothesis 1: There is a positive relationship between individuals' perceived positive consequences toward software piracy and their intentions to pirate software.
> Hypothesis 2: There is a positive relationship between positive social factors and intentions to pirate software.
> Hypothesis 3: There is a positive relationship between an individuals' positive affect toward software piracy and their intentions to pirate software.

According to the results presented in Table 5, there is sufficient evidence to suggest that perceived consequences (.71), social factors (.61) and affect (.77) are strongly correlated to piracy intention. The calculated Pearson's correlation coefficient (*r*) of each variable is indicative of a strong relationship with software piracy intention. The results show that these three variables mentioned above are positively correlated to piracy intention indicating a direct relationship between all the measured variables.

Table 5

Pearson's Correlation Coefficients between Selected Variables and Piracy Intention

Variable	**N**	**Pearson's Correlation Coefficient (*r*)**	**P-Value**
Perceived Consequences	310	.71	<.0001***
Social Factors	310	.61	<.0001***
Affect	310	.77	<.0001***

p<.05* p<.001** p<.0001***

Multiple backward stepwise linear regression analysis was calculated (Table 6) to establish to what degree perceived consequences, social factors and affect were able to predict software piracy intention. To ascertain whether or not the three predictor variables were highly correlated among themselves, collinearity diagnostics were also examined. The condition index indicated that multicollinearity was not a problem among these variables. The regression Equation was found to be significant as: $F_{3, 300} = 205, 89$; p<.0001***

The squared correlation coefficient (R^2) was .67. This indicates that the three predictor variables (perceived consequences, social factors and affect) explain 67 percent of the variance in the total software piracy intention score.

Table 6

Multiple Backward Stepwise Linear Regression Analysis of the Independent Variables on Intention

Variable	Parameter Estimate	Partial R^2	t-value	p-value
Perceived Consequences	.41	.06	7.04	<.0001***
Social Factors	.11	.00	2.11	.03*
Affect	.63	.59	10.44	<.0001***

p<.05* p<.001** p<.0001***

Correlations were also run on piracy intention and habit in order to ascertain their relationship to software piracy behaviour. The correlation results presented in Table 7 are used to address the following two hypotheses.

> Hypothesis 4: There is a positive relationship between the intention to pirate software and piracy behaviour.
> Hypothesis 5: There is a positive relationship between habit and software piracy behaviour.

According to the results, there is sufficient evidence to suggest that both piracy intention (.62) and habit (.58) are strongly correlated to software piracy behaviour. The calculated Pearson's correlation coefficient (*r*) of each of these two variables is indicative of a strong relationship with software piracy behaviour. The results indicate that intention and habit are positively correlated to piracy behaviour indicating a direct relationship between these measured variables.

Table 7

Pearson's Correlation Coefficients between Selected Variables and Piracy Behaviour

Variable	N	Pearson's Correlation Coefficient (*r*)	P-Value
Intention	304	.62	<.0001***
Habit	302	.58	<.0001***

p<.05* p<.001** p<.0001***

3.4. Moderated Multiple Linear Regression

Three separate moderated multiple regressions were run in order to ascertain whether facilitating conditions and habit act as moderators in the TIB model. The results of the moderating multiple regression analyses presented in the following tables are used to address the following three hypotheses.

> Hypothesis 6: Facilitating conditions moderate the relationship between the intention to pirate and piracy behaviour.
> Hypothesis 7: Habit moderates the relationship between intentions and behaviour.
> Hypothesis 8: Facilitating conditions moderate the relationship between habit and piracy behaviour.

The regression results presented in Table 8 are used to address whether facilitating conditions moderate the relationship between piracy intention and piracy behaviour. As seen in Model 1, both intention and facilitating conditions are significant. However, in Model 2 the interaction (the product of intention and facilitating conditions) is significant whilst intention and facilitating conditions are seen to then become non-significant in the presence of the interaction term. As evident from the results, facilitating conditions therefore act as moderator in the relationship between intentions and behaviour, as Baron and Kenny's (1986) moderation criteria state that the moderator hypothesis is supported if the interaction term is significant. To ensure

multicollinearity was not present, collinearity diagnostics were used to ensure that the moderator (facilitating conditions) was uncorrelated in terms of multicollinearity with both the predictor and criterion variables, in order to provide a clearly interpretable interaction term (facilitating conditions as a variable was correlated with behaviour). As a result, multicollinearity was found to not be a problem (Baron & Kenny, 1986).

Table 8

Moderated Multiple Linear Regression

Facilitating Conditions: Intention and Behaviour

	Model 1	Model 2
	Main Effects	*Interaction*
R^2	39.40	40.90
Intention (IN)	0.34***	0.03
Facilitating Conditions (FA)	0.11*	-0.18
IN*FA		0.13**

p<.05* p<.001** p<.0001***

The regression results presented in Table 9 are used to address whether habit moderates the relationship between intention and behaviour. As seen in Model 1, both intention and habit are significant. In Model 2 the interaction (the product of intention and habit) is significant. In model 2, intention becomes non-significant whilst habit is still significant but at a .05 level of significance in the presence of the interaction term. As evident from the results, habit acts as a moderator in the relationship between intentions and behaviour, as Baron and Kenny's (1986) moderation criteria state that the moderator hypothesis is supported if the interaction term is significant. To ensure multicollinearity was not present, collinearity diagnostics were used to ensure that the moderator (habit) was uncorrelated with both the predictor and criterion variables, in order to provide a clearly interpretable interaction term. As a result, multicollinearity was found to not be a problem (Baron & Kenny, 1986).

Table 9		
Moderated Multiple Linear Regression		
Habit: Intention and Behaviour		
	Model 1	Model 2
	Main Effects	*Interaction*
R^2	45.70	49.70
Intention (IN)	0.26***	-0.03
Habit (HA)	0.27***	-0.24*
IN*HA		0.18***
p<.05* p<.001** p<.0001***		

The regression results presented in Table 10 are used to address whether facilitating conditions moderate the relationship between habit and piracy behaviour. As seen in Model 1, both habit and facilitating conditions are significant. However, in Model 2 the interaction (the product of habit and facilitating conditions) is significant whilst habit and facilitating conditions are seen to then become non-significant in the presence of the interaction term. As evident from the results, facilitating conditions acts as a moderator in the relationship between habit and behaviour, as Baron and Kenny's (1986) moderation criteria state that the moderator hypothesis is supported if the interaction term is significant. To ensure multicollinearity was not present, collinearity diagnostics were used to ensure that the moderator (facilitating conditions) was uncorrelated with both the predictor and criterion variables, in order to provide a clearly interpretable interaction term. As a result, multicollinearity was found to not be a problem (Baron & Kenny, 1986).

Table 10		
Moderated Multiple Linear Regression		
Facilitating Conditions: Habit and Behaviour		
	Model 1	Model 2
	Main Effects	*Interaction*
R^2	39.80	41.80
Habit (HA)	0.39***	-0.13
Facilitating Conditions (FA)	0.25***	-0.07
HA*FA		0.19**
p<.05* p<.001** p<.0001***		

3.4.1. Interpretation

The following tables are used to provide a comprehensive interpretation of the significant interaction terms mentioned above and therefore to show how they change at the 10th percentile, lower quartile, median, upper quartile and at the 90th percentile. Table 11 will examine the change with regards to intention and facilitating conditions. Table 12 will examine the change with regards to intention and habit and Table 13 will examine the change with regards to habit and facilitating conditions. All the tables below will explore these variables and their subsequent impact on the probability of software piracy behaviour.

Table 11: Intention and Facilitating Conditions

Intention	10th Percentile	Lower Quartile	Median	Upper Quartile	90th Percentile	
Facilitating Conditions						
10th Percentile	1.05	1.23	1.40	1.49	1.67	0.61
Lower Quartile	1.05	1.25	1.46	1.56	1.77	0.72
Median	1.04	1.27	1.50	1.62	1.85	0.80
Upper Quartile	1.04	1.31	1.57	1.71	1.98	0.94
90th Percentile	1.04	1.32	1.60	1.74	2.03	0.99
	-0.02	0.09	0.20	0.25	0.36	

As shown in Table 11, at the 10th percentile, intention is -0.02 and facilitating conditions is 0.61. These low values imply that when intention is low facilitating conditions may also then be low. However, as intention increases across the range from -0.02 to 0.36 the influence of facilitating conditions also seems to increase from 0.61 to 0.99 which may possibly make a difference with regards to the execution of a particular behaviour. The value range of intention and facilitating conditions shown in Table 11 may imply that when there is high intention, facilitating conditions may possibly make a difference to behaviour, however when there is low intention, facilitating conditions may not make a substantial difference to behaviour. This may possibly mean that a low level of intention could lead to the irrelevance of facilitating conditions in its implied perceived relationship to the target behaviour.

Table 12: Intention and Habit

Intention	10th Percentile	Lower Quartile	Median	Upper Quartile	90th Percentile	
Habit						
10th Percentile	1.10	1.20	1.30	1.35	1.45	0.35
Lower Quartile	1.10	1.22	1.35	1.41	1.53	0.43
Median	1.10	1.30	1.49	1.59	1.79	0.69
Upper Quartile	1.10	1.34	1.59	1.71	1.96	0.86
90th Percentile	1.10	1.39	1.68	1.83	2.12	1.03
	-0.00	0.19	0.38	0.48	0.68	

As shown in Table 12, at the 10th percentile, intention is -0.00 and habit is 0.35 which is also low. As intention increases from zero to 0.68 across the range, the influence of habit may also increase from 0.35 to 1.03 which may possibly make a difference to the execution of the target behaviour. The implication of this value increase across the range for both variables implies that as habit increases and becomes stronger so may the intention to engage in that particular behaviour. At the 90th percentile, habit is at its highest of 1.03 and so is intention at 0.68. This may imply that when there is a high level of intention, the weight of habit may seem to increase and therefore may possibly make a difference with regards to the behaviour in question. However when there is a low level of intention, the weight of habit may seem to make little difference to the execution of the target behaviour.

Table 13: Habit and Facilitating Conditions

Habit	10th Percentile	Lower Quartile	Median	Upper Quartile	90th Percentile	
Facilitating Conditions						
10th Percentile	1.13	1.18	1.32	1.41	1.50	0.37
Lower Quartile	1.18	1.24	1.42	1.54	1.66	0.48
Median	1.21	1.28	1.50	1.64	1.78	0.57
Upper Quartile	1.27	1.36	1.63	1.81	1.98	0.71
90th Percentile	1.29	1.39	1.68	1.87	2.07	0.77
	0.16	0.21	0.36	0.47	0.57	

As shown in Table 13, at the 10th percentile, habit is 0.16 and facilitating conditions is 0.37 which is rather low. This may suggest that when the level of habit is low facilitating conditions may also be low. However, as habit increases across the range from 0.16 to 0.57 the influence of facilitating conditions may seem to also increase from 0.37 to 0.77 which may possibly make a difference with regards to behaviour. This implies that when there is a high level of habit, the presence/absence of facilitating conditions may possibly make a difference as to whether the target behaviour may be executed. The value increase of both variables across the range may also suggest that when there is a low level of habit, facilitating conditions may make little difference to behaviour. The interpretation of these tables implies that both habit and facilitating conditions may possibly make a difference as they may have the power to influence and compound the relationship between intention and behaviour as well as the relationship between habit and behaviour. It may possibly imply that reducing the level of the one variable may possibly lead to the reduction of influence and importance of the other variables in the model.

3.5. Selected Variables in Predicting Piracy Behaviour

Stepwise regression analysis was calculated (Table 14) in order to establish to what degree perceived consequences, social factors, affect, intention, habit and facilitating conditions are able to predict piracy behaviour. This analysis was employed to address the study's research question.

> Research Question: Will a modified version of Triandis' Theory of Interpersonal Behaviour model, give a good prediction of software piracy behaviour?

The results of the stepwise regression analysis indicated that intention, habit, social factors and perceived consequences are the best predictors of behaviour within the model. Therefore, these four variables accounted for the most amount of variance within the piracy behaviour score. Intention explained the most variance in behaviour .39 followed by habit which increased the r-squared to .46 followed by social factors .48 and then perceived consequences .49 as indicated in Table 14. As a result, these four variables in the model explain 49 percent of the variance in behaviour.

Facilitating conditions and affect did not meet the significance level to make entry into the model. The entire TIB model was significant, the four variables entered into the model were found to have a direct relationship to behaviour. Facilitating conditions did not have an effect as it acts as a moderator within the model. Affect does not have a direct relationship to behaviour but was found to be significantly related to intention. Therefore, affect explains to a large degree the variance in intention however intention does not automatically lead to behaviour execution. As the thought of a particular behaviour may elicit a positive emotion (affect) however that does not then automatically lead to an individual engaging in that behaviour. This may be indicative of a mediating role played by intention between affect and behaviour. As a result, facilitating conditions and affect did not add any predictive value to the variance in the piracy behaviour score.

Table 14

Stepwise Regression Analysis of the Independent Variables on Piracy Behaviour

Variable	Parameter Estimate	Partial R^2	t-value	p-value
Intention	.13	.40	2.59	.01*
Habit	.22	.07	4.77	<.0001***
Social Factors	.11	.02	2.42	.02*
Perceived Consequences	.13	.01	2.47	.01*
Affect	.03	<.01	0.54	.61
Facilitating Conditions	.04	<.01	0.80	.42

p<.05* p<.001** p<.0001***

Chapter 4: Discussion

The following chapter examines the results of this research study in relation to the findings within the current literature. The results of this study will be discussed in relation to the eight hypotheses and research question. The first section will discuss the first three predictor variables with regards to their relationship to piracy intention. The second section will address the next two hypotheses, which are concerned with the relationship between selected variables and piracy behaviour. The last three hypotheses will then be addressed with regards to facilitating conditions and habit acting as moderators within the TIB model. The next section will address the research question regarding whether the TIB model is a good predictor of software piracy behaviour. The last three sections are concerned with the practical implications of the study, followed by the study's limitations and finally a discussion on the directions for further research within this area of psychological enquiry.

4.1. Predictor Variables on Piracy Intention

The first three hypotheses are focussed on addressing the second level of the TIB model and their relation to piracy intention (See Figure 1). The three predictor variables (perceived consequences, social factors and affect) at this level of the model were found to be related to and predict software piracy intention. The results imply that *perceived consequences* (.71) comprised of belief about outcomes and evaluation of outcomes in relation to making unauthorised copies of software is significantly and positively related to individuals' *intentions* to pirate computer software (H1). Therefore, perceived positive consequences may lead to higher levels of intention which is consistent with Lau's (2006) study. Peace et al (2003) who made use of the TPB found attitudes (measuring the aspects of Triandis' perceived consequences construct) to be related and the strongest predictor of intentions (Peace et al, 2003 as cited in Hinduja, 2007). These findings are also consistent with Gupta et al's (2004) conclusion that if people perceive pirating software in an unfavourable manner then they are unlikely to pirate software. In current research, people would refrain from pirating if the perceive the consequences to be unfavourable or negative. Contrary to the findings of the current research, Cronan et al (2008) found attitudes not to be the best predictor of intentions.

The finding of the current study supports Triandis' (1977) theory that the perception of consequences attached to a particular behaviour and whether these are valued as positive or negative will influence an individuals' intention. Therefore, people who perceive a certain consequence to follow a particular behaviour and attach a positive value to this consequence are more likely to have a high level of intention towards the target behaviour. However, when the perceived consequence is of a negative value to the individual the intention to engage in the behaviour will be lower. This finding is consistent and at the same time inconsistent with Limayem et al's (2004) study on software piracy. As a positive relationship was found between perceived consequences and intentions however, it was found to not have a substantial impact. Limayem et al (2004) do not provide the reader with a detailed explanation of why they did not find a substantial impact or what they actually mean by this term. A possible reason for this finding is that they found six of the twelve perceived consequences items used in their study to not contribute significantly to the formation of this respective construct (Limayem et al, 2004). In the current research, the researcher decided to exclude these six items in the perceived consequences scale as it was felt that the other items did not add anything substantially different to what it is that perceived consequences relates to theoretically. This may possibly be one of the reasons for the differing results found between perceived consequences and intention among the two studies.

The results also showed that *social factors* (.61) comprised of norms, roles and self-concept was significantly and positively related to individuals' *intentions* to pirate computer software (H2). The social factors questions were phrased as "people who are important to me"; this would probably primarily include family and friends of the participant. Therefore, these people viewed as most important to the respondent could then possibly have a substantial impact on an individual's intentions to pirate software. When a particular behaviour such as pirating software is under surveillance, social factors seem to play a bigger role meaning that if people closest to the individual are aware of the behaviour in question and subsequently disapprove of it, the individual may be more likely to refrain from engaging in the behaviour (Triandis, 1977).

This is consistent with Limayem et al's (2004) findings that social factors significantly influence intentions to make unauthorised copies of computer software. Hsu and Shiue (2008) found social norms to strongly and positively influence an individual's willingness to pay for software products. Numerous studies have found that the more supportive the social environment is to pirating software the greater the intention to engage in this behaviour (Lau, 2006; Tang & Farn, 2005; Peace et al, 2003; Al-Jabri & Abdul-Gader, 1997). Contrary to the above results regarding the influence of social factors on intention, Liao et al (2009) making use of the TPB found subjective norms to not be a significant predictor of piracy intention. This non-significant relationship was also supported by a study conducted by Cronan and Al-Rafee (2008). The results of this study may be different from the above non-significant relation of social factors to intention as a result of the differing samples, study design or theoretical framework in terms of the TPB in comparison to using the TIB.

Contrary to Limayem et al's (2004) study on software piracy, the current findings imply that an individuals' *affect* (.77) (emotion) towards making unauthorized copies of software is significantly and positively related to individuals' *intentions* to pirate computer software (H3). This finding is consistent with Al-Jabri and Abdul-Gader (1997) and Loch and Conger (1996) who found affect to significantly influence software piracy intention. When the emotion elicited at the thought of engaging in a particular behaviour is positive, the individual may be more prone to engage in the target behaviour than when the emotion elicited is of a negative nature (Triandis, 1977).

According to Triandis (1977) perceived consequences are activated when an individual focuses on a goal; however, the behaviour may not take place if the social factors and affect toward that behaviour are larger or have a greater impact on the individual than the perceived consequences. In this case, the results imply that affect .77 has the strongest correlation/relationship to intention followed by perceived consequences .71 and social factors .61. This ordering of the variables was also supported by the multiple linear regression. The results show that perceived consequences, social factors and affect are directly and positively related to intention. It is evident that all three variables are strongly correlated to intention and that these

variables are all individually related to software piracy intention. The findings from the regression analyses run on the data imply that perceived consequences, social factors and affect explain 67 percent of the variance in the total software piracy intention score. However, these variables are unable to explain the unaccounted for 33 percent of the piracy intention score.

4.2. Selected Variables and Piracy Behaviour

The following two hypotheses are focussed on addressing the third level of the TIB model in their relation to piracy behaviour (See Figure 1). The third level of the model states that intentions regarding the behaviour, prior experience and situational conditions predict whether or not the person will perform the specific behaviour in question namely that of software piracy (Milhausen, Reece & Perera, 2006). Due to the fact that this research study is looking at moderating effects of facilitating conditions on the intention–behaviour relationship, only intention and habit are examined at this point in relation to behaviour.

The results imply that both intention and habit at this level of the model may in fact be related to and possibly contribute to providing a good prediction of software piracy behaviour. The results show that *intention* (.62) is significantly and positively related to *piracy behaviour* (H4). This reported significant and positive relation of intention to behaviour was measured in isolation of facilitating conditions and habit. However, when taking facilitating conditions and habit into account as moderators, it becomes evident that intention will not always lead to the execution of the target behaviour of pirating software. Therefore, even though there is a significant strong correlation between the two, a high intention will not always lead to piracy behaviour. This is evident in the results as behaviour was found to be highly skewed indicating a low level of piracy behaviour in the South African sample when the correlation between piracy intention and behaviour is .62 indicative of a rather high level of intention. In Matthews' (2008) study on software piracy her findings suggested that the intention to pirate software in South Africa were higher than the Zambian samples intention, however South Africa has one of the lowest software piracy rates (35%) and is subsequently ranked in the lowest regions in comparison to the rest of the world whereas Zambia's piracy rate is 81% (BSA, 2009). This is consistent with Limayem

et al (2004) and Woon and Pee's (2004) findings that intentions did not always lead to the actual act of pirating software. Therefore, the intention–behaviour relationship is influenced by other variables within the TIB model.

The results also suggest that *habit* (.58) is significantly and positively related to *piracy behaviour* (H5). This implies that the level of piracy behaviour is dependent on the level of habit. Habits determine how frequent the behaviour has been carried out by the individuals in the past as a result of deficient self-regulation (behaviour that is not under the individual's self-control) and therefore when the level of habit is high, the individual is more prone to engage in the target behaviour. This is consistent with Limayem et al's (2004) findings that piracy behaviour may vary depending on how long an individual has been pirating software.

4.3. Moderating Influence of Facilitating Conditions and Habit

The last three hypotheses that this research study addressed were concerned with the moderating effects of facilitating conditions and habit in the third level of the TIB model (See Figure 1). The statistical analyses run on both facilitating conditions and habit suggests that these two variables moderate the intention–behaviour relationship and that facilitating conditions moderates the habit–behaviour relationship. As a result, the presence of these two third variables seems to affect the relevant relationships, in terms of direction and strength.

The results suggest that *facilitating conditions* may moderate the relationship between the *intention* to pirate and piracy *behaviour* (H6). The suggested moderation effect of this third variable implies that the hypothesised casual relation between intention and behaviour may in fact change as a function of facilitating conditions. In the TIB model, intentions may lead to behaviour however; the presence of facilitating conditions has the ability to change this relationship. If an individual has a high level of intention to make unauthorised copies of software facilitating conditions were then found to play an important role and possibly make a difference to whether or not the individual will be able to execute the target behaviour. The facilitating conditions that were focussed on in this research study that could possibly enable individual's to copy software easily included; inappropriate measures in place to prevent software piracy,

insufficient software protection, lack of software piracy awareness and educational campaigns, access to all resources needed, software companies did not protect their software packages, belief that software is overpriced and therefore people pirate to save money, a perceived need to have a certain software package, and employment institutions condoning software piracy. These conditions seem to play a role in whether individuals with the intention to pirate may in fact be able to execute the intended behaviour. A person may intend to pirate software and the objective external environmental factors may facilitate the execution of this behaviour. However, if facilitating conditions are absent, meaning that external factors hinder the performance of behaviour, it is then less likely that the behaviour will in fact take place.

What has become apparent from the results is that software piracy behaviour is not actually a huge problem within this specific sample. Based on Matthews' (2008) piracy study, South Africa does seem to have a high intention to pirate software. Yet, the results imply that the majority of the sample is not currently engaging in software piracy, regardless of their individual level of intention towards this behaviour. This low level of piracy behaviour evident from the high skewedness of behaviour and the fact that South Africa is ranked as one of the lowest piracy regions in the world (BSA, 2009), suggests that when intentions are high people actually refrain from pirating software because the facilitating conditions are not conducive to the execution of software piracy behaviour within the South African context.

Triandis' (1977) theory stated that facilitating conditions affect the execution of behaviour. One may have the intention to perform a particular behaviour, but if the environment does not support or facilitate the execution of the behaviour, it will probably not be executed (Osbourne & Clarke, 2006). If an individual has low intention to engage in pirating software, facilitating conditions seem to not play a role and subsequently not make much of a difference to the execution of behaviour. This is rather straight forward in the sense that the environment does not need to play a role in facilitating the target behaviour when a person has little to no intention to execute the behaviour in question. Based on the analyses, the findings suggest that intentions may in fact moderate the relationship between facilitating conditions and behaviour.

Reducing the impact of one variable leads to the other variables becoming less important. Reducing the level of intention to pirate computer software may lead to facilitating conditions becoming less important and therefore a subsequent reduction in piracy behaviour. Overall, the findings are consistent with Triandis' (1977) theory where at any level of intention, the absence or presence of facilitating conditions may have an influence on whether or not the behaviour will be performed. Therefore, if the situation does not allow the individual to carry out the behaviour, intention seems to have limited relevance (Gagnon, Sanchez & Pons, 2006).

Therefore, what the results are saying is that facilitating conditions play an important role in determining the execution of a particular behaviour. If an individual perceives the factors in the environment as facilitating the act of software piracy and the intention to pirate is high, the probability that the behaviour will be executed is higher. However, an individual may have a high intention to pirate a certain software program but if the external factors in the environment are perceived to prevent or impede this desired behaviour from being carried out, the probability of software piracy taking place is almost zero. This is consistent with Limayem et al's (2004) study on software piracy. Their findings suggest that facilitating conditions significantly affect actual software piracy behaviour. Limayem et al (2004) found that a person who has formed an intention to pirate may not be able to do so as the facilitating conditions hinder or prevent the desired behaviour. Woon and Pee's (2004) study making use of Triandis TIB found that facilitating conditions are negatively related to the behaviour in question (internet abuse behaviour). However, the researchers in this study tested the direct relationship of facilitating conditions toward behaviour; moderating effects were not tested for.

The results from the second moderating hypothesis imply that *habit* moderates the relationship between *intentions* and *behaviour* (H7). The moderation effect of this third variable implies that the casual relation between intention and behaviour may change as a function of habit. The results show that habit may change the relationship between intention and behaviour in terms of strength and direction. The weight of habit seems to increase as a result of high levels of intention. Over time this may lead to an increase in the strength of habit resulting in individuals being more prone to engage in piracy behaviour characterised by deficient self-regulation (behaviour that

is not under the individual's control). When there is a high level of intention, the weight of habit seems to increase and subsequently makes a noticeable difference with regards to the behaviour in question. However, when there is a low level of intention, the weight of habit seems to make little difference to behaviour. Based on Triandis' (1977) theory, the weight of habit will be larger when the behaviour is more deliberate. When intention to engage in a particular behaviour is relatively stable across time, the behaviour seems to occur over and over leading to an increase in the weight of habit over intention.

Triandis' (1977) TIB states that when behaviour is new and unlearned, intention is solely responsible for the behaviour, whilst when the behaviour is old and over-learned and has been performed numerous times, the behaviour is then said to be under the control of habit. Therefore, the findings of this study imply that when there is no intention to engage in software piracy the weight of habit is low. The reason for this given by Triandis is that with no intention the behaviour seems to not become old and over-learned and therefore the behaviour may not become a habit as a continuous intention toward the target behaviour has not been formulated. However, the findings suggest that habit influences the relationship when intention is at a high level. When the intention to engage in a particular behaviour is high and the behaviour is executed frequently, the weight carried by habit increases and according to the theory the behaviour is then said to be under the control of habit. Therefore, as this takes place, habit seems to become a better predictor of behaviour over intention and as a result changes the direction and strength of the relationship.

The results were found to be somewhat consistent with Limayem et al (2004) as they found that habit had strong effects on behaviour that could override the effects of intention. A study conducted by Cronan and Al-Rafee (2008) looking at factors influencing piracy intention, found past piracy behaviour (habit) to significantly increase an individual's intention to pirate software in the future. This is consistent with the findings of this study, in the sense that past behaviour influences intention initially, however over time when the behaviour becomes old and over-learned and occurs frequently the behaviour begins to become under the full control of habit and therefore its influence on the intention to behaviour relationship falls away and behaviour is said to be under the control of habit (Triandis, 1977).

The results of the third moderating hypothesis suggest that *facilitating conditions* moderated the relationship between *habit* and piracy *behaviour* (H8). The moderation effect of this third variable implies that the relation between habit and behaviour may in fact change as a function of facilitating conditions. The results show that facilitating conditions seem to change the relationship between habit and behaviour in terms of strength and direction. As a result, as the weight and strength of habit increases facilitating conditions seem to make a difference to whether or not the target behaviour will be executed. However, when habit has a low weighting it is then that facilitating conditions seem to make little difference to behaviour. The influence of facilitating conditions on the habit–behaviour relationship is similar to its impact with regards to the intention–behaviour relationship.

Habit refers to an individual who makes copies of software that he/she may not currently require; however engages in the behaviour as a result of deficient self-regulation which means that the behaviour is occurring without self-instruction (LaRose et al., 2005). As a result of this, the individual for which pirating is a habit does not engage in any form of conscious processing, therefore objective factors in the environment play a role in either facilitating or hindering the behaviour from being performed. The results suggest that when pirating software is not a habit (low habit weight) for the individual, facilitating conditions seem to not make a difference to behaviour. Therefore, the environment does not need to play a role in either facilitating or impeding the target behaviour when an individual's behaviour is not habitual, therefore reducing the impact of one variable (habit) leads to the other variables becoming less important.

The findings also suggest that facilitating conditions could make it more likely that the behaviour becomes habitual. This is possible as the external objective factors in the environment could consistently facilitate behaviour execution enabling the behaviour to be performed with ease. As the behaviour constantly becomes easy to perform time and again, it could then become a habit for the individual. However, if facilitating conditions are at times absent, leading to behaviour execution becoming hindered by these factors, it is then less likely that the behaviour will become habitual in nature. Facilitating conditions are seen to play a role in reducing habitual software piracy behaviour but they could also play a role in preventing this behaviour from

becoming habitual in the long run. Reducing the level of habitual pirating will lead to facilitating conditions becoming less important and this could possibly lead to a subsequent reduction in piracy behaviour. If piracy behaviour becomes habitual, indicative of a strong habit weighting, it is then that facilitating conditions could make a difference to the desired execution of the target behaviour. The findings are consistent with Triandis' (1977) theory in the sense that, at any level of habit, the absence or presence of facilitating conditions will have an affect on whether or not the behaviour will be performed. Therefore, if the situation does not allow the individual to carry out the behaviour, habit may have limited relevance (Gagnon, Sanchez & Pons, 2006). It is difficult to compare or relate these findings to previous research on software piracy or research making use of Triandis' TIB. The reason for this is that numerous studies making use of the TIB have changed and modified Triandis' theory and do not look at moderating or mediating effects of certain variables. Researchers have interpreted and changed the theory to suit their individual needs, making it difficult to relate previous TIB research findings to the current results (Woon & Pee, 2004; Milhausen, Reece & Perera, 2006).

Previous studies have shown that demographic variables predominately gender and age are good predictors of software piracy behaviour (Mishra et al, 2006; Moores & Dhillon, 2000). Research has confirmed that males and younger individual's are more prone to pirate software (Eisend et al, 2006; Gupta et al, 2004). Interestingly, the sample in the current study is predominately male (73%) and the majority fall into the 18 to 28 age group (47%). The results indicate that piracy behaviour in the sample is highly skewed indicating a low piracy rate.

4.4. Selected Variables in Predicting Piracy Behaviour

Triandis' (1977) Theory of Interpersonal Behaviour has been used in numerous contexts as mentioned earlier to gain an understanding of a variety of complex human behaviours. This research study employed a slightly modified version of the Triandis' TIB. The TIB model as shown in Figure 3 below was slightly modified by adding a 'line' to indicate the possible moderating effects of habit on the relationship between intention and behaviour.

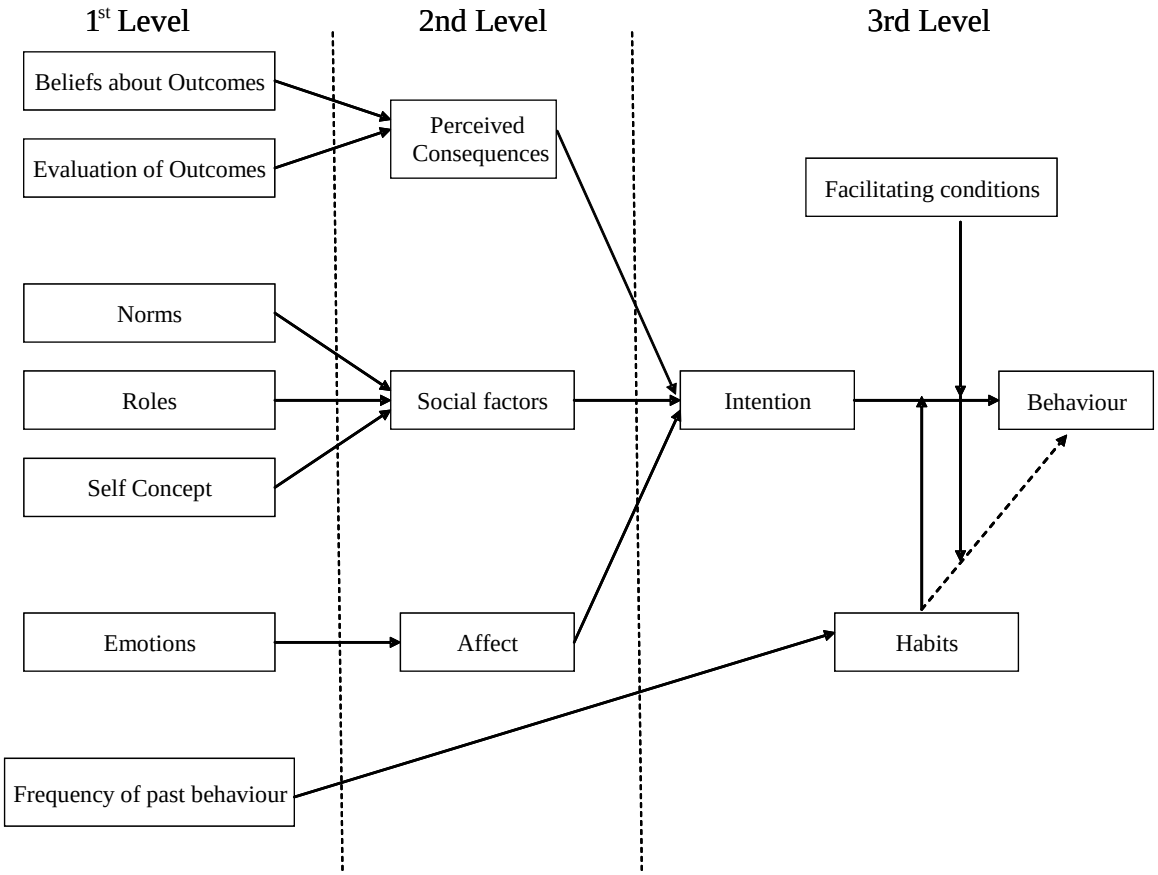

Figure 3: Modified Diagrammatic representation of TIB (Egmond & Bruel, 2007).

Triandis' TIB in this research study was kept almost identical to his original theory with the modification of the possible moderating effects of habit on the intention-behaviour relationship. The implication of this slight modification to the original theory is regarding the emphasis of habit on the intention–behaviour outcome. Modifying the role of habit within the TIB in this study places more emphasis on the role that habit plays and has the potential to play in the TIB model. The implication of adding the modified role played by habit has been seen to add value to the TIB in the sense that habit can change the relationship between intention and the outcome behaviour. As seen in the results, the influence of habit changes the intention–behaviour relationship in terms of direction and strength. The weight held by habit has been shown to change the role or weight held by intention towards the target behaviour.

In terms of the TIB providing a good prediction of software piracy behaviour, the results have implied that Triandis' model is able to provide a good prediction of whether or not the target behaviour will be executed. As mentioned earlier intention, habit, social factors and perceived consequences explain 49 percent of the variance in behaviour. Facilitating conditions and affect did not meet the significance level to make entry into the model. The entire TIB model was significant, the four variables entered into the model were found to have a direct relationship to behaviour. Due to the fact that behaviour in the current study is highly skewed, indicating a low level of actual piracy behaviour in the sample, the variance explained by the four variables in the TIB model should be interpreted with caution in relation to behaviour. This is because very few people were found to actually be actively engaging in this behaviour. This could mean that the variables explain 49 percent amount of variance in the piracy behaviour score however the role played by facilitating conditions reduces the likelihood that intention will automatically lead to behaviour execution, explaining why the piracy behaviour score is low within this sample. The results of this research study may in fact be implying what effective strategies are, in this South African sample, in preventing piracy behaviour (intention high, but facilitating conditions are not conducive to behavior execution). It seems as though Triandis' TIB model and the added modification of the role played by habit is able to a degree, to predict software piracy behaviour within South Africa.

4.5. Practical Implications

The findings generated from this research study are aimed at predicting and emphasizing the prevention strategies that may possibly be most effective in combating the globalized criminal behaviour of software piracy. Therefore, these findings have a variety of implications for the fight against software piracy. The findings from this study should be used to develop more effective anti-piracy strategies and campaigns, with the idea of combating this ever-increasing criminal activity. In addressing the practical implications of the results, it is imperative to keep in mind that software piracy behaviour is not this massive problem within the study's sample. In fact, these practical implications and prevention strategies discussed below may in fact currently be present within South Africa and viewed as effective strategies as evident in the low software piracy behaviour score.

In terms of perceived consequences that contribute to the development of an individuals intention to pirate software, anti-piracy campaigns should continue to focus on changing individual's perceptions surrounding the act of piracy. If an individual perceives a positive consequence to follow as a result of engagement in piracy behaviour, they are more likely to have a higher level of intention towards wanting to engage in the target behaviour. The reason behind this is that people perceive and anticipate a certain consequence or outcome to follow from pirating software. If they attach a positive value to this perceived consequence, they will probably become more prone to pirating software, especially if the desired consequence occurs frequently. Anti-piracy campaigns should then continue to focus on changing people's perceptions regarding the possible outcomes that are perceived to be gained from pirating. This could possibly lead to a reduction in people's intention because if the attained consequence is not what was initially perceived and the outcome is therefore valued negatively for the individual, piracy intention may be reduced. Campaigns should focus on changing people's perceptions surrounding the outcomes that will follow as a result of engaging in software piracy.

Campaigns should continue to focus on social factors due to their predictive ability on piracy intentions. Campaign strategies need to be aimed at condemning software piracy and push the idea into the public domain that engaging in software piracy is a behaviour that is not tolerated within the social environment. Individuals who are copying software illegally are not frowned upon by people in their close social network as they should be. Therefore, campaigns need to create a greater awareness surrounding the criminality of this behaviour, so that people who do pirate software are subjected to increased social pressure to not engage in this behaviour. Anti-piracy strategies that are targeted towards perceived consequences and social factors may in the end change people's affect or emotions that are usually generated at the thought of engaging in this behaviour. Even though South Africa has one of the lowest piracy rates in the world, the continuation and enhancement of these prevention strategies may contribute to further reducing software piracy in South Africa over the next few years.

The main finding and focus of this research is with regards to facilitating conditions. Therefore, in order to continue the fight against software piracy and further reducing

South Africa's piracy rate, campaigns need to continue to put more energy and emphasis on objective factors present in the external environment. As the findings indicate that facilitating conditions that inhibit piracy behaviour are the most effective when there is a high intention to pirate or in the case of habitual piracy behaviour. Facilitating conditions as intervening factors between wanting to engage in the behaviour and being prevented from doing so are seen to be most effective in this case.

Therefore, anti-piracy measures that impede the unauthorised copying of software even when there is a high intention to engage in this behaviour could be aimed at increasing the legal aspects and punishment surrounding this behaviour, contributing to the continued reduction in the piracy behaviour score. The punishment that will result needs to be made clearer and be perceived as harsh. Included in this is the perception that the chances of getting caught pirating software are high. This needs to be made clear to businesses and individuals alike. Institutions and organizations need to come on board and have measures in place that prevent this behaviour from taking place within their businesses. Software companies need to make pirating software increasingly difficult and have measures put in place to protect their intellectual property. The protection of software and intellectual property needs to increase, this will in turn make the unauthorized copying of software harder to accomplish and achieve without getting caught. Technical controls could be used to make pirating a more difficult task to accomplish or just too time-consuming so that the perceived amount of effort needed to be exerted overrides the individuals need to acquire the software package in question.

Fully combating this globalised behaviour is not going to occur over night, however it seems as though South Africa is moving in the direction of a continued reduction is piracy behaviour. If anti-piracy campaigns can continue to be tailored and used more effectively, a slow decline in software piracy will continue to occur. Anti-piracy strategies need to continue to focus on objective external environment factors as they seem to be working in this context due to the fact that South Africa's intention to pirate is high, but it seems as though the facilitating conditions are not conducive to the execution of piracy behaviour. Continuing to reduce the presence of facilitating conditions will further reduce South Africa's already low piracy rate. The aim of anti-

piracy measures is of decreasing the conditions that facilitate this behaviour or make it easy to accomplish and increasing the objective external environmental factors that hinder or make pirating software more difficult, hopefully leading to its consistent decline.

4.6. Limitations of the Research

Limitations are inherent in any research study due to the nature of research. As the current study is focussed on software piracy, the possibility arises regarding the honesty and truthfulness with which the participants answered the questionnaire. Participants were asked questions pertaining to their actual current piracy behaviour. As software piracy is a criminal activity, participants may not have felt entirely comfortable with being truthful with regards to the frequency with which they make unauthorized copies of software. As the questionnaire was electronically/computer based and situated on an internet website, the participants may have been suspicious of the conveyed confidentiality and anonymity guarantee and as a result did not feel comfortable with answering as truthfully as one would have hoped. This limitation is evident in the skewedness of software piracy reporting within the sample. Behaviour is highly skewed to the right meaning that most people do not currently engage in software piracy. This skewedness of behaviour could be a result of a lack of honesty and truthfulness with which the participants answered the questionnaire for reasons mentioned above or due to the sample generally not engaging in piracy behaviour.

Another limitation of this study is that the sample may have possibly attracted participants who did not engage in software piracy. The individuals who do pirate software or are more prone to making unauthorised copies of software may have avoided taking part in the research for a number of reasons, one of which may have been confidentiality or anonymity. Individuals who are pirating software may have been concerned with being identified and caught as software piracy is considered a criminal activity.

Inherent in all research is the issue of generalizability. As is evident from the demographics mentioned in the methods chapter, the majority of the sample consisted of young white males. In a diverse nation such as South Africa, this sample is not

representative of our country's population. Therefore, it is imperative that the research findings are not widely generalized to characterise the entire South African population. These findings should be looked at within the context of the sample and as a result generalized with caution.

In terms of the study's method, mediation effects of facilitating conditions and habit were not tested for during the research. Triandis' TIB stated that facilitating conditions act as moderators in the model and as a result of this, the researcher decided to only test for moderation. Therefore, the researcher did not strictly follow Baron and Kenny's (1986) criteria (testing for mediation before testing for moderation). Baron and Kenny's (1986) criteria for moderation was used to guide the researcher in testing for the possible moderation effects of facilitating conditions and habit, however their criteria were not followed in terms of firstly testing for mediation effects. This is a limitation due to the fact that it is possible that mediation effects were in fact present, however bypassed due to a decision based on the TIB theory. It is also a limitation in that most research strictly follows Baron and Kenny's (1986) criteria in terms of the general method of mediation followed by moderation testing.

The final limitation of this study is concerned with the skewness of both habit and behaviour which are both highly positively skewed. This is a limitation of the study because the statistical tests performed on the data assumed normal distribution. Various transformations were performed on these two scales, however they were found to make no difference in terms of making the data more normally distributed. Due to the fact that behaviour was highly skewed, the researcher was unable to test the full TIB model with path analysis because the skewedness of behaviour would have become a problem in terms of the assumptions required to conduct path analysis and testing the full model was not one of the study's research questions.

4.7. Directions for Future Research

A variety of different approaches have been used to understand the psychological phenomenon of software piracy. The current study has presented a number of insightful findings that can be used to combat software piracy in terms of differential

anti-piracy campaigns. However, it has also provided possible new areas of enquiry within the context of software piracy.

Triandis' (1977) TIB has provided the psychological framework on which this study is based and has shown its effectiveness in predicting and gaining a better understanding of software piracy behaviour in the South African context. Therefore, further research into this area should make use of a framework of this nature on which to base their study. Triandis' TIB has not been widely used in piracy research, and therefore future research into this area should make use of and include more variables from the TIB model, such as facilitating conditions and habit. In future, it may possibly be helpful to include other variables from Triandis' wider model, such as history, culture, ecology and the social situation.

Certain variables in Triandis' TIB were found to be good predictors of piracy behaviour as they were found to explain 49 percent of the variance in the behaviour score, however this research study did not do a full path analysis as it was not within the scope of this research study and as a result future research would benefit from testing the full TIB model with path analysis.

As mentioned earlier, numerous studies have found males and younger people to be more prone to pirate software. The demographics of the current study's sample indicate that piracy behaviour should be high. Therefore, future research could benefit from exploring the impact of demographics on piracy behaviour within the South African context.

This study adopted a cross-sectional approach and it may possibly be more beneficial to conduct a longitudinal study in order to gain a deeper and more comprehensive understanding of software piracy behaviour within the South African context. A longitudinal study design may also be able to generate a degree of causality leading to a greater understanding of piracy behaviour. The current research has broken away from the frequently used student sample when researching software piracy, however in future it would be more beneficial to obtain a sample at a cross-cultural level in order to gain an understanding of piracy behaviour that is representative of our diverse country, racially and culturally.

One of the aims of this research study is to ascertain which anti-piracy campaigns and strategies would be most effective in combating the ever-increasing behaviour of software piracy. It is therefore imperative that further research analyses the effectiveness of these different strategies in changing peoples perceptions towards intellectual property, finding and enhancing the objective factors within the external environment (facilitating conditions) that will hinder actual piracy behaviour. Further research into this area may also benefit from looking into the use of open source software as an alternative to pirating software.

Conclusion

This study employed a slightly modified version of Triandis' TIB in order to determine what the objective factors present in the external environment are that enable this behaviour to be performed with either ease or difficulty even when there is a strong intention. Certain variables were examined namely that of perceived consequences, social factors, affect, intention, habit and facilitating conditions that may contribute to software piracy behaviour. Statistical analyses run on the data have implied that affect, perceived consequences and social factors are all significantly and positively related to intention. The results also indicated that intention and habit are both able to predict software piracy behaviour. However, high intention and strong habit weighting do not always lead to the execution of behaviour. Therefore, what became evident is that facilitating conditions play an important role in determining whether a desired behaviour will be carried out. The findings illustrate that facilitating conditions and habit both moderate the intention-behaviour relationship and the habit-behaviour relationship. This study has provided support for Triandis' TIB with regards to its predictive power for gaining an understanding of software piracy behaviour.

In conclusion, this study has shown that software piracy is not hugely prevalent in this sample, as demonstrated by the skewedness of behaviour. However, there does seem to be a high level of intention to pirate software, therefore the results have implied that conditions present in the external environment are not enabling software piracy to be executed with ease. The study results suggest that anti-piracy strategies may in fact be effective in reducing piracy behaviour within the South African context, as intention is high but people seem to refrain from engaging in this behaviour as the facilitating conditions seem to not be conducive to executing this behaviour.

Therefore, anti-piracy campaigns should continue to put more energy and emphasis on objective factors present in the external environment. Facilitating conditions that inhibit piracy behaviour are the most effective when there is a high intention to pirate or in the case of habitual piracy behaviour. Facilitating conditions as intervening factors between wanting to engage in the behaviour and being prevented from doing so are seen to be most effective.

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Appendix A: Participant Information Sheet

Psychology
School of Human & Community Development
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4500 Fax: (011) 717 4559

Date: _____

Hello,
My name is Julie Robinson and I would like to invite you to participate in a research study. I am conducting the research for the purpose of obtaining my Masters degree in Industrial Psychology at the University of the Witwatersrand, under the supervision of Prof. Andrew Thatcher. My research is on software piracy.

I am looking at the unauthorised use or illegal copying of computer software; or the unauthorised use, duplication, distribution or sale of commercially available software. Examples of computer software include; databases, security packages, PC Games and reference software. The aim of this study is to gain a more in-depth understanding of the unauthorised copying of computer software behaviour within the South African context. Specifically, I am looking at objective factors within the environment that may facilitate or impede an individual from engaging in this behaviour.

Participation in this research will involve completing a questionnaire online, on a website called SurveyMonkey.com. The questionnaire will take approximately ten minutes to complete. Participation in this research is completely voluntary. You will not be advantaged or disadvantaged in any way from choosing to complete or not complete this questionnaire. You will be asked minimal demographic questions for descriptive purposes but at no time will anyone including the researcher be able to identify who you are. Your completed questionnaire will only be seen by me and my supervisor Prof. Andrew Thatcher. SurveyMonkey allows the researcher to collect completely anonymous surveys for the purpose of confidentiality. By filling out the questionnaire online, SurveyMonkey's Web Link Collector does not track email addresses or IP addresses on a response. Therefore, I am unable to track who took part in the research, assuring the participant complete anonymity. Your answers to the questions will only be looked at in relation to other participants, therefore only group data will be reported in my final research report. Your responses will therefore be anonymous and confidential.

A summary report of the findings of the study will be emailed to IT Web and then made available on their website so that if you took part in the study, you will be able to view the results.

If you would like to participate in this study please complete the questionnaire available on SurveyMonkey.com as honestly and carefully as possible. Completion of the questionnaire is regarded as consent to participate in the study.

Your participation in this study would be greatly appreciated. This research is aimed at trying to provide valuable insight and understanding behind unauthorised copying of computer software behaviour.

If you have any queries please do not hesitate to contact either myself, or my supervisor, Prof. Andrew Thatcher.

Yours Sincerely

_____

Julie Robinson
Industrial Psychology Masters student
robinson83@live.co.za

_____

Prof. Andrew Thatcher
Professor
Andrew.Thatcher@wits.ac.za

Appendix B: Compiled Questionnaire

Biographical Information

These questions are used for descriptive purposes only. Please mark the box that best describes you.

What is your gender?

Male	Female

What is your age in years?

18-28	29-38	39-49	49-59	60+

What is your race?

African	Indian	Coloured	White	Other

What is your occupation?

_____

What is your employment status?

Student	Full-time employment	Part-time employment	Self-employed	Retired	Unemployed

What is your field of expertise?

IT	Sales	Marketing	Legal	Finance	Human Resources
Research	Technical	Administration	Other		

What industry sector do you work in?

IT	Aerospace & Defence	Automotive	Education & Research	Engineering & construction	Financial services
Healthcare	Life Sciences	Manufacturing	Media & entertainment	Mining	Public Sector
Retail	Telecomm.	Travel & transport	Utilities	Petrochemical	Other

Are you a South African citizen?

Yes	No	If no, please state your nationality	

What is your regional location?

Technology Usage

These questions describe the nature and frequency of your technology use.

How many years have you interacted with computers for any purpose?

Less than 1 year	1-5 years	5-10 years	10-15 years	15-20 years	More than 20 years

How many hours a day do you use a computer?

1-5 hours	5-10 hours	15-20 hours	20+ hours

How frequently do you use:	Never	At least once a day	At least once a week	At least once a month
Software programming packages (C ++ and Java)				
Desktop applications (Word processors & spreadsheets)				
Specialist software (Statistical, architectural drawing packages)				
Gaming software (Warcraft & Civilization)				
The Internet				

Unauthorised Copying of Software

These questions are concerned with your opinions regarding the unauthorised use, distribution, acquisition, sharing and copying of software. Remember that software piracy is when people make copies of software without permission and load the software onto more computers than the software package agreement stipulates. The following questions are concerned with the unauthorised copying of computer software.

Perceived Consequences Scale

Please mark the scale value that best reflects your answer:

- Existing laws do not deter me from making unauthorised copies of software:*

Strongly Agree 1 2 3 4 Strongly Disagree

- I pirate software because the chance of me getting caught is minuscule:*

Strongly Agree 1 2 3 4 Strongly Disagree

- I refrain from making unauthorised copies of software as the risk of being penalized is too high:

Strongly Agree 1 2 3 4 Strongly Disagree

- I do not make unauthorised copies of software as it would deteriorate my sense of ethics:

Strongly Agree 1 2 3 4 Strongly Disagree

- I do not make unauthorised copies of software as I believe that they are faulty and I will suffer from a lack of technical support when using pirated software:

Strongly Agree 1 2 3 4 Strongly Disagree

- I believe that I will gain significantly from making unauthorised copies of software:*

Strongly Agree 1 2 3 4 Strongly Disagree

*Note: * Indicates Reversed Items*

Affect Scale

Please mark the scale value that best reflects your answer:

- To me, making unauthorised copies of software is:*

Very Good 1 2 3 4 Very Bad

- To me, making unauthorised copies of software is:*

Highly Pleasant 1 2 3 4 Highly Unpleasant

- To me, making unauthorised copies of software is:

Very Foolish 1 2 3 4 Very Wise

- To me, making unauthorised copies of software is:

Highly Unattractive 1 2 3 4 Highly Attractive

Social Factors Scale

Please mark the scale value that best reflects your answer:

- If I made unauthorised copies of software, most of the people who are important to me would:*

Highly Approve 1 2 3 4 Highly Disapprove

- Most people who are important to me would look down on me if I made unauthorised copies of software:

Highly Likely 1 2 3 4 Highly Unlikely

- People who are important to me think it is ok to make unauthorised copies of software:*

Strongly Agree 1 2 3 4 Strongly Disagree

*Note: * Indicates Reversed Items*

Piracy Intention Scale

Please mark the scale value that best reflects your answer:

- I may make unauthorised copies of software in the future:*

Strongly Agree 1 2 3 4 Strongly Disagree

- If I had the opportunity, I would make unauthorised copies of software:*

Strongly Agree 1 2 3 4 Strongly Disagree

- I would never make unauthorised copies of software:

Strongly Agree 1 2 3 4 Strongly Disagree

Habit Scale

Please mark the scale value that best reflects your answer:

- Copying licensed software without paying for it is a habit for me:*

Strongly Agree 1 2 3 4 Strongly Disagree

- I am addicted to making unauthorised copies of software:*

Strongly Agree 1 2 3 4 Strongly Disagree

- I do not think twice before making unauthorised copies of software:*

Strongly Agree 1 2 3 4 Strongly Disagree

- Sometimes I download unauthorised copies of software without thinking about whether I actually need it or not:*

Strongly Agree 1 2 3 4 Strongly Disagree

- Making unauthorised copies of software is automatic for me and therefore I make a high quantity of this software:*

Strongly Agree 1 2 3 4 Strongly Disagree

*Note: * Indicates Reversed Items*

Facilitating Conditions Scale

Please mark the scale value that best reflects your answer:

- There are inappropriate measures in place at my institution to prevent the use of unauthorised copies of software:*

Strongly Agree 1 2 3 4 Strongly Disagree

- There is insufficient software protection in my institution to prevent unauthorised copying of software:*

Strongly Agree 1 2 3 4 Strongly Disagree

- There is a lack of awareness and educational campaigns in my institution to prevent the use of unauthorised copies of software:*

Strongly Agree 1 2 3 4 Strongly Disagree

- I have access to all the resources needed to make unauthorised copies of software:*

Strongly Agree 1 2 3 4 Strongly Disagree

- I make unauthorised copies of software because software companies do not have adequate measures in place to protect their software:*

Strongly Agree 1 2 3 4 Strongly Disagree

- I make unauthorised copies of software as I am given no other means to get access to this software:*

Strongly Agree 1 2 3 4 Strongly Disagree

- My institution condones the unauthorized copying of software:*

Strongly Agree 1 2 3 4 Strongly Disagree

- I make unauthorised copies of software to save money:*

Strongly Agree 1 2 3 4 Strongly Disagree

- I make unauthorised copies of software because I believe that software is overpriced:*

Strongly Agree 1 2 3 4 Strongly Disagree

*Note: * Indicates Reversed Items*

- I make unauthorised copies of software because I cannot afford it and need the software to do my job:*

Strongly Agree 1 2 3 4 Strongly Disagree

- I do not earn enough to afford to buy software legally:*

Strongly Agree 1 2 3 4 Strongly Disagree

Piracy Behaviour Scale

Please circle the scale value that best reflects your answer:

IN THE LAST 3 MONTHS:

- I have made unauthorised copies of software:

Never 1 2 3 4 Very Often

- I have made unauthorised copies of the software programs that my friends have purchased:

Never 1 2 3 4 Very Often

- I have acquired one or more software programs from renting or borrowing the program and then making an unauthorised copy of it:

Never 1 2 3 4 Very Often

- I have copied software illegally at work to use on my personal computer at home:

Never 1 2 3 4 Very Often

- I have made unauthorised copies of software and then sold them to my friends at a cheaper price:

Never 1 2 3 4 Very Often

- I have allowed my friends and colleagues to make copies of the software that I have purchased:

Never 1 2 3 4 Very Often

*Note: * Indicates Reversed Items*

Appendix C: Ethical Clearance Certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (NON MEDICAL)
R14/49 Robinson

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER H0 90615**
PROJECT	Triandis theory of interpersonal behaviour in understanding software piracy behaviour in the South African context
INVESTIGATORS	Ms J Robinson
DEPARTMENT	Psychology
DATE CONSIDERED	12.06.2009
DECISION OF THE COMMITTEE*	Approved Unconditionally
NOTE:	

Unless otherwise specified this ethical clearance is valid for 2 years and may be renewed upon application

DATE 20.07.2009 **CHAIRPERSON** .....
(Professor R Thornton)

cc: Supervisor : Prof A Thatcher

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10005, 10th Floor, Senate House, University.

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

Signature

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES