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“THE THEORY OF PLANNED BEHAVIOUR AND HOW IT RELATES TO SOFTWARE PIRACY”

DEREK VAN DER SCHYFF

DECLARATION

A research project submitted in partial fulfilment of the requirements for the degree of MA by coursework and Research Report in the field of Industrial Psychology in the Faculty of Humanities, University of the Witwatersrand, Johannesburg, February 2008.

I declare that this research is my own, unaided work. It has not been submitted before for any other degree or examination at this or any other university.

Derek van der Schyff

28th January 2008.

ABSTRACT

Owing to the ever increasing prevalence of software piracy and the alarming rise in costs to global economies, this research evaluated the Theory of Planned Behaviour and looked to determine if there are any relationships between the constructs under the model and intentions to carry out a specific behaviour, namely the copying of unauthorised computer software. The theory suggests that should attitudes and social norms favour the pirating of software and should the individual have the necessary perceived behavioural control and self-efficacy then they will be more likely to have intention to commit a certain act.

A quantitative study looking at 225 individuals from organisations in the fields of manufacturing, finance and information technology was carried out to evaluate the theory's claims. Correlations and linear regressions were run to analyse the data and it emerged that attitudes were the major predictor of intentions to pirate software accounting for up to 55% of the variance. Despite the perceived behavioural control variable there was significant support for the predictive value of the different constructs under the Theory of Planned Behaviour as well as the construct of self-efficacy.

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INTRODUCTION

In recent years, software piracy has increased to the extent that in the United States it rivals organised crime as one of their most costly offenses. Each year the software industry suffers substantial losses in the region of tens of billions of dollars and each year this estimate grows (Seale, Polakowski & Schneider, 1998). It has been revealed that up to half of professionals working in the area of information systems has illegally copied software and that for every legal piece of software there are between two and ten illegal copies.

Organisations are being increasingly confronted with legal and liability issues due to the increasing rate of piracy and with the rapid growth of information systems and the increased accessibility of pirated software it is an issue that is not likely to disappear in the near future (Lending & Slaughter, 1999). In fact software piracy is expected to increase at an alarming rate as more and more developing countries develop and increase their information sharing networks.

Looking at the South African context in particular, it is estimated that up to 35% of businesses make use of illegal software resulting in a cost to the South African economy of up to R1, 5-billion in lost revenue (Sapa, 2007). A study conducted in 2006 by the International Data Corporation suggested that South Africa's piracy rate was on par with the global average and lower than the average rate for African and Middle Eastern countries, however the economic impact of software piracy in South Africa was on the increase (Sapa, 2007). These findings call for an urgent need to aggressively tackle software piracy in the South African context.

RESEARCH RATIONALE

With the development of information sharing networks around the globe, software piracy has become an ever increasing problem and has been seen to cost economies up to billions of dollars annually (Seale, Polakowski & Schneider, 1998). In South Africa in particular, millions of rands have been lost each year due to piracy and so it is of importance to try and gain insight into this phenomenon (BSA, 2007). Software piracy, in the face of strict piracy legislation, continues to increase and it has far reaching implications which have affected both the local job market as well as levels of foreign investment.

It is necessary to try and determine what it is exactly that leads people to pirate software and using the Theory of Planned Behaviour this study will look to gain insight into the processes guiding people's intentions so that the issue at hand can be better understood and so that appropriate measures can be taken to try and reduce the prevalence of software piracy in the work setting.

RESEARCH AIMS

The costs to the South African economy and the negative implications for growth potential stemming from software piracy are substantial. With this in mind, the aim of this research is to evaluate the Theory of Planned Behaviour (Ajzen & Madden, 1986) with regards to its ability to predict intentions when looking at behaviours which are unethical. It is to assess the variables of attitude, social norms, behavioural control and self-efficacy with regards to their individual ability to predict intentions. The aim is to also try and gain some insight into the development of moral standards and social norms when it comes to new technologies.

The research will look to establish the mechanisms that underpin an individual's decision to pirate software and how they justify their actions. While economic reasons appear the most obvious, this research will try to delve into the deeper reasoning behind piracy with the purpose of assisting policy makers and enforcement agencies in their understanding of the matter so that they can best respond to the issue.

LITERATURE REVIEW

Introduction

As previously mentioned, software piracy is becoming an increasingly large and costly issue for both greater economies and individual organisations. Over and above the millions of rands lost to the South African economy annually due to software piracy, organisations face increasingly stringent legislation increasing their risks of liability and punishment. With this in mind piracy has become a central issue and requires immediate attention to try to understand and limit the costs implicated with this phenomenon.

Piracy is proving to be a major hurdle in South Africa realising the potential of its information economy, as such there has been increased interest in software piracy from various parties including the Business Software Alliance who have undertaken a large anti-piracy campaign set to run the course of 2007 (BSA, 2007). It is therefore of importance to try to understand and gain further insight into exactly what it is that leads individuals to pirate software.

Defining Software Piracy

Before looking in detail at the study at hand and the model to be used to address software piracy in the workplace, it is first important to understand exactly what software piracy is and its different shapes and forms. It is also necessary to explore what is currently being done to curb unauthorised software piracy and illustrate the laws around it. However, as mentioned, it is first important to define the concept of software and software piracy.

Software is essentially the programs or instructions which tell a computer what to do and how to operate. Software is central to the functioning of a computer and as hardware prices have dropped, so software has become the primary money spinner for the computer market

(Forester, 1990). It has developed into a multi-billion dollar industry worldwide, however, with it has arisen the unfortunate side effect of the development of an industry based on copying computer programs or what is known as software piracy. Software piracy has become a social problem that is not likely to disappear within the near future (Forester, 1990).

Software piracy has generally been defined as the illegal or unauthorised copying of computer software which includes the unauthorised copying of an organisation's internally developed software or illegal duplication of commercially available software (Robertson, Gilley & Crittenden, 2007).

The history of software piracy dates back as far as 1964 when a United States organisation, Texaco, was offered in the region of $5 million worth of pirated software. The United Kingdom has records of software piracy dating back to 1968 and so it is not a new or recent problem. However, large-scale piracy only became common after the arrival of the personal computer and packaged software in the late 1970's (Forester, 1990). This, for the first time, put software into the hands of individuals and allowed them to perform various business and personal tasks. Personal computers and software programs went hand in hand. As personal computers became more popular, so the demand for software increased. Alternatively, as new and improved software packages emerged, allowing individuals to perform more and more tasks, so the sales for personal computers also rocketed (Forester, 1990).

The development of the software industry occurred almost overnight and sales soared from the early eighties. Back then software programs could basically only perform single functions and integrated programs which could perform multiple tasks using the same disk were very expensive. Because of this people began giving in to the temptation of software piracy in large numbers (Forester, 1990).

It was not only the actions of the consumers who threatened the software industry, but initially there were many lawsuits being laid by software development corporations against other software developers (Forester, 1990). These lawsuits were generally around the stealing of ideas or designs or concepts from one another's software programs. So it was seen that software piracy took on multiple forms and was carried out by all sorts of individuals and organisations.

Various authors have identified many different forms of software piracy. Stains and Stains (1984) identified five. The first is that of *counterfeiting* or *commercial counterfeiting* which is essentially illegal copying and distribution done at a fee (Robertson et al., 2007). This is where exact copies, which often include packaging and manuals, are sold on the black-market for uncharacteristically low prices (Stains & Stains, 1984).

Secondly, there is what is known as *disguised imitation* whereby the idea behind a piece of software is stolen. This idea is used to create new software which, although appears different, functions on the same fundamental ideas of other software (Stains & Stains, 1984). In 1989 this type of piracy was brought to the fore when Apple Computer sued Microsoft and Hewlett-Packard for using a Macintosh-type user interface. Although this type of piracy is very difficult to prove, it does not mean it is taken any less seriously and Apple Computers proceeded to win the initial round of court battles (Forester, 1990).

Thirdly, is what is known as *seeping*, which is basically once-off copying by home and business users and is the most common or widespread of all the forms of software piracy (Stains & Stains, 1984). It generally involves the casual copying of software for friends or business associates usually free of charge and as a favour. Computer games have been identified as the most commonly 'seeped' software (Stains & Stains, 1984).

Another form of piracy is *copying by distributors*. Many software distributors are given demo versions of new pieces of software and what can happen is that when the piece of software becomes dated, the distributor then sells the demo version at discounted prices (Stains & Stains, 1984).

The last form identified by Stains and Stains (1984) is that of *employee copying* which is not merely copying a work program for personal use, but rather refers to the stealing of developing software and the distribution of this software to either competition or other interested parties. Other forms of piracy were also identified in Forester (2007). These include *client-server overuse* which involves permitting more users to use the software than was licensed; *hard-disk loading* which is the loading of software onto multiple hard drives from one original; and *internet swapping* which is essentially on-line file sharing.

These different forms of unauthorised software copying fall under three levels of piracy namely petty piracy, grand piracy and commercial grand piracy. Petty piracy is the simple unlicensed copying of software by individuals and businesses and is the most common level of piracy. Grand piracy on the other hand refers to a much broader sharing of software and commercial grand piracy refers to the illicit sale and distribution of software. These two forms of piracy are considered to be much higher level infringements of intellectual property rights (Robertson et al., 2007) and are considered to be far more serious offences. This study will focus largely on petty piracy involving the unauthorised duplication of software by individuals and businesses and does not address the selling of software piracy or duplication on a mass scale.

The problem with software piracy is that it is generally viewed as an issue that does not carry any significant moral weight and as long as there is low moral intensity towards the issue, the software industry cannot expect significant shifts in copying behaviours. The piracy of

software has truly become a phenomenon with global reach (Robertson et al, 2007). This then begs the question as to what is being done to stop this global phenomenon and who is leading the way in the fight against software piracy.

Industry organisations like the Business Software Alliance (BSA) and the Software Publishers Association have been largely formed to protect against the ever increasing threat of the international theft of copyrighted materials (Robertson et al, 2007). Various global laws have also been passed, including the 'Agreement on Trade-Related Aspects of Intellectual Property Rights' which is an agreement between World Trade Organisation members to protect and enforce intellectual property rights. On top of this the World Intellectual Property Organisation has also been set up by the United Nations to assist in the fight against piracy (Robertson et al, 2007). Despite these bodies though, software piracy has remained a significant problem and so software developers are generally left to fend for themselves.

In this battle, software companies have employed various methods including pricing strategies, legal strategies, communication strategies and product strategies. They have even tried things like 'shareware' which will be discussed. Looking at pricing strategies, it has been seen that price has been identified as a main determinant in whether or not customers buy certain products. The strategy is to then lower prices or allow for discounts to try and encourage people to buy legal software thereby lessening the incentive to pirate software (Chiu, Hsieh & Wang, 2007).

Legal strategies have also been employed and it has been discovered that legal actions will influence people's intentions to pirate software. The strategy rests on the belief that if consumers are worried about disobeying the laws then they will stop buying pirated software (Chiu, Hsieh & Wang, 2007).

Communication strategies have also been employed and these include communicating the potential risks of illegal software as well as the benefits of using legal software. It is a carrot approach and companies try to gain consumer loyalty by enhancing consumer learning and knowledge development (Chiu, Hsieh & Wang, 2007).

The main strategy used is what is referred to as product strategies. Product strategies involve either providing added value or extra services to registered customers or using technology to protect software products (Chiu, Hsieh & Wang, 2007). Providing customer support to only registered users and providing them with the opportunity to upgrade their software and receive various benefits from being a registered user is one way of trying to reduce piracy. However, the method that has received the most attention is the use of technology to protect software.

Many companies use codes or built in encryption software to try and prevent or at least increase the cost of illegal software copying (Chiu, Hsieh & Wang, 2007). One method has been the use of software 'locks' whereby electronic locks are placed on the computer and only those with the correct code or key are allowed to gain access to the software. Another option has been to popularise 'shareware' which is where software is distributed free of charge and is accompanied with the request for a donation to be paid to the authors of the program (Chiu, Hsieh & Wang, 2007). This approach allows for programs to be tested before the full registered versions are purchased. Also, as donations are going straight to the authors, it is a very cheap way of purchasing software. However, even with ideas like this many software development companies have been forced to cease their efforts to protect their products.

Many companies have found that discarding these protection devices is the best protection from competitors. Microsoft gave up all pretence of protections to its Word program as long

ago as 1985 and it was felt that if you wanted to get into the market you had to drop the copy protection to even be considered (Chiu, Hsieh & Wang, 2007).

In South Africa, the Copyright Amendment Act of 1992 was introduced to plug loop-holes in the theft of intellectual property and it laid down some severe and harsh penalties for those found guilty of piracy (Verardi, 1993). Punishments include a R5000 fine or 3 years imprisonment for each offending article and even harsher penalties for subsequent offences. The Business Software Alliance in South Africa seeks to enforce this legislation, however due to the difficulty of catching individuals they tend to focus mainly on businesses (Schakowski, 1996).

On the Business Software Alliance's internet page, they make the facts clear as to the risks and penalties involved in software piracy. They make it clear that in copying software individuals expose themselves to criminal and civil charges. The offended companies have the right to sue for damages and prevent any further use of the program by the offending individual. Over and above this, the government can criminally prosecute individuals or organisations for copyright infringement which often includes hefty fines or may even carry jail terms (BSA, 2007).

They also make individuals aware of other risks such as greater exposure to software viruses and corrupt disks that can damage hardware; inadequate or no warranties on pirated software; lack of technical support to unlicensed products; and lack of upgrade opportunities (BSA, 2007). It is evident that the risks in pirating software are there and that there is sufficient legislation in place, however this has not seemed to stem the increasing rates of unauthorised software copying and so this research will look to determine the internal reasons behind the choice to pirate software.

The theoretical basis for the study of intentions to pirate software will be that of the Theory of Planned Behaviour. The Theory of Planned Behaviour proposes a model about how human action is understood and is guided and looks to predict the occurrence of specific intentional behaviours. It is also known to be useful in designing strategies to assist in the development and adoption of healthy behaviours (Francis et al., 2004).

The theory essentially looks at specific variables and how they relate to the intention to perform certain behaviours. The Theory of Planned Behaviour is an extension of Ajzen and Fishbein's (1975) Theory of Reasoned Action (TRA) which says that attitudes and subjective norms determine a person's behavioural intent which in turn is believed to predict behaviour itself (Brown, 1999). Extended by Ajzen (1985) himself, the Theory of Planned Behaviour adds a third variable of perceived behavioural control to the process of determining intentions.

The Theory of Reasoned Action (TRA)

The Theory of Reasoned Action *(figure 1.)* has for a long time been the most successful and discussed theory in attitude-behaviour research (Albert, Aschenbrenner & Schmalhofer, 1989). It has accumulated considerable support in a variety of settings including behaviour from simple choices in laboratory game settings to actions of ethical, personal and social significance, such as drug taking and abortion (Ajzen & Madden, 1986).

The model is presented as a process model or a causal chain whereby beliefs are said to determine attitudes, which in turn determine one's intentions which in turn is the immediate determinant of behaviour (Albert, Aschenbrenner & Schmalhofer, 1989). The constructs that underlie the Theory of Reasoned Action are motivational in nature and suggest that intention to perform a specific behaviour is the immediate antecedent of any behaviour. Therefore, the

stronger the motivation, the more likely a behaviour is to be performed (Ajzen & Madden, 1986).

The Theory of Reasoned Action specifies two independent determinants of intention. They are *attitudes towards the behaviour* which refers to the degree to which a person evaluates a specific behaviour to be favourable or unfavourable; and *subjective norms* which is a social factor referring to the perceived social pressure to perform or not perform a certain behaviour (Ajzen & Madden, 1986). The Theory of Reasoned Action at a basic level suggests that behaviour is a function of beliefs relevant to the particular behaviour (Fishbein, 1967). It identifies two sets of beliefs, namely behavioural beliefs and normative beliefs.

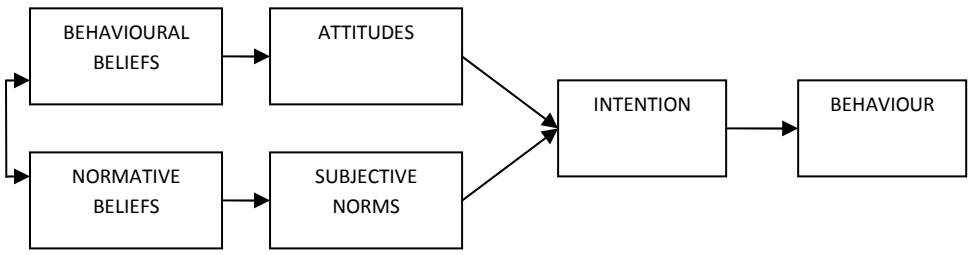

Figure 1. ***THEORY OF REASONED ACTION – Ajzen & Fishbein (1975)***

Behavioural beliefs are said to influence attitudes towards a specific behaviour and they draw a link between the behaviour itself and the outcome or cost incurred by performing the behaviour (Chang, 1998). The outcomes' subjective value then contributes to the attitudes surrounding the behaviour.

Normative beliefs, on the other hand, refer to the likelihood that important referent individuals or groups would approve or disapprove of performing the behaviour. It is ultimately these beliefs that determine both the attitudes and subjective norms which in-turn

influence an individual's intention to perform the behaviour (Ajzen & Madden, 1986; Chang, 1998).

Shortfalls of TRA

Despite the success achieved by the Theory of Reasoned Action, there are some fundamental problems regarding the theory's boundary conditions. According to the theory a strong association between intention and behaviour is dependent on three prerequisites. Firstly, the measure of intention must correspond to its level of generality to the behaviour criterion and so to predict a specific behaviour, we need to assess equally specific intentions (Ajzen & Madden, 1986). Secondly, the individual's intention must not have changed between the time it was assessed and the time that the behaviour was observed. The problem arises around the third criterion of volitional control. Although the Theory of Reasoned Action has been proved to be successful in predicting intention in cases whereby an act is under a subject's power of control, it has had far less success in cases whereby a subject has no volitional control (Broadhead-Fern & White, 2006).

Volitional control exists when an individual has the ability to decide at will whether to perform or not perform a specific behaviour. Volitional control is a prerequisite for a strong association between intention and behaviour, according to the Theory of Reasoned Action, and so problems arose with the theory in situations where there was no volitional control or where behaviour was contingent on the presence of opportunities and resources, such as in the case of software piracy (Ajzen & Madden, 1986). A variety of factors in addition to one's intentions can influence whether or not an individual performs a behaviour (Chang, 1998).

Even seemingly mundane tasks can be subjected to the influence of factors beyond one's control. Behavioural control thus becomes important as there will be a large discrepancy

between the control required to, for example, attend lectures compared to the control required to quit smoking or pirate software. The copying of software is largely contingent on opportunities, resources and skills and so demonstrates many issues surrounding control (Ajzen & Madden, 1986).

The Theory of Planned Behaviour (TPB)

The Theory of Reasoned Action, relying on intention as the sole predictor of behaviour, would therefore be insufficient in cases lacking in volitional control. Control can be affected by both internal factors such as skills, abilities and knowledge; and external factors such as time and opportunities (Broadhead-Fern & White, 2006)). The Theory of Planned Behaviour *(figure 2.)*, therefore, looks not only to determine behaviour purely through assessing intentions, but also through assessing the extent to which the individual is capable of exercising control over the behaviour in question. Behavioural control, however, is a very difficult construct to measure as many accidental or unanticipated factors can influence control. For this reason the Theory of Planned Behaviour looks not to assess behavioural control, but rather Perceived Behavioural Control (Ajzen & Madden, 1986).

Perceived Behavioural Control refers to the person's belief as to how easy or difficult performing a particular behaviour is likely to be. The Theory of Planned Behaviour, like the Theory of Reasoned Action, ultimately looks at beliefs as the driving force behind the various constructs however it adds control beliefs to assess the presence or absence of necessary opportunities and resources. These control beliefs which inform one's level of perceived behavioural control, are based largely on past experience, second hand information, the experience of others and other factors that may influence the ease of performing a task (Ajzen & Madden, 1986).

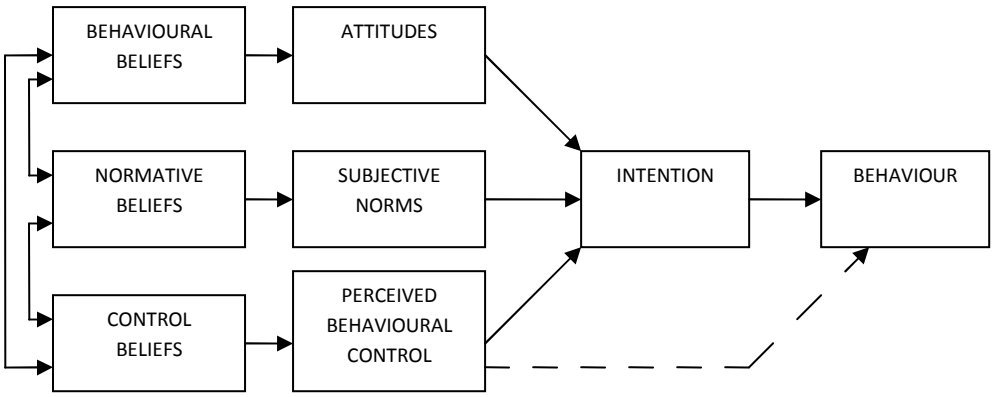

Figure 2. ***THEORY OF PLANNED BEHAVIOUR – Ajzen (1986) Version 2***

The Theory of Planned Behaviour actually has two versions. These versions differ with regards to the role of the *perceived behavioral control* construct. The first version does not include the link from *perceived behavioural control* to *behaviour* and suggests that *perceived behavioural control* has only motivational implications for intentions. It also suggests that the constructs of *attitudes, subjective norms* and *perceived behavioural control* are correlated yet independent of one another. It ultimately claims that the effect of perceived behavioural control on behaviour is completely mediated through intention (Ajzen & Madden, 1986).

The second version, however, considers the link between perceived behavioural control and behaviour and says there is a direct and indirect link between the two. The indirect link relates to the mediation through intention. The direct link is through perceived behavioural control being considered as a partial measure of actual control. Actual control is expected to directly and fully influence behaviour but since only perceived control can be measured, it is seen as a partial measure of control, hence the fragmented connection between the constructs (Ajzen & Madden, 1986).

Due to the fact that software piracy is an illegal act, the study becomes ethically sensitive and so only intentions will be addressed and not actual behaviours and so for the purpose of this study, the first version of the Theory of Planned Behaviour will suffice and will be adapted to

create a model specific to this study. Before looking at the model to be assessed it is important to first address the constructs under the Theory of Planned Behaviour in more detail.

Intentions

First and foremost, to focus on intentions, we see that it is largely viewed as a function of the other independent variables within the model (Giles et al. 2004). Behavioural intention refers to an individual's subjective probability that they will perform certain behaviours (Fishbein & Ajzen, 1975). Intentions involve four main elements: the behaviour; the target object at which the behaviour is directed; the situation in which the behaviour is to be performed and the time at which the behaviour is to be performed.

Each of these elements influences the specificity of intention of which there are five levels, namely: global; cluster; behaviour specific; behaviour and situation or time specific; behaviour and situation and time specific (Fishbein & Ajzen, 1975). These levels basically range from very general intentions to very specific intentions. Software piracy in the workplace would fall under the fourth level as it is behaviour and situation specific. It is usually the higher level intentions which have drawn the most attention with regards to trying to understand and predict an individual's intention to perform certain behaviours (Fishbein & Ajzen, 1975).

Intention is seen as the most accurate predictor of actual behaviour (Chang, 1998; Francis et al., 2004) and this view allows for the use of the variables under the theory to assess different interventions and programs in cases whereby there is no readily available measure of actual behaviour (Giles et al., 2004).

Under the Theory of Planned Behaviour, this intention is determined by three main factors including attitudes; social norms and perceived behavioural control. Each of these factors is

based on a different belief and it is these beliefs that are core to this particular theory. Beliefs are a person's subjective probability judgements concerning some aspect of their world and they deal with the person's understanding regarding themselves and their environment. Beliefs involve establishing a link between two aspects of a person's world, namely the object of the belief and that objects relation to another object, value or attribute (Fishbein & Ajzen, 1975).

The Role of Beliefs

As mentioned, all the constructs behind the Theory of Planned Behaviour are backed by certain fundamental beliefs. As a person forms or establishes beliefs around a certain object, they also begin to create and acquire an attitude towards the object. Each belief formed will link the attitude to an attribute and an evaluation of this attribute will guide and influence an individual's attitude towards the object. Objects we associate with good and positive things will acquire favourable attitudes towards them and vice versa (Fishbein & Ajzen, 1975).

Throughout a person's life, beliefs surrounding different objects, actions and events will be formed largely through experiences. This can be achieved through either direct observation or inference processes. While many of an individual's core beliefs around subjects such as religion or politics remain relatively stable, beliefs about consequences or specific individuals can vary and change quite substantially (Fishbein & Ajzen, 1975).

While beliefs can vary, a person's attitude at a particular point in time about a particular object will be determined by only a few salient beliefs. Though there is no set number of beliefs informing an attitude, a person's evaluation of the attributes linked to an object, contributes to their attitude in proportion to the strength of their belief (Albert, Aschenbrenner & Schmalhofer, 1989).

Attitudes are informed largely by behavioural beliefs, subjective norms are informed largely by normative beliefs and perceived behavioural control is influenced by control beliefs. Each of these beliefs, which refer to subjective judgements surrounding specific constructs (Ajzen & Madden, 1986), will be touched on under each of the specific constructs under the Theory of Planned Behaviour.

Attitudes

To turn now specifically to the attitudes component of the Theory of Planned Behaviour, it is evident that it is a construct which has received much attention and exploration. Attitudes have been defined as learned predispositions to respond in a consistently favourable or unfavourable manner with regards to a specific given object (Fishbein & Ajzen, 1975). They are essentially a person's general feelings of favourableness or unfavourableness towards a specific behaviour (Chang, 1998).

Attitudes can be distinguished from the other concepts within the theory mainly due to its evaluative or affective nature as it involves a general evaluation or feeling of favourableness or unfavourableness towards the object in question. It has been conceptualised as the amount of affect for or against something. Affect refers to a person's feelings toward and evaluation of some object, issue or person (Fishbein & Ajzen, 1975).

Attitudes towards a specific behaviour are therefore determined by two key dimensions, them being behavioural beliefs and outcome evaluations. These two dimensions are a function of a person's general beliefs towards the consequences of certain behaviours and their evaluation of those particular consequences (Seale, Polakowski & Schneider, 1998). If a person views an act as being wrong and they see the outcome as being a negative one then, according to the theory, they will be less likely to commit the act (Loch & Conger, 1996).

Social Norms

Turning to the variable of subjective or social norms, it can be seen that it is made up of both a person's normative beliefs and their motivation to comply with these beliefs (Chang, 1998). It is defined as a person's own estimate of the social pressures placed on an individual to perform or not to perform a specific behaviour (Loch & Conger, 1996). According to the Theory of Planned Behaviour, should relevant others perceive an act as being negative and the individual is motivated to meet their expectations then the person will be unlikely to commit the act (Brown, 1999). As this study will be looking primarily at the organisational context, the specific organisation's norms, culture and policies towards software piracy will also have to be taken into account and assessed.

Social norms are generally regarded as widely accepted ideas or rules indicating certain ways individuals should behave in certain situations (Baron & Byrne, 1991). They can take the form of spoken or unspoken rules. Some, for example the constitution, sports rules or the rules of the road, are more detailed and explicit than others. However, many social norms are unspoken or implicit and are largely unwritten rules regarding how to behave in certain situations. These norms are generally obeyed and can stretch across races, religions and beliefs (Baron & Byrne, 1991).

Norms generally consist of two main types. Firstly, prescriptive norms which refer to how members should behave and secondly, proscriptive norms which refer largely to how group members should not behave (Baron & Byrne, 1991). These norms are usually followed due mainly to the desire for the individual to join or remain part of a certain group and to be viewed positively within that group so not to be excluded.

Other norms such as performance norms, appearance norms and social arrangement norms all refer to how hard one should work, how one should look and how one should interact with those around them (Baron & Byrne, 1991). However, these specific norms are not of

relevance to the study at hand as appearance and social arrangement norms are not considered relevant when looking purely at organisational norms surrounding software piracy. It would be also not be practical to assess each and every aspect of social norms.

Organisational Norms

Organisational norms, in the same vein, can influence employees to comply with certain ways of doing things. Through a process of organisational socialisation, employees learn the ropes of an organisation and through formal and informal processes they come to share in the norms of the organisation and act accordingly (Feldman, 1985).

Conflicts between norms can occur if different groups hold different norms. For example, organisational norms may conflict with more general social norms. If conflicts in how individuals are supposed to act do occur, then the group of most importance will take priority (Wheelan, 2005). For example, a person's organisation may oppose software piracy, but close friends and family may support piracy. In this case an individual may still pirate software from the workplace if they view their role in the friendship and family group to be more important than their organisation.

Perceived Behavioural Control (PBC)

Looking at Perceived Behavioural Control, it has been defined as the extent to which an individual believes he or she is able to perform or carry out a specific behaviour (Baron & Byrne, 1991). The inclusion of the variable of perceived behavioural control ultimately refers to a situation whereby a person may have an attitude and the necessary social norms which favour performing an act, however, should they not have the access or expertise or belief that they can perform the act, there can be no intention or behaviour. Perceived behavioural control is determined by control beliefs regarding the power of situational and internal factors to inhibit or facilitate the behaviour (Francis et al. 2004).

According to the Theory of Planned Behaviour, among the beliefs determining intentions are beliefs surrounding the absence or presence of necessary opportunities and resources. The more resources and opportunities individual's perceive to possess, the fewer obstacles or impediments they will anticipate and therefore the greater their level of perceived behavioural control (Ajzen & Madden, 1986).

There are essentially two aspects behind the perceived behavioural control variable. They are those of control beliefs, which involve the perception of the availability of the specific resources necessary to perform the intended act, and perceived facilitation, which is the perception of the importance of those resources to the achievement of the desired outcome (Chang, 1996). These refer to both internal and external control factors, with external factors including various things such as situation, environment, opportunities and dependence on others and internal factors referring to beliefs regarding past experiences, emotions, skills and knowledge as to other's experiences.

These factors and beliefs alter the perceived ease or difficulty of performing a particular behaviour (Broadhead-Fern & White, 2006). Perceived Behavioural Control is, therefore, one's disposition that holds their beliefs regarding their capacity to conduct certain activities (Kuo & Hsu, 2001).

Self-Efficacy

Perceived Behavioural Control has been increasingly linked to Bandura's concept of self-efficacy (Kuo & Hsu, 2001). The reason, being largely due to the fact that perceived self-efficacy is viewed to encompass the elements of perceive behavioural control as well as a much larger set of individual and situational characteristics. In addition to mere facilitation, it includes other characteristics like skills, knowledge and conviction suggesting that the Theory of Planned Behaviour can best be applied through incorporating perceived self-

efficacy (Kuo & Hsu, 2001). Debate, however, arises over whether to replace perceived behavioural control with perceived self-efficacy or to use them both as two distinct constructs.

The concept of self-efficacy is derived from Bandura's Social Cognitive Theory. Social Cognitive Theory adopts a cognitive inter-actionist approach and has largely been applied in settings to do with learning, health, achievement and career development (Kuo & Hsu, 2001). Under this approach, personal characteristics, environmental factors and personal behaviours all interact and influence one-another bi-directionally. It is here that an individual's efficacy beliefs play a vital mediating role with regards to goal setting, thought patterns, emotional states and strategies for action (Kuo & Hsu, 2001). Self-efficacy, therefore, is a personal judgement of an individual's capabilities to organise and execute courses of action required to attain designated types of performances (Bandura, 1986).

Bandura (1977) suggests that when it comes to self-knowledge nothing is more influential on an individual's day to day lives than their conceptions of their personal efficacy. Due to the relationship between this knowledge and action, people sometimes do not behave optimally despite possessing the necessary knowledge and skill to carry out the tasks required. How people come to judge and perceive their capabilities will have an impact on both motivation and behaviour (Bandura, 1977).

Low levels of self-efficacy can result in an individual, who possesses equal skill to another, performing less effectively and being more willing to give up should initial attempts fail (Bandua, 1977). Individuals with low self-efficacy will also tend to avoid situations or tasks even if they are capable of performing. Alternatively, high levels of self-efficacy will increase individual's engagements in activities and help to develop new competencies (Bandura, 1977).

Misjudgements in self-efficacy can have consequences either side of the spectrum though, as individuals with abnormally low senses of self-efficacy may shun and avoid potential growth opportunities or challenges. In the same vein, individuals with abnormally high self-efficacy perceptions may take on too much or too challenging a task and as a result find themselves in difficult situations (Bandura, 1977).

Self-efficacy essentially refers to an individual's confidence as to their abilities to mobilise motivation, cognitive resources and courses of action necessary to execute a task successfully within a specific context (Kuo & Hsu, 2001). Therefore, it is important to note that one of the core fundamental properties of the concept of self-efficacy is that it is not necessarily concerned with the actual skills a person may possess but rather with the judgements of what one can do with those skills (Bandura, 1986).

It is, therefore, of importance to distinguish between one's component skills and their ability to organise those skills in order to execute different courses of action. One example Bandura (1986) uses involves the driving of a motor vehicle whereby driving self-efficacy is not the skill required in driving the car like steering and braking, but rather the behaviours accomplished using those skills such as weaving and over-taking (Kuo & Hsu, 2001).

As mentioned, self-efficacy has been applied to many situations and human behaviours and has been found to influence behavioural decisions, commitment to the chosen behaviours, arousal states concerning those behaviours and the actual performance of those behaviours (Kuo & Hsu, 2001). Studies have also incorporated self-efficacy into research regarding computer use and what has emerged is the concept known as computer self-efficacy (Kuo & Hsu, 2001; Compeau & Higgins, 1995).

Computer self-efficacy is simply defined as an individual's judgement regarding their capability to use a computer. There is research to illustrate that computer self-efficacy does

play a significant role in determining an individual's decision to use computers (Kuo & Hsu, 2001). Therefore, there is evidence to support the development of a specific computer self-efficacy concept, however, for the purpose of this study the more established, general version of self-efficacy will be referred to and measured.

In summation, self-efficacy has very basically been defined as an individual's judgements of their own capabilities to organise and execute different courses of action required to attain designated types of performances (Bandura, 1977). It is not the skill that an individual possesses that is of concern but rather the judgment of what they can achieve or accomplish with those skills (Bandura, 1977).

PBC/Self-Efficacy Debate

As mentioned, there has been substantial debate surrounding the inter-changeability of the concepts of perceived behavioural control and self-efficacy. While some believe that self-efficacy incorporates perceived behavioural control and a whole lot more (Kuo & Hsu, 2001; Ajzen & Madden, 1986), others believe the two are distinct from one another (Broadhead-Fern & White, 2006; Giles et al. 2004). Self-efficacy has been shown to predict behaviours in situations requiring the exercise of personal control and this has been attributed to the fact that perceived self-efficacy embodies such a large set of individual and situational characteristics (Kuo & Hsu, 2001).

While it is claimed that as self-efficacy embodies the facilitation aspect of perceived behavioural control, some researchers are pointing to the control beliefs as the major differentiator between the two concepts. It is argued that self-efficacy refers to an individual's perceptions as to how easy or difficult performing a task will be and how much confidence they have in their own abilities whereas perceived behavioural control measures

more an individual's perception of the extent to which they feel they have control over performing a specific act (Broadhead-Fern & White, 2006).

Ajzen (1991) himself has come to acknowledge the issues raised by researchers and has since argued for a unitary control construct. He says that individuals consider both internal and external factors which impact on performance when deciding on the ease or difficulty of performing behaviours and ultimately evaluating their own abilities. With this in mind, Ajzen sees no reason to distinguish between internal factors (self-efficacy) and external factors (control) as he feels that perceived behavioural control encompasses both (Broadhead-Fern & White, 2006).

Although Ajzen (1991) has argued that self-efficacy and perceived behavioural control are synonymous, some researchers have found that Bandura's concept of self-efficacy on its own better predicts intentions than perceived behavioural control and that the two should be treated as separate measures (Broadhead-Fern & White, 2006).

Perceived control relates to an individual's perception of external factors and how they may impact on behaviour. Perceived difficulty is the individual's belief about how easy or difficult performing a specific behaviour would be. These are two distinct constructs which, some argue, cannot possibly be measured together. In fact, some researchers have even found a separation of the two constructs in factor analytic results (Broadhead-Fern, 2006; Povey et al. 2000).

The suggestion to distinguish between the two constructs is due to the fact that one cannot assume that an individual's perception regarding the extent to which external factors may impair behaviour will correspond with their perception as to how easy or difficult the behaviour would be to perform (Giles et al. 2004).

When self-efficacy is low, individuals will experience feelings of helplessness which can lead to an absence or negative effect of behaviour. Important to one's self-efficacy is the presence of a clear image of good performance (Baron & Byrne, 1991). With regards to the topic at hand, an individual may possess the necessary skills and knowledge to copy unauthorised software yet due to their lack of self-efficacy and confidence in their ability may shy away from attempting the act. They may have all the internal and external resources such as opportunity, knowledge and experience yet if they themselves feel like they do not have the ability to copy software then this will impact on their actual intentions.

Azjen's descriptions of the relationship between behaviour and perceived behavioural control focuses on the element of actual control and the implication, therefore, is that perceived behavioural control is made up of two distinct components that of self-efficacy and perceived control (Povey et al. 2000). An individual may well perceive a specific behaviour to be under their control but at the same time may still view the performance of that behaviour as being difficult or beyond their capabilities (Giles et al. 2004).

There is an indication as to the benefits to measuring the constructs independently. Some studies have shown self-efficacy to be more reliable than perceived behavioural control (Broadhead-Fern & White, 2006; Povey et al. 2000; Giles et al. 2004) and this has raised debate over which is in fact the better predictor of intention and ultimately behaviour. Self-efficacy has been seen to account for more variance in the prediction of intentions than perceived behavioural control (Broadhead-Fern & White, 2006).

There is accumulating evidence to suggest that self-efficacy is not only an important addition to the theory of Planned Behaviour but is in fact the largest and best predictor of intention and behaviour (Giles et al. 2004). In Broadhead-Fern and White (2006), self-efficacy was found to be a better predictor than perceived behavioural control and in Terry and O'Leary

(1995) self-efficacy was found to be a significant predictor of intention whereas perceived control was not found to be significant at all. In one study (Giles et al. 2004), self-efficacy was found to explain some 73% of variance and was the main predictor in the model as a whole. With this in mind, this research will be assessing perceived behavioural control and self-efficacy as two distinct components to be measured separately.

Due to the ambiguity and the lack of agreement on the matter as well as the strong arguments and results put forward by those who believe the two constructs are separate, this particular study will assess the two items separately.

Proposed Model

The proposed model *(figure 3.)* for this study will largely follow along the lines of the original Theory of Planned Behaviour. Attitudes, subjective norms and perceived behavioural control will all be assessed in terms of their influence on intentions. Where the proposed model differs, however, is in the fact that it will look only at intention and not actual behaviour due to the ethically sensitive nature of the topic. The ethical implications of the study are addressed later in the research under the procedure section.

In addition to this the concept of self-efficacy will also be assessed. It will be looked at separately from perceived behavioural control. The perceived behavioural control construct will focus on the external control factors and self-efficacy will measure the internal self-belief factors. The last difference between the original Theory of Planned Behaviour and the proposed model will be with regards to the subjective or social norms. In addition to social norms this study will also be looking at organisational norms as the study is set in an organisational context.

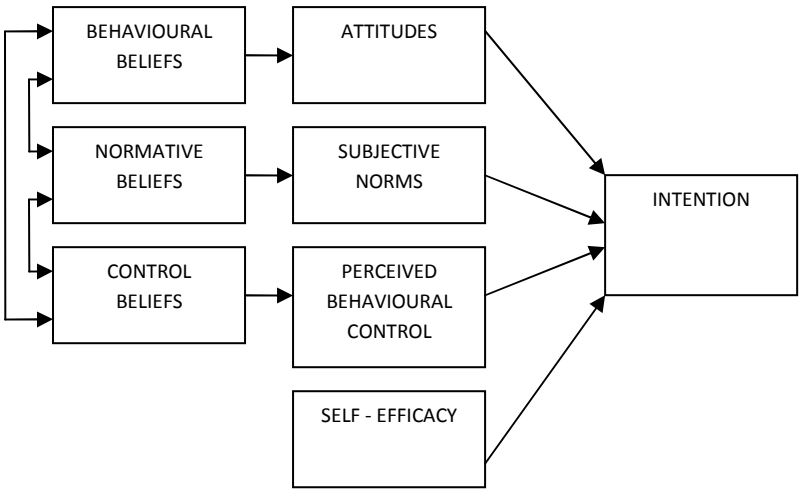

Figure 3. ***ADAPTED MODEL***

The belief constructs as described within the model will not be assessed specifically. The lack of interrogation and measurement of these concepts has been criticised (Upmeyer, 1989). The Theory of Planned Behaviour claims that in order to understand one's attitudes towards an object, it is necessary to assess their salient beliefs about that object, however, it also claims that it is nigh impossible to obtain precise measures of beliefs which effectively determine individual's attitudes since the number of salient beliefs influencing an individual vary from person to person (Upmeyer, 1989).

Povey et al. (2000) and Giles et al. (2004) did incorporate control beliefs into their models to assess factors which inhibit or facilitate the performance of a specific act. Each study identified certain core beliefs and asked participants to rate them on a scale assessing their beliefs around whether a factor was inhibiting or facilitating in their decision to donate blood or stick to certain dietary habits respectively. However, these beliefs tended to relate to the participants intentions or behaviours rather than the individual specific variables outlined in the theory of planned behaviour.

These beliefs have also not been assessed when looking at software piracy in particular. It is also possible to argue that the beliefs underlying the different constructs are partially assessed by the measures addressing those very constructs. Due to the lack of reliable and developed measures specific to the various constructs under the theory, beliefs will not be specifically assessed in this case.

Empirical Support

With regards to the model in general, although there is a fair amount of research addressing both the theories of planned behaviour and reasoned action, there is very little research that applies them to unethical behaviour and even less that relates them to software piracy in particular. Previous research has generally not looked at the Theory of Planned Behaviour in its original form. Generally only certain aspects of the theory are assessed and more often than not the theory is merely used as a base for different researchers own models and frameworks.

The Theory of Planned Behaviour as a whole has been well supported (Chang, 1998; Giles et al. 2004; Povey et al. 2000). With regards to the specific variables, they too have all been consistently supported. Attitudes and social norms have been found repeatedly to be significant predictors of intention in cases when testing both the Theory of Planned Behaviour and the Theory of Reasoned Action in relation to software piracy (Seale, Polakowski & Schneider, 1998; Loch & Conger, 1996).

Perceived Behavioural Control and Self-efficacy have also received empirical support and have also been found to be significant predictors of intention (Povey et al. 2000; Broadhead-Fern & White, 2006; Giles et al. 2004). Self-efficacy, though not thoroughly tested, did emerge as the strongest predictor of intention by quite some margin when it was tested.

Armitage and Conner (2001) assessed 185 studies using the Theory of Planned Behaviour and found that on average the variables in the model accounted for 39% of variance with regards to intentions to act and that perceived behavioural control accounted for significantly more variance over and above the variance explained by the other variables (Broadhead-Fern & White, 2006).

With regards to software piracy in particular, it was found that all the variables within the model have proved to be significant predictors of illegal software copying, though not necessarily always in the same study. For example, Limayem, Khalifa and Chin (2004) found a significant result linking only social factors or norms to intentions to pirate software, whereas Chang (1998) found significant results linking perceived behavioural control and attitudes to intentions to pirate software. Seale, Polakowski and Schneider (1998) though not addressing perceived behavioural control, also found attitudes and social norms to be significant predictors of intentions to make unauthorised software copies. Therefore, there is significant empirical support within the context of software piracy for the different aspects of the theory of planned behaviour.

Despite this general support for the model however, the research illustrates some glaring problems. The obvious problem being that there is very little research regarding software piracy in general, never mind incorporating the theories discussed in this paper. The Theory of Planned Behaviour has largely been tested in situations unrelated to software piracy such as; rule-following behaviours in homeless youth shelters (Broadhead-fern & White, 2006); exercise among students (Kraft, Rise, Sutton & Roysamb, 2005); dietary behaviours (Povey & Conner, 2000); blood donation (Giles et al, 2004); and retail theft (Bailey, 2006).

The research that has covered software piracy in particular has largely assessed it in terms of models derived from the Theory of Reasoned Action. Loch and Conger (1996), made use of

the Theory of Reasoned Action but adapted it so that the construct of attitudes was changed to include de-individuation, self-image and computer literacy. Despite the fact that the study does not assess the theory in its pure sense, it also used measures relating to the work place on university students, many of whom did not have a job. Some of the measures also had to be self-developed which brings reliability and validity questions into play.

The study by Seale, Polakowski and Schneider (1998) also used an adapted model of the Theory of Reasoned Action to study software piracy. Again the study sample included students indicating a dire need for research in the workplace in particular. Limayem, Khalifa and Chin (2004) followed in the same vein and assessed only student populations with regards to piracy.

Chang (1998), represents the only piece of research found that assesses the theories as they stand in their original form. It looks at both the Theory of Planned Behaviour and the Theory of Reasoned Action in relation to software piracy and compares the two. However, this research failed to acknowledge the perceived behavioural control versus self-efficacy debate and contained very questionable measures. The subjective norms measure consisted of only a single item and the intentions, attitudes and perceived behavioural control measures only contained three items which is not sufficient for producing a reliable and valid study. Again the sample was university students.

With regards to research incorporating the construct of self-efficacy it is evident that it has not yet been tested in software piracy studies. The studies that have incorporated self-efficacy into them to be tested alongside the Theory of Planned Behaviour have involved a variety of behaviours from blood donation (Giles et al, 2004) to shoplifting (Kuo & Hsu, 2001) to behaviours in homeless shelters (Broadhead-Fern & White, 2006) to dietary habits

(Povey & Conner, 2000). So there is no evidence of the self-efficacy construct being incorporated into any piracy research.

An additional problem with some of the past research is that it is relatively outdated with some of it dating back more than ten years. In the world of information systems, ten years is a very long time and so there is a need for more recent and relevant research. A couple of the studies were done in the past few years', however there is a definite need for more research in the area.

Also, as mentioned, the samples have consisted only of university students and university staff and so organisations have not yet been effectively dealt with or assessed. Also discussed is the issue regarding the use of questionable scales, many of which show little evidence of reliability and validity.

This piece of research will be looking for far more comprehensive and reliable measures of the variables in question. Social norms have also not yet been evaluated in terms of workplace norms as almost all of the research has been done on student samples. In this research we will incorporate workplace norms into the social norms construct so to create a single measure to evaluate norms outside and within the organisational setting.

The research at hand will also look to assess the Theory of Planned Behaviour as it stands as a whole without dissecting and splitting it up too much. It looks at the additional variable of self-efficacy which has not yet been measured in this specific context and tries to contribute this information to the ever increasing debate around perceived behavioural control and self-efficacy.

The theories have ultimately been well supported and the main variables of attitudes and social norms have consistently been found to have a significant effect on intention as has self-efficacy and perceived behavioural control in general. The Theory of Planned Behaviour has

also been found to be a better predictor of intention, in situations of unethical behaviours, than the Theory of Reasoned Action. This study will, therefore, be looking to assess social and workplace norms, attitudes, perceived behavioural control, self-efficacy and intentions within an organisational setting.

RESEARCH QUESTIONS

Are Attitudes, as contained within the Theory of Planned Behaviour, predictors of intentions to make unauthorised software copies?

Are Social Norms, as contained within the Theory of Planned Behaviour, predictors of intentions to make unauthorised software copies?

Is Self-efficacy, as contained within the Theory of Planned Behaviour, a predictor of intentions to make unauthorised software copies?

Is Perceived Behavioural Control, as contained within the Theory of Planned Behaviour, a predictor of intention to make unauthorised software copies?

Which variable under the Theory of Planned Behaviour best predicts intentions to make unauthorised software copies?

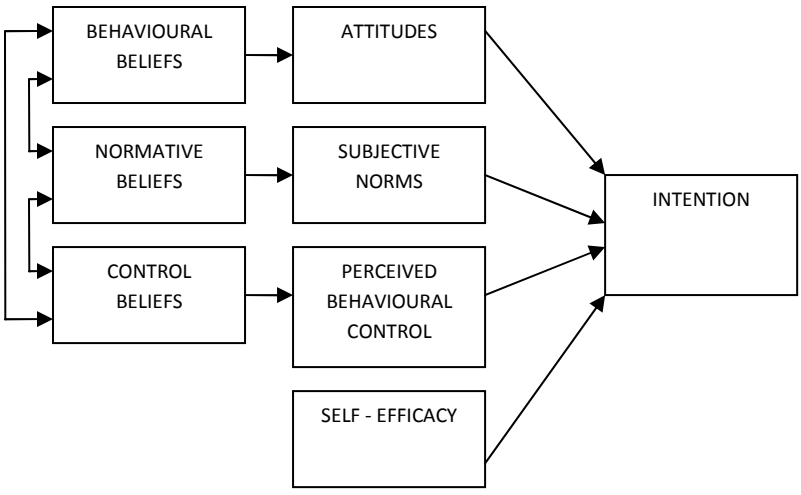

Figure 4. ADAPTED MODEL

METHOD

Research Design

This research is a quantitative, non-experimental design. It is also correlational as it looks to determine the relationship between intention to act and the various variables under the model. Summary statistics and one way frequencies were first run to check the data and establish means, standards deviations and frequency counts among other things. An ANOVA was then run to determine whether there were any significant differences within the different groups in the sample.

Correlations were then run to firstly determine the scale reliabilities and then to determine any relationships between these variables. Lastly a linear regression analysis was run to explain the relationships between the variables and step-wise regression was run to determine which variable best explains the intention to pirate software (Howell, 2004). The correlations and regressions were first run separately for the different samples and then run for the collective sample as a whole.

Sample

The sample was derived from several organisations within different industries. The study was aimed primarily at white collar employees as access and exposure to computers was fundamental to the study. The sample consisted of 225 respondents from the manufacturing, financial and information technology industries. The organisations approached were chosen as they were viewed as being representative of their industry. The sample size of 225 is a relatively large sample and would be more than adequate to illustrate any trends or relationships between variables. The sample is described below from tables 1.1 to 1.4.

Industries

Of the respondents, 100 were from a single organisation within the manufacturing industry, 63 were derived from four different banks in the financial services industry and the other 62 were from a single organisation in the information technology industry. With regards to the manufacturing organisation, 125 questionnaires were handed out, of which 111 were returned resulting in an extremely high return rate of 90%. Of these only 100 were usable due to incomplete questionnaires or patterned responses.

With regards to the financial sector, 30 questionnaires were handed out to each of the banks which were situated in Zambia. Bank one returned 18 questionnaires, of which one was unusable as the questionnaire was only partially filled in, and had a response rate of 57%. Bank two returned 22 questionnaires with a response rate of 71%, however, two proved to be unusable due to one questionnaire not being filled in adequately and the other illustrating patterned responses. Bank three had a response rate of 47% as 14 completed questionnaires were returned all of which were usable. Bank four returned 12 questionnaires with a response rate of 40%.

Looking at the responses from the Information Technology organisations, 102 questionnaires were handed out within a single organisation, of which 71 were returned. Of those returned 62 questionnaires were found to be usable. The differentiating between industries is important as we will be looking to find if there is a difference in the results based on industry.

Table 1.1. **Industry Breakdown by Percentage**

Industry	**Manufacturing**	**Financial**	**Information Technology**
Proportion of Sample	44%	28%	28%

Gender, Race and Age

Of the 225 participants, 55% were male while 45% were female. The majority of the participants were between the ages of 18 and 28 years of age which accounted for 41% of the sample and a further 36% of the sample were between the ages of 29 and 38. The sample consisted of 45% black and 43% white participants with the remainder of the sample consisting of coloured and Indian participants. It was fairly representative of the countries demographics which will certainly assist with generalisability.

Table 1.2. **Race Percentages**

Race	**Black**	**Indian**	**Coloured**	**White**	**Other**
Proportion of sample	45%	5%	6%	43%	1%

Education

With regards to education, the sample was almost entirely a white collar sample as about 90% of the sample had either a diploma, undergraduate degree or a postgraduate degree. The remainder of the sample had schooling at least up to a high school level.

Table 1.3. **Education Breakdown by Percentage**

Education	**High School**	**Matric**	**Diploma**	**Undergraduate**	**Postgraduate**
Proportion of sample	1%	9%	33%	27%	29%

Computer Experience

Probably the most important demographic question relates to computer experience. Of the sample, only 13% had less than 5 years exposure to computer technology as 59% reported to have had over 10 years of computer experience.

Table 1.4. **Computer Experience Breakdown by Percentage**						
Years of Use	**< 1 year**	**1-5 years**	**5-10 years**	**10-15 years**	**15-20 years**	**> 20 years**
Proportion of Sample	**3%**	**10%**	**28%**	**35%**	**18%**	**6%**

Over and above this, 73% of the participants reported to using their computer more than five hours a day. Also, 93% of participants also reported using the internet at least once a week.

Instruments

There are no frequently used, established measures to address the variables under the model of the Theory of Planned Behaviour and the measures which have been previously used have been generally found to be unreliable and lacking in validity and many of the questions seem to be asking the same thing. Therefore, the questionnaire used (Appendix A) adapted specific scales to fit the current study.

Intentions

In measuring intentions, a three item scale adapted from Povey et al. (2000) was used. The scale was originally used in a study looking at dieting habits and so had to be adjusted to measure software piracy. The third item on this scale was changed and reworded as the Cronbach alpha of .95 suggests that there is repetition within the scale and that it is repeatedly asking the same thing. Therefore, the item ‘I want to eat a low fat diet’ was

changed to ‘I am tempted to make unauthorised software copy in the future’. The items were measured on a five point Likert-type scale ranging from strongly disagree to strongly agree.

Attitudes

Attitudes was measured using a scale adapted from Swinyard, Rinne and Kau (1990) and consisted of five items measured again on a five point Likert-type scale ranging from strongly disagree to strongly agree. The scale was originally used in the software piracy context. The fourth item on this scale was rephrased for ethical reasons as it initially dealt with actual behaviour. The remaining item was added to assess the perceived outcomes aspect of attitudes, contained within the Theory of Planned Behaviour, as the initial four items look only at the perception of the behaviour. Although no alpha was given on the original scale, when the scale was used in research last year it returned a Cronbach alpha of .76. Items one and three were reverse scored.

Subjective Norms

With regards to subjective norms, this scale was also taken from Povey et al. (2000) and was reworded to address the context of software piracy. The original six item scale was extended to nine items to accommodate workplace norms which originally had not been included in the scale. The original scale only addresses social norms with regards to important social figures whereas the three added items address workplace norms with regards to colleagues, managers and organisational views with regards to copying unauthorised software. The original scale returned a Cronbach alpha of .74. However this is sure to change due to the added items. Items two, eight and nine have been reverse scored and all the items will be scored on a five point Likert-type scale ranging from strongly disagree to strongly agree.

Perceived Behavioural Control

Perceived behavioural control was measured using another scale adapted from Povey et al. (2000). It consists of four items and has also been altered to address software piracy instead of the dieting habits for which it was used originally. Item two was reworded to form a statement rather than a question so as to fit in with the answer structure and the final item followed a similar route. One of the original items was excluded due to repetition within the scale. The original Cronbach alpha was .92, however again this should change as we are measuring a different behaviour intention and the items have been slightly altered. It was measured on a five point Likert-type scale ranging from strongly disagree to strongly agree. Items three and four were reverse scored.

Self-efficacy

Self-efficacy was measured using a 12 item scale developed by Kuo and Hsu (2001) which consists of three subscales, namely use and keep self-efficacy (α=.84), distribution self-efficacy (α=.71) and persuasion self-efficacy (α=.78). They were measured on a five point Likert-type scale ranging from extremely confident to not at all confident. The scale was developed for cases of shoplifting in particular and so had to be reworded to fit the software piracy context. No items on the scale were reverse scored.

The questionnaire consisted of both biographical questions as well as 33 questions relating to the measures measured on a five point Likert-type scale and all ranging from strongly disagree to strongly agree. The biographical questions asked for the participant's race, age, gender, occupation and level of education among other things and was be used for description purposes. The department they work in was also asked as was their use of computers with regards to various programs and frequency of use. With regards to the various measures, there were reverse scored items to prevent patterned responses. Answers tending to the

strongly disagree side of the scale will generally suggest a lessened probability of someone intending to commit an act whereas answers tending to the side of strongly agree would suggest an individual to be more likely to have intention to copy unauthorised software.

Procedure

The various organisations were all approached and invited to voluntarily participate in the study. Upon agreement with the relevant and necessary individuals, the questionnaires were brought to the different organisations. The questionnaires were handed out with the assistance of the management and participants were invited and informed about the research at hand and made aware that the study conducted was being done so entirely independently of the organisation that they operate in. They were then made aware that they would in no way be advantaged nor disadvantaged should they decide to complete or not complete the questionnaire. Participant information sheets (Appendix B) were be attached to the questionnaires briefly explaining the study and bringing to the attention of the participants that completed questionnaires were regarded as informed consent. Furthermore, the participant information sheet stated that the study was entirely anonymous and confidential and explained exactly what this meant.

A pen and paper method was used whereby participants were asked to fill out the questionnaires and on completion to place them in the accompanying envelope and then to place them into the sealed box, which was left in the reception area of organisation. The questionnaires were then collected from the organisations by the researcher after specified periods of time. This ensured that no one but the researcher had access to the questionnaires which were destroyed upon the completion of the research.

Participants were not required to state their names or any identifying personal details again in order to ensure anonymity and confidentiality. The results were made available to the

organisation and the participants' alike and summary data was distributed upon request. The participants had the results displayed on the organisations notice board and it is further available at the University of the Witwatersrand's library.

Ethical Considerations

There are important ethical considerations with regards to this study due to the illegal nature of software piracy and the utmost care needs to be taken in order to ensure the anonymity of the participants as the results may have very serious consequences for both the participants and the researcher. The use of a pen and paper type questionnaire being deposited into an envelope and sealed box was best suited to ensure anonymity is guaranteed.

There was no identifying information requested to further ensure that all participants remain anonymous and the responses were handled by the researcher themselves and no-one else. The submitting of the questionnaire was considered an indication of consent to participate in the study. The participants were neither advantaged nor disadvantaged in choosing to participate in the current study. Over and above this, only intentions were asked and so no actual behaviours were reported as knowledge of such behaviours would have legal implications.

RESULTS

As mentioned, various analyses were run to test the proposed hypotheses as set out previously. This chapter will first look at the reliabilities of the measures, after which an ANOVA will be analysed to identify any potential differences among the samples. The correlation results will then be addressed to identify any relationships between the different variables. The results of the regression analysis will then be analysed as will the results retrieved from the stepwise regression.

Reliabilities

Correlations were then run to assess the reliabilities of the scales. Although excellent reliabilities were reported regarding the initial scales, certain items had to be re-phrased, excluded or added to the original scales and so it was necessary to determine the reliabilities of the new scales. The results of the reliability analyses are illustrated below.

Table 2. **Cronbach Reliability Coefficient**

	Intentions	**Attitudes**	**Social Norms**	**PBC**	**Self-efficacy**
Cronbach Alpha	0.92	0.81	0.76	0.55	0.94

The intentions measure consists of three items which were initially used in a study looking at dietary habits. After rewording the items to apply to software piracy in the workplace, an alpha of .92 was returned which is very high considering that tests returning reliability coefficients of at least .70 are considered to be sufficiently reliable (Murphy & Davidshofer, 2001).

With regards to attitudes, which included five items, a coefficient of .81 was returned which proved to illustrate a higher reliability than that of the original scale. Social Norms also returned an alpha, .76, indicating greater reliability than the scale the items were adapted

from. The self-efficacy scale consisting of twelve items returned a very high reliability of .94. All the reliabilities mentioned above are more than satisfactory, however, the Perceived Behavioural Control scale proved to be slightly problematic.

This scale, consisting of only four items, returned a weak reliability of just .55. After a factor analysis was performed it was determined that the measure consisted of two factors consisting of the two positively worded items and the two negatively worded items. The table below *(table 3.1)* illustrates the results of the correlation between the items in the scale. Items one and two were worded positively and items three and four were phrased negatively. The positively worded items correlated well with one another, as did the negatively correlated items however, the positively phrased items did not correlate at all with the negatively phrased items.

Table 3.1 **Pearson Correlation Coefficients (*N = 225*)**			
	Pbc_1	**Pbc_2**	**Pbc_3**
Pbc_2	.51 <.0001	1.00000	.05 0.4480
Pbc_3	.02 0.7255	.05 0.4480	1.00000
Pbc_4	.12 0.0779	.09 0.1929	.59 <.0001

The perceived behavioural control scale was also found to not correlate well with any of the other scales within the study and only very weak correlations with attitudes and social norms were illustrated *(table 3.2).*

Table 3.2. **Pearson Correlation Coefficients (*N = 225*)**				
	Intentions	**Attitudes**	**Social Norms**	**Self-efficacy**
PBC	-.09 0.1764	-.14 0.0415	-.21 0.0016	-.09 0.1598

Due to these results the decision was made to exclude Perceived Behavioural Control from the model and perform the analysis without the variable. The fact that the measure was found to be unreliable and failed to correlate as well as the other variables is consistent with the argument put forth in the literature stating that self-efficacy was in fact a stronger and more inclusive predictor of intentions than perceived behavioural control (Kuo & Hsu, 2001). The very weak correlation between self-efficacy and perceived behavioural control also supports the argument that the constructs are in fact separate in nature however this will be dealt with further in the discussion section of the research report.

With this established, considering the sample was derived from three very different industries, it was then important to establish if in fact the samples from the different industries were similar or if there were any significant differences between the groups. This was done by making use of a one-way ANOVA.

Anova

The results of the ANOVA suggested that there were in fact significant differences in how the samples responded to the questionnaires *(table 3.3).* In particular there were differences between the manufacturing industry sample and the information technology sample. The financial industry organisation was not significantly different from the other two.

Table 3.3. **ANOVA Results**			
	Mean Square	**F Value**	**Pr>F**
Intentions	49,75	4.35	0.0140
Attitudes	23,51	1.15	0.3198
Social norms	203,43	6.76	0.0014
Self-efficacy	1298,23	9.10	0.0002

A Bonferroni post-hoc test was run for each of the variables and it was discovered that for all of the variables, there was no significant difference between the financial industry sample and the manufacturing or information technology samples. However, there were differences between the manufacturing sample and the information technology samples with regards to self-efficacy, social norms and intentions. With this in mind, the statistics to follow were performed separately according to industry.

Correlation of Variables

Correlations were run to determine the relationships between the variables under the model. As mentioned above certain aspects of the samples were shown to be significantly different and so the analyses were carried out according to sample. The table below *(table 3.4)* illustrates the correlations between intentions and the other variables according to the samples from the three different industries.

Table 3.4 . **Pearson Correlation Coefficients for variables by sample**				
Variable	**Sample**	**Intentions**	**Attitudes**	**Social Norms**
Attitudes	**Manufacturing**	.69 <.0001		
	Financial	.73 <.0001		
	Information Technology	.84 <.0001		
Social Norms	**Manufacturing**	.65 <.0001	.75 <.0001	
	Financial	.73 <.0001	.70 <.0001	
	Information Technology	.59 <.0001	.59 <.0001	
Self-efficacy	**Manufacturing**	.51 <.0001	.59 <.0001	.51 <.0001
	Financial	.61 <.0001	.69 <.0001	.59 <.0001
	Information Technology	.59 <.0001	.66 <.0001	.44 <.0001

The results indicated that the correlations between variables were all significant and in fact illustrated strong correlations and relationships between intentions and the rest of the variables. There were very strong correlations between intentions and attitudes in particular and this was evident across all samples. There was a substantial difference, however, between the correlation of intentions with attitudes regarding the manufacturing and information technology samples. Although the manufacturing sample returned a strong correlation of .69, the information technology sample showed an extremely high relationship

of .84 between intentions and attitudes. The reasons for this difference will be discussed later on.

With regards to attitudes, again all the relationships were seen to be significant and strong correlations were reported across all the samples *(table 3.4).* This variable was the only one whereby there were no reported significant differences across the samples. The only noticeable differences among the samples here is that attitudes seemed to correlate with social norms quite a bit less for the information technology industry, however, as mentioned the correlation with intentions was remarkably high.

With regards to Social Norms as illustrated (*table 3.4),* it is evident that it too correlates strongly with the other variables in the model and all the relationships were again seen to be significant. What is noticeable is that Social Norms and Self-efficacy seem to correlate the weakest out of all the constructs. This was evident across the samples, particularly the information technology sample which showed a relatively weak correlation of .44.

Again, in the case of social norms, it was demonstrated that there were differences between the samples and this is most evident regarding the correlation with social norms whereby the manufacturing sample reported a strong correlation of about .75, the information technology sample only reported a correlation of around .59. The significance of these differences will be discussed at a later stage.

Lastly, self-efficacy was looked at in regards to its relationships with the other variables and it too produced generally high correlations *(table 3.4).* However, of all the variables self-efficacy produced the weakest relationships, particularly with regards to intentions and social norms. The correlation coefficient failed to reach past the .60 level however again all the relationships were shown to be significant.

Although there were reported differences among a couple of the samples, all of the variables assessed showed significant and generally strong relationships with one another. The overall correlations which assessed the entire sample as a whole again produced relationships that proved to be very strong. The literature focuses on the relationships between intentions and the other variables and, as a whole, intentions correlated with attitudes with a coefficient of .75; to social norms with a coefficient of .66; and with self-efficacy with a coefficient of .63 as illustrated in *table 3.5*.

Table 3.5. **Pearson Correlation Coefficients**			
	Attitudes	**Social Norms**	**Self-efficacy**
Intentions	.75 <.0001	.66 <.0001	.63 <.0001

Regression Analyses

Regression analyses were run on the three samples independently and each sample showed different sets of variables as being predictors of intention. For the first sample consisting of the manufacturing industry participants, the results suggested that only attitudes and social norms were significant predictors of intention and that attitudes had the strongest relationship with intention. Self-efficacy was found to be non-significant as indicated by *table 4.1*.

Table 4.1. **Sample 1. Parameter Estimates.** ***R-Square*** **0.4980**		
Variable	**T-Value**	**Pr>|t|**
TOT_Att	3.03	0.0031
TOT_SN	2.63	0.0099
TOT_SE	1.67	0.0980

The results also returned an *R-Square* of .49 which illustrates a strong relationship between the variables. The figure suggests that just under 50% of the variance can be accounted for by the attitude, social norm and self-efficacy variables. A stepwise regression was carried out and it was found that attitudes explained 43.72% of the variance, social norms explained an additional 4.56% of the variance while self-efficacy explained a negligible 1.52% of additional variance.

Table 4.1.1. **Proportion of Variance Explained**			
	Attitudes	**Attitudes & Social Norms**	**Attitudes, Social Norms & Self-efficacy**
Proportion of variance explained (*R-Square*)	.44	.48	.50

The second sample consisting of the financial industry participants, produced results which also suggested that only attitudes and social norms were significant predictors of intention. Self-efficacy was once again found to be non-significant as indicated by the table below *(table 4.2)*.

Table 4.2. **Sample 2. Parameter Estimates. *R-Square* 0.6308**		
Variable	**T-Value**	**Pr>|t|**
TOT_Att	2.81	0.0068
TOT_SN	3.64	0.0006
TOT_SE	1.01	0.3161

The results also returned an *R-Square* of .63 which illustrates a very strong relationship between the variables. The figure suggests that over 63% of the variance can be accounted for by the attitude and social norm variables. A stepwise regression was also carried out and

found that social norms explained 53.69% of the variance, attitudes explained an additional 8.75% of the variance while self-efficacy explained an insignificant 0.64% of additional variance.

Table 4.2.1. **Proportion of Variance Explained**			
	Attitudes	**Attitudes & Social Norms**	**Attitudes, Social Norms & Self-efficacy**
Proportion of variance explained (*R-Square*)	.54	.62	.63

The last sample consisting of the information technology industry participants, produced results which were slightly different. These results suggested that only attitudes and self-efficacy were significant predictors of intention and again that attitudes had the strongest relationship with intention. Social norms this time was found to be non-significant as indicated by the table below *(table 4.3)*.

Table 4.3. Sample 3. Parameter Estimates. *R-Square* 0.7627		
Variable	**T-Value**	**Pr>|t|**
TOT_Att	6.23	<.0001
TOT_SN	1.54	0.1284
TOT_SE	3.12	0.0028

The results also returned an *R-Square* of .76 which illustrates a very strong relationship between the variables. The figure suggests that over 76% of the variance can be accounted for by the attitude and self-efficacy variables. A stepwise regression was also carried out and found that attitudes explained 70.94% of the variance, self-efficacy explained an additional

4.35% of the variance while social norms explained an insignificant .98% of additional variance.

Table 4.3.1. **Proportion of Variance Explained**			
	Attitudes	**Attitudes & Self-efficacy**	**Attitudes, Self-efficacy & Social Norms**
Proportion of variance explained (*R-Square*)	.71	.75	.76

The results demonstrated show a clear indication that attitudes are the main predictor of intention to act. Although when looking at the individual samples, not all the variables are seen to be significant predictors at one time, when the analyses were run on the sample as a whole, all three variables were found to be significant predictors of intention. Again attitudes were the most significant.

Table 4.4. Collective Sample. Parameter Estimates. *R-Square* 0.6233		
Variable	**T-Value**	**Pr>|t|**
TOT_Att	7.09	<.0001
TOT_SN	4.13	<.0001
TOT_SE	3.86	0.0001

The results also returned an *R-Square* of .62 too, which illustrates a very strong relationship between the variables. It essentially suggests that over 62.33% of the variance can be accounted for by the variables. A stepwise regression was carried out on the collective sample and it found that attitudes explained 55.51% of the variance, social norms explained an additional 4.23% of the variance while self-efficacy explained an insignificant 2.59% of additional variance.

Table 4.4.1. **Proportion of Variance Explained**			
	Attitudes	**Attitudes & Self-efficacy**	**Attitudes, Self-efficacy & Social Norms**
Proportion of variance explained (*R-Square*)	.56	.60	.62

These results essentially illustrate support for proposed model as a whole and provide evidence for the fact that attitudes are excellent predictors of intentions. What these results mean in the context of the study will be addressed now in the discussion section of this paper.

DISCUSSION

The results reported illustrated some interesting findings about the various hypotheses originally drawn up within the research report and need to be explained and discussed with regards to what they mean for this particular piece of research. The results will be discussed on both a group level and a more general level as although there were significant differences within the sample we also need to assess the theory as whole.

The first hypothesis asked '*Are Attitudes, as contained within the Theory of Planned Behaviour, predictors of intentions to make unauthorised software copies?'* The attitudes construct consisted of five items and returned a Cronbach alpha of .80 which illustrated that the scale used to measure this construct was more than sufficiently reliable. When correlated with intentions according to the different samples, attitudes were found to correlate with the intention variable the strongest for both the manufacturing and information technology sample and very highly with intentions from the financial industry.

The attitudes scale was the only instrument found not to be significantly different across the samples and it correlated the strongest with the sample as a whole by quite a margin. With a correlation coefficient of .75, attitudes also managed to explain the majority of the variance in all the samples and within the sample as a whole. It accounted for over 55.5% of the variance of the collective sample and in all cases was found to be the strongest predictor of intentions. Attitudes regarding the performance of an act and regarding the consequences around performing an act were proven to be the main predictor of intention to act and can largely be attributed to the fact that the scale relates directly to an act and its consequences.

The results regarding attitudes are consistent with the theory as the theory suggests that should a person attribute unfavourable feelings towards a specific act or object then that person will be less likely to perform that act (Chang, 1998). This was evident in this case as

attitudes and intentions were the most highly correlated variables which means that the way that people view an act is of vital importance to the how the behave. This was result was supported in Loch and Conger (1996) and Seale, Polakowski & Schneider (1998) whom also found attitudes to be the strongest predictor of intentions to pirate software.

The second hypothesis was '*Are Social Norms, as contained within the Theory of Planned Behaviour, predictors of intentions to make unauthorised software copies?'* This too was answered affirmatively and social norms were found to correlate with intentions very strongly across all industries. It was found to be the second best predictor of intentions and explained an additional 4.23% of the variance. Social norms were found to be the best predictor of intentions to act within the financial industry sample but overall was not as good a predictor as attitudes and was even found to be non-significant when looking at the information technology industry which is surprising.

This particular result may be due to the fact that as experts in the field of computer technology, the information technology employees may value their own opinions above those of significant others and so social norms may be less important to them. However, overall the results suggest that the thoughts and perceptions of significant others in one's private life and within one's organisational setting play an important role in influencing an individual's decision to perform certain acts. It concurs with the theory that the social norms of significant others, whether within organisations or in more general society, do in-fact have a substantial impact on individuals behaviour. This results has found to be consistent again with Loch and Conger (1996) and Seale, Polakowski & Schneider (1998) as well as with Limayem, Khalifa and Chin (2004) who found the construct of social norms to be the best predictor of intentions to act.

Looking at hypothesis three which asked *'Is Self-efficacy, as contained within the Theory of Planned Behaviour, a predictor of intentions to make unauthorised software copies?'* this too was found to be true. Self-efficacy was found to be a significant predictor of intentions when looking at the overall sample. It was, however found to be non-significant when looking at the manufacturing and financial sectors and the construct proved to correlate the least with the other variables within the model and was found to explain the least variance of all the variables.

The difference in industry may be due to the fact that the information technology employees are more confident regarding their abilities to make, accept and decline pirated software as they have been forced to address their stance on the matter and are confronted with it more regularly. Many of the employees from other industries may be unsure as to their feelings around their self-efficacy levels regarding the pirating of software.

This evidence while supporting the role of self-efficacy, particularly in relation to perceived behavioural control which will be discussed further at a later stage, is not as conclusive as some research suggests such as in Broadhead-Fern and White (2006). In this research piece a similar model was tested with regards to the following of rules within a homeless youth shelter and the variables of attitudes, social norms, perceived behavioural control and self efficacy were assessed in relation to intentions in an effort to see the differences between the self-efficacy and perceived behavioural control constructs. Broadhead-Fern & White (2006), showed self-efficacy to be the best and only significant predictor of behaviour, thereby suggesting its importance.

While it was found that self-efficacy was overall a significant predictor of intentions it was not found to be as strong a predictor as research suggests and was in fact the variable that explained the least variance and correlated the weakest with intentions. Self-efficacy also

demonstrated a significant but very weak relationship with Perceived Behavioural Control. This was consistent with the argument put forth that the two constructs are separate and should be treated as such (Broadhead-Fern & White, 2006; Giles et al. 2004) and it proved that the two do in fact measure different constructs.

While it was anticipated that self-efficacy and perceived behavioural control would not be well correlated, it was surprising that, when it became apparent that all the variables did in fact correlate with one another, these two correlated the weakest. Ajzen (1991), himself suggested that the two constructs are one and the same and although the argument was made that they should be treated as separate entities, if correlations between variables were to be found, it is expected they would be found between the constructs of self-efficacy and perceived behavioural control.

Despite the fact that the perceived behavioural control construct was unreliable it did seem to be measuring completely different aspects to the self-efficacy scale thus supporting the original argument that self-efficacy and perceived behavioural control are essentially two separate constructs and that self-efficacy is a far better predictor of intentions than perceived behavioural control. The result as a whole, however, is consistent with previous research (Broadhead-Fern and White, 2006; Giles et al. 2004) and suggests that if someone is confident in their abilities, then they will be more likely to commit or perform a specific behaviour.

The fourth research question which asked, '*Is Perceived Behavioural Control, as contained within the Theory of Planned Behaviour, a predictor of intention to make unauthorised software copies?'* could not effectively be dealt with. The construct was found to be unreliable and it correlated very poorly with the rest of the variables leading to the decision to remove it from the analyses.

The lack of reliability may be due to the fact that the measure only consisted of four items. More practically, it may have been due to language problems. In a society whereby English is not the first language to the majority of people, perhaps the questions were not phrased correctly or as accurately as possible. As the questions were relatively similar, perhaps the respondents did not pick up on the negatives or assumed their answers to follow a similar path.

The items within the scale had two positively worded items which only correlated with one another, and two negatively worded items which also only correlated with each other. The items were essentially asking the same thing which is why the lack of reliability and correlation between items is surprising. Although Povey et al (2000) assessed dietary behaviours the Cronbach of .92 seemed promising considering the questions were not significantly altered.

The fact that perceived behavioural control had to be excluded from the analyses is not entirely surprising as it was predicted that it would not be as good a predictor as self-efficacy which it proved not to be. These results are consistent with Terry and O'Leary (1995) whereby they also found self-efficacy to be a significant predictor of intentions and perceived behavioural control to be non-significant. Broadhead-Fern and White (2006) as well as Giles et al., (2004) also found self-efficacy to be a better predictor than perceived behavioural control.

From the results it would not be fair to suggest that perceived behavioural control is not an effective measure of intention for a few reasons. Firstly, the fact that the scale turned out to be unreliable suggests that it could not be assessed accurately. Secondly, Ajzen (1991) states that the role of perceived behavioural control in predicting intention will vary across situation and context. What is needed is a measure of perceived behavioural control which has been

validated and found reliable consistently so that the construct can be measured consistently and accurately within the context of software piracy.

With these conclusions in mind, it effectively answers the final hypothesis which asked '*Which variable under the Theory of Planned Behaviour best predicts intentions to make unauthorised software copies?'* The attitudes scale accounted for significantly more variance than the other variables across all the samples and the collective sample and was identified as the strongest predictor of intentions to commit an act which has been seen to be consistent with other research findings (Seale, Polakowski & Schneider, 1998; Loch & Conger, 1996; Vallerand et al. 1992).

In a meta-analysis of 26 studies by Farley, Lehmann and Ryan (1981), it was found that attitudes dominated social norms when it came to predicting intentions and it was suggested that this was due to the fact that attitudes put more of a focus on the consequences of an act. Social norms, and in this case self-efficacy deal with more remote elements of intention by looking at perceptions as to what significant others would do or toward perceptions regarding our beliefs in our abilities (Vallerand et al. 1992).

Another interesting point of discussion revolves around the argument that the constructs within the Theory of Planned Behaviour are independent of one another. Significant correlations among all of the constructs were found. This result has been garnering increasing support over time (Miniard & Cohen, 1981; Shepherd & O'Keefe, 1984; Vallerand et al. 1992). The correlations between the items of social norms, attitudes and self-efficacy suggest there may be some commonality in what they are looking at and perhaps there is a common antecedent concept existing among the variables (Vallerand et al. 1992). From the evidence, this commonality is more likely to exist between social norms and attitudes. Self-

efficacy, although significantly correlated to the other constructs, did illustrate a much weaker correlation.

In looking at the overall model we see that it was largely validated. Bar the problems with the perceived behavioural control scale all the variables were found to be significant predictors of intentions. What the research indicates is that while the Theory of Planned Behaviour seems to be an adequate and effective predictor of intentions to act, there is room for improvement within the model and perhaps self-efficacy should replace the construct of perceived behavioural control. Not necessarily because they measure the same thing, as it has been effectively argued that they do not, but because self-efficacy may be more important and more relevant in conditions of low volitional control.

Another argument could be regarding the claim of no volitional control and whether in fact, in cases of software piracy, there is no volitional control. Complete control over a behaviour is rarely possible as any number of outside factors may affect the performance of a behaviour and so behavioural control is measured along a continuum (Ajzen & Madden, 1985). Although it was initially argued that software piracy is an act of little volitional control, the fact that the perceived behavioural control construct was found not to be valid and that self-efficacy was discovered to be the weakest predictor of intentions within the model, it may be reasonable to argue that there is in fact a fairly significant amount of control when dealing with software piracy.

In today's age of personal computers, portable laptops, flexible working hours and increasingly easy access to information it has become relatively easy to learn how to pirate software, to find the time to pirate software and to source the software desired to be copied. Individuals these days grow up with technology and so the 'know-how', especially among educated white collar workers can almost be assumed. So perhaps there is a level of control

to pirating software which may explain the lack of results regarding perceived behavioural control and self-efficacy.

This is not to say the perceived behavioural control construct should be discarded. It may well still have its place within the model, but what needs to be done is the effective development of reliable and valid scales with which to test these constructs. Ideally a definitive scale for each measure should be developed so that the constructs are measured consistently so that the results will be comparable across circumstances. As mentioned, many of the results from previous studies reporting significant relationships have been based on single item scales and this brings into question the ability of the scales to effectively measure the constructs.

Also interesting is the fact that the results differed across industries. The manufacturing industry and the financial industry organisations found attitudes and social norms to be their main predictors of intention however the information technology industry found attitudes and self-efficacy to its significant predictors of intention. The results are interesting as being in the computer industry it could be assumed that social norms would in fact play a more vital role in determining behaviour as the act relates directly to this industry and one would think that workplace norms would be crucial to the behaviour of employees.

One explanation could be due to the fact that over 70% of the variance was explained by the attitudes variable which may suggest that working within the information technology industry you develop strong attitudes regarding different behaviours within the industry and being educated, trained and experienced in the field, the participants may regard their views over and above those of significant others and so there may be less reliance on external norms. The finance organisations found social norms to be the primary predictor of intentions and this is probably due to the fact that due to the nature of the finance industry it is already

closely monitored and people who work in the industry have to have records of honesty and good ethics.

With regards to what the results say for organisations, it is clear that they should help to inform workplace policies. The main predictor of intention to make unauthorised copies of software was attitudes, followed by social norms. What could perhaps be done is to implement firstly an organisational culture prohibiting and discouraging piracy. Although it may be difficult to control the influence of outside norms such as an individual's friends or family, organisations can make sure they garner an environment condemning software piracy. Over and above this, anti-piracy campaigns should try and go beyond the organisational setting as many people are influenced more by their friends and family than by work colleagues and so a wider campaign would be required to reach those outside of the workplace.

Most importantly though, as informed by the research, organisations should look to influence an individual's attitudes and change their views on piracy. Perhaps having seminars demonstrating the consequences and effects of software piracy in the workplace will provide workers with new information and change their views on the benefits and risks of pirating software, thereby influencing their attitudes. Though the research does reveal some important results for both the theory itself and for possible organisations policy changes, there are certain limitations surrounding the study which need to be addressed.

Strengths and limitations

This study did express certain strengths which were lacking from previous studies. Firstly, regarding the sample, it was a fairly large sample size which was importantly derived from the organisational setting. Previous research (Seale, Polakowski & Schneider, 1998; Loch & Conger, 1996; Chang, 1998) has failed to look at employees and has only really addressed the

student populations. Also the study examined across industries and was able to assess different contexts and working environments.

The study also looked at the theory in terms of its original state. A proportion of research to date (Seale, Polakowski & Schneider, 1998; Loch & Conger, 1996) has only assessed aspects of the Theory of Planned Behaviour and so the fact that the theory is being assessed as intended is important. Although this research did make room to incorporate self-efficacy into the model, it is justifiable as it is a current and important issue facing the theory. It is an issue which Ajzen (1991) himself has been forced to acknowledge and is of importance and relevance to both the study and the model itself.

Lastly, the study set out to employ reliable and valid instruments for testing the constructs. Although the perceived behavioural control measure turned out to be unreliable, the study provides for further validation and support of the other scales employed. The scales used were a significant improvement on measures used in many other studies which sometimes used only one or two items (Chang, 1998; Broadhead-Fern & White, 2006; Vallerand et al. 1992) to assess certain constructs.

However, there were certain limitations to the study. The most pertinent being the fact that actual behaviour could not be looked at. The theory in its original form draws a link from intention to behaviour, however due to mentioned ethical reasons around what is essentially an illegal act and the risks around being implicated in those behaviours it was not possible to assess behaviour. While behavioural intention is regarded to be the most accurate predictor of actual behaviour (Ajzen & Madden, 1985), intention to act does not always translate into actual behaviour and so while the variables suggest that they play a vital role in predicting intentions, it does not mean that they necessarily have the same impact regarding predicting actual behaviour.

Another obvious limitation surrounds the perceived behavioural control construct which was deemed to be unreliable and had to be discarded. It ultimately meant that the construct could not be properly assessed and so conclusions surrounding the role and effect of perceived behavioural control could not be effectively and accurately made. Future research should look to develop effective scales within the Theory of Planned Behaviour so that there is consistency across studies with regards to what is being studied and how it is being assessed.

With any quantitative study there are the issues of self-reporting and patterned responses. When filling out a questionnaire relating to something like software piracy, although anonymity and confidentiality are ensured, participants may still feel pressured to give socially desirable answers and may still feel uneasy at giving truly honest responses. No social desirability measure was used in the study. Also patterned responses were identified. These were eliminated as best as possible. However due to the length, sometimes repetitiveness of items and the nature of the questions some participants may still have offered random responses.

Added to this is the issue of multi-collinearity which refers to the fact that the scales within the model are correlated with one another because they are found to measure similar constructs (Howell, 2004). When this occurs you have an overlap regarding what the constructs are measuring and so certain constructs are being explained by more than one variable. The result illustrating attitudes to be the biggest predictor of intentions by such a margin may have been compounded and magnified by the fact that the construct may well have measured certain aspects of the other constructs. The fact that the other constructs were seen to explain fairly little over and above the attitudes construct shows that there was in fact a degree of multi-collinearity which could have been further exacerbated by common-method measurement as all the scales assessed were measured on the same scale format.

It is important to note that these results refer purely to white collar workers of which most have had substantial computer experience. Therefore, transference onto student populations or blue collar workers would not be appropriate. In South Africa, while the white collar segment of the population moves toward a more representative view of the population, blue collar work is still dominated disproportionately by black workers and so the study at hand would only be relevant to the white collar population.

The South African context is important to note as it would be very difficult to transfer results from a setting as diverse in culture and language as South Africa to other settings such as in the western world. Different cultures will place different emphasis on the role of certain variables like social norms and this may well have affected the results. The African cultures tend to place a higher emphasis on community and are a more collectivist culture (Hook, Watts & Cockcroft, 2002) and so social norms may have been far more important among those segments of the sample.

Another limitation, within the context of such a diverse setting, could be the language barrier. The questionnaire was presented in English which is a second or third language for the majority of the sample. Many of the sentences or phrases may well have been misinterpreted or interpreted in alternative ways. Some of the questions and contexts and subtleties may not have been fully comprehended and so may well have had an impact on the results of the study.

Lastly, the fact that 77% of the sample consists of individuals between the ages of 18 and 38 may have issues when looking to generalise the results over an older population as these individuals would have grown up in the age of technology and may have been exposed to these technologies from a much younger age than older generations. As such there may be problems of generalisability when looking across older generations.

CONCLUSION

This study has essentially provided positive support for the Theory of Planned Behaviour and has identified the important variables which drive people to pirate software in different organisational settings. The results can serve as important information in guiding organisational policies towards piracy in the workplace and provides for deeper understanding into the motivational factors behind piracy so that it can best be dealt with on a larger scale.

It is clear that this study has its limitations, however it too has its strengths and so can make some important recommendations for future research. First, it is important that further research into employee populations is carried out as students cannot provide accurate information when looking at the workplace setting as they lack a valid point of reference and do not possess the proper experience and knowledge of the workplace and its environment. Secondly, instruments for each the relevant variables need to be further developed and validated to allow for accurate and consistent results and research.

Lastly, many studies claim to be assessing the Theory of Planned Behaviour yet all they really assess are their own models merely borrowing aspects from the theory. When assessing a particular model it is important to assess the model as it was intended to properly evaluate the effectiveness of the model. Otherwise the model tested ends up representing very little of what was intended by the original theory. With this in mind, research into the original state of the theory is required to accurately determine the effectiveness of the Theory of Planned Behaviour in assessing intentions and ultimately behaviours.

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