

2007

Determinants of Digital Piracy among Youth in South Africa

Jean-Paul Van Belle

Department of Information Systems University of Cape Town

Brandon Macdonald

Department of Information Systems University of Cape Town

David Wilson

Department of Information Systems University of Cape Town

Follow this and additional works at: <http://scholarworks.lib.csusb.edu/ciima>

Recommended Citation

Van Belle, Jean-Paul; Macdonald, Brandon; and Wilson, David (2007) "Determinants of Digital Piracy among Youth in South Africa," *Communications of the IIMA*: Vol. 7: Iss. 3, Article 5.

Available at: <http://scholarworks.lib.csusb.edu/ciima/vol7/iss3/5>

This Article is brought to you for free and open access by CSUSB ScholarWorks. It has been accepted for inclusion in Communications of the IIMA by an authorized administrator of CSUSB ScholarWorks. For more information, please contact scholarworks@csusb.edu.

Determinants of Digital Piracy among Youth in South Africa

Jean-Paul Van Belle

Brandan Macdonald

David Wilson

Department of Information Systems

University of Cape Town

Jean-Paul.VanBelle@uct.ac.za

ABSTRACT

This paper investigates digital piracy, the information technology-enabled theft of digital goods, among the South African youth. It proposes a “unified” comprehensive three-stage model to look at the determinants of piracy attitude, intention and behaviour. In particular, it looks at the differences between piracy of video, music and software piracy. Although our findings confirm the impact of most of the factors found in the literature, not all of the factors were found to have a significant correlation. The model was particularly successful for stage 2 in explaining piracy intention through piracy attitude, affordability, personal normative beliefs and perceived behavioural control. However, in a first stage, gender, perceived ethical importance and institutional attitude towards piracy were found to impact these intermediate factors. Finally, it was found that access to enabling technology moderates the influence of piracy intention on actual piracy behaviour quite strongly.

INTRODUCTION

Digital piracy, information technology-enabled theft of intellectual property, is claimed to cost businesses billions of dollars per year globally (BSA, 2005). However, our limited understanding of the factors influencing piracy constrains initiatives to curb this activity (Moore & Chang, 2006).

Digital piracy (hereafter referred to as “piracy”) is most prevalent amongst youth worldwide (Freestone & Mitchell, 2004, Kini, Ramakrishna & Vijayaraman, 2003, Vartiainen, 1999). This research investigated the factors that affect piracy amongst young South Africans between the ages of 17 and 25 years. Notably, the mediating role of access to information technology (IT) in piracy – a factor typically excluded in many major studies – is investigated. A model is developed by integrating relevant literature to explain software, video and music piracy and tested quantitatively on a group of students.

Background and Prior Research

Digital piracy can be defined as “the illegal act of copying digital goods – software, digital documents, digital audio (including music and voice) and digital video – for any reason other than backup without explicit permission from and compensation to the copyright holder” (Gopal, Sanders, Bhattacharjee, Agrawal & Wagner, 2004).

Economic Effects of Piracy

The global software piracy rate in 2005 was estimated to be between 35 and 40 percent, with South Africa’s estimated 37 percent piracy rate putting it right in the middle (BSA, 2005). Piracy cost the software industry as much as US\$196 million in South Africa and US\$32.7 billion globally in 2004 (Prins, 2005, BSA, 2005). The BSA claims that a 10 percent point reduction in software piracy could create an additional 2400 South African IT jobs.

The piracy rate of music and video products in South Africa during 2004 was estimated to be 40 percent, translating into a loss of US\$35 million in revenue to the local music and video industries (Curtis, 2006).

On the other hand, piracy may have some benefits. Givon, Mahajan and Muller (1995) discovered that software piracy may be responsible for 80 percent of new software buyers. In this case, software developers need to balance the costs of pursuing software pirates with the loss of new, potentially legal, customers (Moores & Chang, 2006). Similarly, research indicates that music piracy does not necessarily result in decreased music sales and can even result in increased sales (Gopal, Bhattacharjee & Sanders, 2006, Oberholzer-Gee & Strumpf, 2005).

Comparison of Software, Video and Music Piracy

Although software, video and music are all information goods, implying a marginal production cost of almost zero (Gopal *et al.*, 2006), there are some key differences between software, video and music (summarised in table 1), which affect respective piracy behaviour.

Table 1: Key differences between software, video and music.

Source: Bhattacharjee, et al, 2003, Wang, 2005

	Software	Video	Music
Product price	High	Low/Medium	Low
Size	Medium/Large	Medium	Small
Volume	Low	Medium/High	High
Perceived need	High	None	None
Support	Required	None	None
Network externalities	Present	None	None
Value degradation	None	Present	Present
Product life	Long	Short/Long	Short/Long
Consumption skill	High	Low	Low
Personalised valuations	Low	Medium/High	High

Software is often significantly more expensive than a video DVD or music CD. Software piracy is therefore justified by some as being necessary for those who are unable to afford certain software applications (Wang, 2005), whereas research by Bhattacharjee et al. (2003) suggests that most music purchase decisions are unaffected by disposable income levels but rather by size and volume of video and music files - these contribute to their piracy (Gopal et al., 2004).

Further, software often needs technical training or support which only legal purchasers may receive, despite claims by some business owners that they cannot be profitable without piracy. Software piracy can also cause network externalities; as the number of users of pirated products increase, so the sales of legal software will increase. This is often because the pirated products become the industry standard and so more companies will adopt, and legally buy, that software (Wang, 2005, Gopal et al., 2004, Katz, 2005). None of these considerations apply to video or music piracy.

Gopal et al., (2006) also points out that consumption skill and personalised valuation significantly alter the dynamics of the software consumption as opposed to video and music consumption. The skill required to consume software is far greater than that required to consume digital video or music, meaning that the consumer base for software is smaller. In addition, consumers associate performers with music products to a far greater extent than they associate developers with software. Personal valuations of music products therefore depend on the performer far more than valuations of software depend on the developer.

Two other differentiators between software, video and music are value degradation and product life. Value degradation in terms of loss of quality, does not affect software. In addition, software often has a longer product life than music or movies. Music can either have a very short life, in the case of a catchy tune that quickly gets replaced, or a longer life if the music stays popular or enjoyable for an extended time. Movies usually have a short life as they are often quickly replaced by other high-interest movies (Wang, 2005).

The different characteristics of the types or categories of piracy, hereafter referred to as 'piracy scenarios', are expected to affect the levels of piracy.

Demographic Factors Influencing Piracy

While research into software, video and music piracy has examined the effect of many different factors, the influence of gender and age or experience is a common thread between most of these studies.

Research comparing IS practitioners to IS students indicates that IS students are generally more ethically lenient than their professional counterparts (Cappel & Windsor, 1998, Sumner & Werner, 1997, Vartiainen, 1999). In addition, research shows that undergraduate students are more ethically lenient than postgraduate students and similarly that inexperienced computer users are more ethically lenient than more experienced users (Kini et al., 2003, Munro, 2003 as cited in Williams et al., 2003). This evidence is supported by several moral development and ethical behaviour theories, which suggest that age and experience affect individuals' ethical attitudes (Bommer, Gratto, Gravener & Tuttle, 1987, Kohlberg, 1981, Leonard et al., 2004).

Morris et al. (1993) compared IS students from South Africa and the United States of America and found that South African students were more ethically lenient towards software piracy than their counterparts in the USA (Morris et al., 1993). Brodner et al. (1999) later found that South African students' attitudes had become even more ethically lenient toward software piracy since 1993.

There has been little piracy-related research purely focused on youth, and even less focussed on video and music piracy among South African youth. However, Freestone and Mitchell (2004) found that a mere six percent of United Kingdom students thought downloading music for free was wrong and five percent believed that downloading movies for free was wrong. These students did not consider that they were harming the sellers as the students felt they were "victims" of inflated software, music and movie prices and that these prices were being kept artificially high.

Several studies suggest that females are generally less ethically liberal than males (Cronan et al., 2005, Kreie & Cronan, 1998, Reiss & Mitra, 1998, Vartiainen, 1999). Loch and Conger (1996) found that when making a decision, men's behaviour is determined primarily by their attitudes toward an action whereas women's behaviour is influenced more by social norms. However, findings about gender and ethical decision-making are not unanimous: Moores and Chang (2006) did not find that gender affected the decision to pirate software. Similarly, the findings of two South African studies are contradictory. Munro (2003, cited by Williams et al., 2003) found that gender had no effect on attitudes towards piracy or general ethics, whereas Williams et al. (2003) concluded that gender did affect attitudes towards these issues, namely men were found to be ethically more lenient than women.

There are many other factors, in addition to age, experience and gender, that are used to explain IT-related ethical behaviour and piracy behaviour specifically. A number of these theories are based on well-established psychological frameworks such as the theories of Reasoned Action and Planned Behaviour (Ajzen, 1991, Fishbein & Ajzen, 1975) and Kohlberg's (1981) Cognitive Moral Development approach. For this research, a comprehensive, combined model was adopted based on all of the above.

Overview of Piracy-Specific Behavioural Theories

There are several models which explain software, video or music piracy, but none which specifically seek to explain all three. Several of these models are derived from TRA or TPB, but one, tested by Thong and Yap (1998) and described in the following section, focuses on the decision-making process leading up to piracy behaviour.

Hunt and Vitell's General Ethical Theory

A general ethical decision-making framework originally developed to model marketing ethics (Hunt & Vitell, 1986) describes both the deontological and teleological aspects of the decision-making process. Most other models treat this process of reasoning as a black box (Thong & Yap, 1998).

In Hunt and Vitell's (1986) and Thong and Yap's (1998) models, an individual is faced with an ethical dilemma and perceives a set of alternate courses of action to resolve the ethical problem. Both deontological and teleological evaluations of the alternate courses of action will influence ethical judgement, indicating that most individuals use both types of ethical reasoning when making ethical decisions. According to Thong and Yap (1998), teleological evaluations were on average almost three times more significant than deontological evaluations in explaining ethical judgement about piracy (Thong & Yap, 1998).

Situational Constraints in the Context of Software Piracy

Chatterjee's (2005) model of unethical usage of IT, drawing from TPB as well as Hunt and Vitell's (1986) theory, also includes the factor "IT resources", which influences both behavioural intention as well as actual behaviour. In the model, IT resources consist of computer skill and technology availability (Chatterjee, 2005). While Chatterjee (2005) equates IT resources to TPB's perceived behavioural control, IT resources can also be considered a "situational constraint" with regard to its potentially limiting effect on actual behaviour.

Net Gain Evaluation

Chatterjee's (2005) model also includes an evaluation of net gain – an "individual's perceived net gain (or loss) for self as an outcome of the action undertaken" (Chatterjee, 2005, p. 2894) – as a predictor of IT-related unethical behaviour intention.

Several other piracy models also take this concept of economic gain/saving into account. For example, a fairly recent but widely-cited software piracy model based on TPB (Peace et al., 2003) which includes software cost in addition to punishment severity, and punishment certainty as predictors of attitude towards piracy.

Video and Music Piracy Theories

Of the few models explaining video or music piracy behaviour, most include some measure of economic saving. Wang (2005) proposed a model loosely based on TRA/TPB to describe DVD piracy behaviour includes cost benefits as a predictor of the intention to buy pirated DVDs. Other significant factors included performance risks (the quality of the pirated DVD may be low), social norms and ethical concerns.

In addition, Gopal et al.'s (2004) behavioural model of audio piracy, derived partially from Hunt and Vitell's (1986) general ethical theory, included variables such as age, gender, ethical predisposition (deontological or teleological) and money saved by using pirated music.

More recent investigations into music piracy behaviour have moved away from planned behaviour or general ethical approaches. Gopal et al.'s (2006) economic model that incorporates the incentive structure for consumers and sellers yielded several insights. Among them that greater "sampling", which can include unauthorised copying or downloading of music, is a direct result of decreased sampling costs relative to purchase prices. Furthermore, this decrease in sampling costs also positively affects purchasing intention thus it has a beneficial impact on sales, provided the music item has "intrinsic value" to the consumer. On the other hand, Huang (2005) disregards economic effects entirely, developing a model to explain illegal music file sharing based on morality, expertise and social networking. While preliminary in nature and not comprehensive, the model was supported by empirical evidence.

Although many different, statistically significant factors influence piracy, the concept of net economic benefit or affordability is one that recurs in several theories spanning software, video and music piracy. In addition, access to piracy-enabling technology is a factor that has been hypothesised, but never tested despite advancing technology being seemingly correlated with increasing piracy rates (Gopal et al., 2006). Integrating these variables into Leonard

et al.'s (2004) extensive IT ethical behaviour model may increase its explanatory power for software, video and music piracy scenarios. Such a model is proposed next.

SOFTWARE, VIDEO & MUSIC PIRACY MODEL

The proposed Software, Video and Music Piracy (SVMP) research model is based primarily on Leonard et al.'s (2004) IT ethical behaviour model, and was extended by adding affordability and access to piracy-enabling technology as factors. All factors and their expected effects are described in table 2 below.

Since the test subjects are all students at the same university, Professional and Business Environmental factors, shown by dashed borders, are held constant in this study and are not tested. Moral judgement was not tested because the instrument is not available in the public domain.

Figure 1: Software, Video and Music Piracy (SVMP) Model.

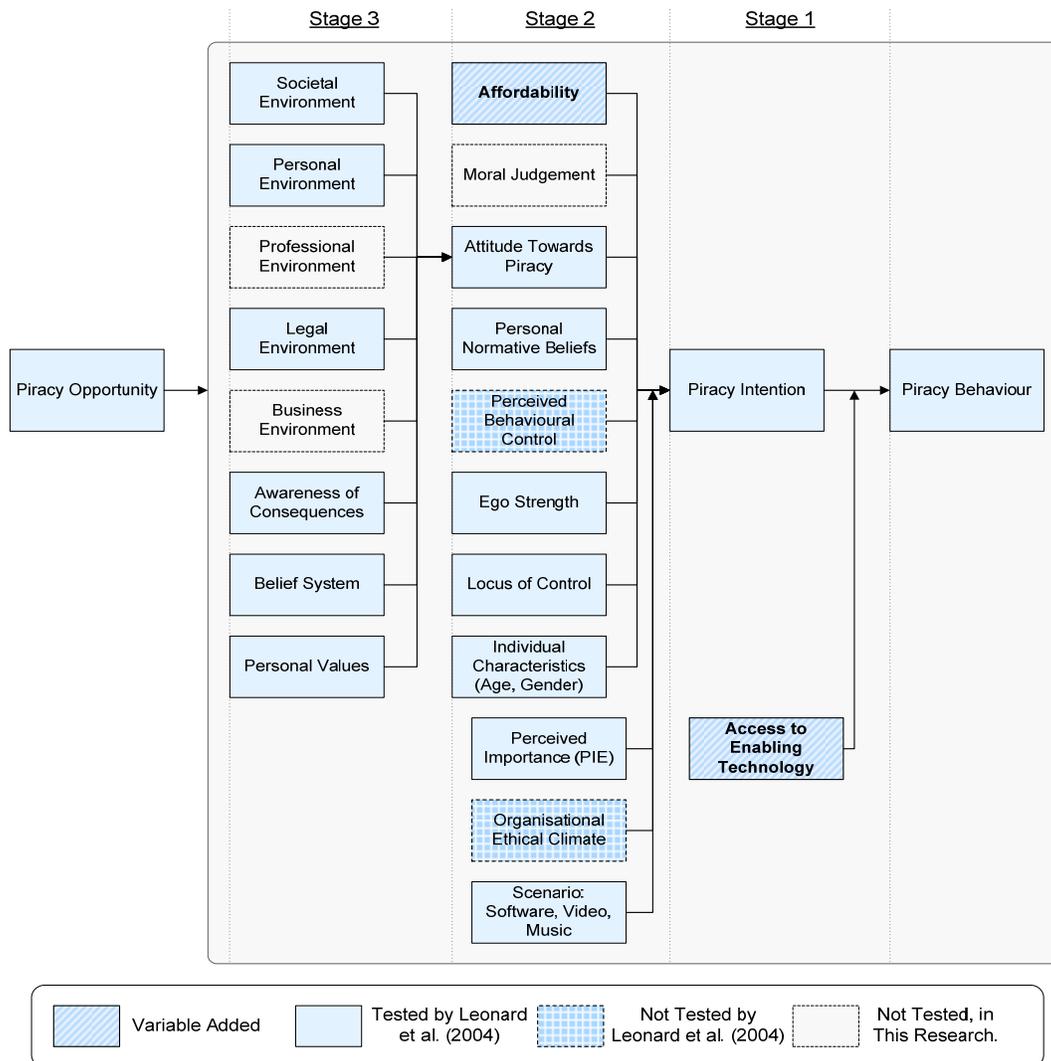


Table 2: Description of selected factors and their expected effects within Stage 1 of the SVMP model.
 Adapted from: Leonard et al., 2004

Symbol	Factor (Variable)	Description	Expected Effect
PB	Piracy Behaviour	Actual piracy behaviour conducted by the respondents	N/A
PI	Piracy Intention	How likely the respondent is to pirate	Positively affects PB
AET	Access to Enabling Technology	How often respondent has had access to any enabling technology	Moderates the relationship between PI and PB
AFF	Affordability	Rating of how affordable respondents feel software, video or music is	Positively affects PI
ATP	Attitude Towards Piracy	Respondents feelings towards piracy (e.g. acceptability of piracy)	Positively affects PI
PNB	Personal Normative Beliefs	An individual's moral obligation to perform an act	Negatively affects PI
ES	Ego Strength	Strength of one's conviction or self-regulating skills	Negatively affects PI
LOC	Locus of Control	The degree to which one believes they are in control of their life	Positively affects PI
SEX, AGE, YOS	Individual Characteristics: Sex, Age, Year of Study	Sex, Age and Year of Study	Positively affects PI
PIE	Perceived Importance	Perception of importance of scenario	Negatively affects PI
OEC	Organisational Ethical Climate	Culture of the organisation as perceived by the individual	Negatively affects PI
SCEN	Scenario	Type or category of piracy i.e. nature of digital good: software, video or music	Moderates PI, ATP
SOC	Societal Environment	Social and cultural values which affect respondent	Positively affect ATP
LEG	Legal Environment	Legislation, government, law	Negatively affects ATP
BUS	Business Environment	Corporate goals and business motives	Negatively affects ATP
CON	Awareness of Consequences	Knowledge of consequences and possible affects	Negatively affects ATP
BEL	Belief System	Religious or spiritual values	Negatively affects ATP
PVAL	Personal Values	Morales, goals, experiences	Negatively affects ATP

RESEARCH METHODOLOGY

This study aims to discover what factors influence young South Africans, between the ages of 17 and 25 years, to pirate software, music and video. To achieve this, the SVMP model, developed from the literature and described above is tested quantitatively (contact the authors for the questionnaire) using the following three hypotheses:

- H₁. Piracy Intention influences Piracy Behaviour, moderated by Access to Enabling Technology (E1).
- H₂. Personal Factors and Affordability influence Piracy Intention, moderated by Perceived Importance, Organisational Ethical Climate and Piracy Scenario e.g. software, video, music (E2).
- H₃. Environmental Factors, Personal Values, Belief System and Awareness of Consequences influence Attitude Towards Piracy (E3).

Research Strategy

A predominantly positivist quantitative approach has been used to address the research objectives. A modified instrument based on one used by Leonard et al. (Kreie, 2006, Leonard et al., 2004) model was used. New test items were added to test affordability, access to enabling technology, perceived behavioural control and organisational ethical climate.

A seven-point Likert scale is used for many of the test items as it provides greater statistical significance than five-point scales. In order to reduce the social desirability bias, the study presents scenarios and asks the subjects to respond to questions on an individual basis in that scenario instead of directly asking them about their own intentions (Chatterjee, 2005).

In order to obtain as large and varied a sample as possible, questionnaires were distributed at University of Cape Town (UCT) first year courses in Information Systems (INF1002S) and Philosophy (PHI1010S). PHI1010S in particular has a diverse range of students, in terms of year of study and degree. Furthermore, fourth year “senior” students in the Information Systems (IS) Honours class were also surveyed as they have frequent access to technology and possess a high level of technological skills – two aspects thought to be important in this study. A total of 470 questionnaires were distributed resulting in 225 valid responses equivalent to a response rate of 48%. Of these responses; 42% were first year IS students, 47% first year philosophy students and 11% were IS Honours students. Ages ranged between 17 and 25 years with a mean of 20 years. 126 students (56%) were female and 99 male.

Although unrepresentative samples limit the ability to make generalisations about the population as a whole, the respondents were diverse enough for the SVMP model to be tested and validated as well as for additional and interesting themes to emerge.

DATA ANALYSIS AND FINDINGS

Data analyses and discussions of findings are organised by hypotheses H₁ to H₃. All statistical tests are performed at a 5 percent significance level. Findings are discussed and contextualised within the literature as they arise below.

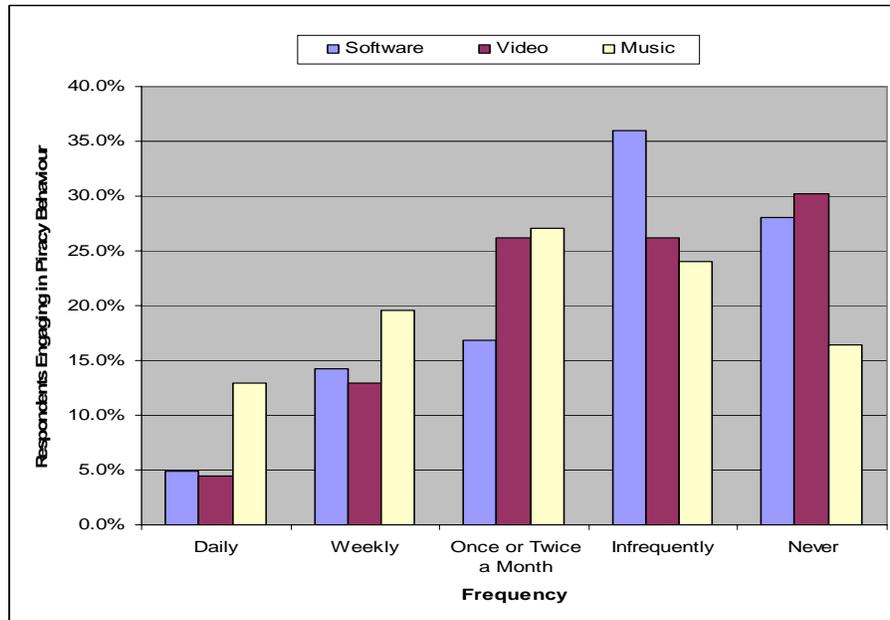
SVMP Stage 1 – What Influences Piracy Behaviour:

H₁. Piracy Intention influences Piracy Behaviour, moderated by Available Enabling Technology.

Figure 2 gives an overview of piracy behaviour among respondents. Almost three times as many respondents engage in music piracy on a daily basis than software or video piracy. Thirty-six percent of respondents pirate software on

an infrequent basis. Only eleven percent of the sample report that they never engage in software, video or music piracy.

Figure 2: Frequency of Piracy Behaviour by Scenario.



Stage one of the SVMP model (E1) is used to test the significance of the relationship between piracy intention and piracy behaviour, moderated by access to enabling technology. Table 3 presents the regression analysis results of E1 and indicates that piracy intention explains approximately 20 percent of variance in piracy behaviour across all scenarios, while only explaining 10 percent of variance in software piracy specifically.

Table 3: Explained Variance between Piracy Intention and Piracy Behaviour by Scenario (E1).

Scenario:	All	Software	Video	Music
R ²	0.20*	0.10*	0.26*	0.23*

* indicates significant at 5% in all tables

Table 4 shows how the explanatory power of piracy intention changes when moderated by access to enabling technology. It can be seen that daily access increases correlation whilst weekly/monthly access and infrequently/no access decreases correlation providing strong support for the moderating effect of access to enabling technology on the relationship between piracy intention and actual behaviour. It appears evident that technology availability has resulted in even greater piracy behaviour than those who pirate less frequently.

Table 4: Piracy Behaviour and correlation between Piracy Intention and Behaviour by Scenario and Access to Enabling Technology.

Scenario:	Software			Video			Music		
	Access to Enabling Technology:			Access to Enabling Technology:			Access to Enabling Technology:		
Piracy Behaviour:	Daily	Weekly/ Monthly	Infreq./ Never	Daily	Weekly/ Monthly	Infreq./ Never	Daily	Weekly/ Monthly	Infreq./ Never
Daily	10.6%	2.6%	0.0%	12.5%	1.3%	0.0%	24.1%	6.5%	4.4%
Weekly/ Monthly	30.6%	49.4%	9.5%	29.2%	65.8%	20.3%	42.5%	67.7%	11.1%
Infreq. / Never	58.8%	48.1%	90.5%	58.3%	32.9%	79.7%	33.3%	25.8%	84.4%
Correlation btwn: Piracy Intention & Behaviour	0.430*	0.144	0.215	0.616*	0.369*	0.329*	0.432*	0.325*	0.610*

P-value	0.000	0.209	0.091	0.000	0.001	0.005	0.000	0.002	0.000
---------	-------	-------	-------	-------	-------	-------	-------	-------	-------

Discussion of Findings

For H₁ - piracy intention influences piracy behaviour, moderated by available enabling technology -the null-hypothesis of no correlation is rejected at the 5 percent confidence level. Thus stage 1 of the model is supported.

Piracy intention positively influences piracy behaviour. This supports an extensive range of literature outlined above. There are noticeable differences in the frequency of piracy behaviour depending on scenario (that is, software, video or music piracy). Music is pirated most frequently, while software is pirated most infrequently. Possible reasons for this will be discussed with piracy intention below.

The relationship between piracy intention and piracy behaviour is moderated by access to enabling technology in the cases of software piracy and video piracy. The correlation between piracy intention and behaviour is statistically significant in the case of software piracy when individuals have daily access to enabling technology (see table 2). However this is not the case when access to technology is less frequent. This effect is less pronounced for video piracy, but is still significant, judging by the increasing explanatory power of the regression model for increasing access to technology. This is further supported by qualitative evidence, which suggests that particularly software piracy behaviour increases with greater access to enabling technology. This finding supports Chatterjee’s (2005) assertion that IT resources affect unethical IT usage.

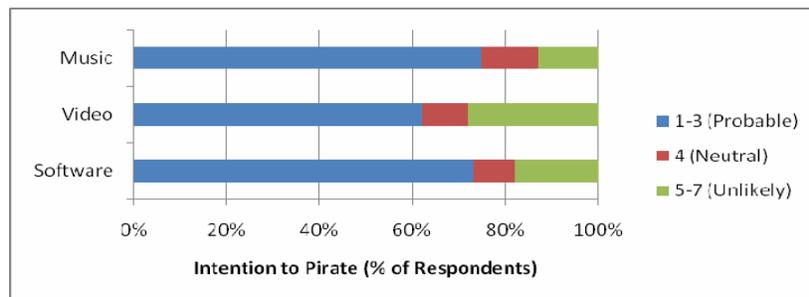
The moderating effect of technology is not consistent in the case of music piracy however. There is lower correlation between piracy intention and piracy behaviour for individuals with ‘weekly/monthly access’ to technology than that for individuals with either ‘infrequent/no access’ or daily access to technology. This does not support Gopal et al.’s (2004) claim that advancing technology positively affects music piracy.

SVMP Stage 2 – What Influences Piracy Intention:

H₂ Personal Factors and Affordability influence Piracy Intention, moderated by Perceived Importance, Organisational Ethical Climate and Piracy Scenario e.g. software, video, music.

Figure 3 provides an overview of piracy intention among respondents. Sixty percent of respondents indicated that they would probably pirate videos whilst 73 percent and 75 percent indicated an intention to pirate software and music respectively. This is significantly higher than that for either neutral or improbable intentions to pirate.

Figure 3: Piracy Intention by Scenario.



Stage two of the SVMP model (E2) is used to test the significance of the relationship between the independent variables and the intention to pirate. Table 5 presents the regression analysis results of E2 for all scenarios as well as

for each individual scenario. For the full model i.e. all scenarios, 43 percent of the variation in piracy intention is explained by variation in affordability, attitude towards piracy, perceived behavioural control, personal normative beliefs and ego strength. Affordability, attitude towards piracy and perceived behavioural control are significant in the regression models for all scenarios. Personal normative beliefs are also significant in explaining variation in video and music piracy intention. The model is most effective in explaining variation in music piracy intention

Table 5: Regression Analysis for Piracy Intention by Scenario.
Variables listed in order of significance (non-significant variables not shown)

Scenario:	All	Software	Video	Music
Significant Variables	<ul style="list-style-type: none"> Affordability (b=0.26) Attitude Towards Piracy (b=0.24) Perceived Behavioural Control (b=0.23) Ego Strength (b=-0.14) Personal Normative Beliefs (b=-0.13) 	<ul style="list-style-type: none"> Affordability (b=0.27) Attitude Towards Piracy (b=0.20) Ego Strength (b=-0.19) Perceived Behavioural Control (b=0.17) 	<ul style="list-style-type: none"> Affordability (b=0.34) Attitude Towards Piracy (b=0.22) Perceived Behavioural Control (b=0.18) Personal Normative Beliefs (b=-0.15) 	<ul style="list-style-type: none"> Perceived Behavioural Control (b=0.36) Attitude Towards Piracy (b=0.28) Affordability (b=0.19) Personal Normative Beliefs (b=-0.14)
R ²	0.43*	0.36*	0.43*	0.54*

Gender also appears to affect piracy intention as males generally have a greater intention to pirate (see table 6). The greatest difference between males (n=99) and females (n=126) is in the software category where 79% of males would probably pirate compared to 69% of females. Another significant gap between males and females is in the music scenario where 8% of males would probably not pirate compared 18% of females who would probably not pirate. This is in line with the findings of Williams et al. (2003) and Cronan et al. (2005) who found that men were more ethically lenient than women.

Table 6: Ethical Behaviour Intention by Gender and Scenario.

Scenario:	Software		Video		Music	
	Gender		Gender		Gender	
Piracy Intention:	Male	Female	Male	Female	Male	Female
1-3 (Probable)	78.8%	69.0%	63.6%	61.1%	74.7%	74.6%
4 (Neutral)	7.1%	11.1%	13.1%	7.9%	17.2%	7.9%
5-7 (Improbable)	14.1%	19.8%	23.2%	31.0%	8.1%	17.5%
Mean	2.4	2.8	3.1	3.3	2.3	2.6

Table 7 presents stage 2 of the SVMP model moderated by the perceived importance of the ethical issue. Where the issue is perceived to be important, 46 percent of the variation in piracy intention for the full model is explained by the components of the model. Affordability, perceived behavioural control, attitude towards piracy and personal normative beliefs are all significant in at least two of the scenarios and the full model. When the issue was perceived as unimportant, 43 percent of the full model’s variation in piracy is explained by the independent variables. However, only affordability and attitude towards piracy are significant variables throughout the models except in the video scenario where only affordability is significant.

Scenario:	All	Software	Video	Music
	Issue Perceived to be Important			
Significant Variables	<ul style="list-style-type: none"> Affordability (b=0.30) Attitude Towards Piracy (b=0.26) 	<ul style="list-style-type: none"> Affordability (b=0.40) Personal Normative Beliefs (-0.30) 	<ul style="list-style-type: none"> Attitude Towards Piracy (b=0.39) Affordability (b=0.30) 	<ul style="list-style-type: none"> Personal Normative Beliefs (b=-0.39) Perceived Behavioural Control

	<ul style="list-style-type: none"> • Personal Normative Beliefs (b=-0.25) • Perceived Behavioural Control (b=0.22) 		<ul style="list-style-type: none"> • Perceived Behavioural Control (b=0.24) 	(b=0.33) <ul style="list-style-type: none"> • Attitude Towards Piracy (b=0.30)
R ²	0.46*	0.36*	0.53*	0.63*
Significant Variables	Issue Perceived to be Unimportant			
	<ul style="list-style-type: none"> • Attitude Towards Piracy (b=0.41) • Affordability (b=0.26) • Ego Strength (b=-0.15) 	<ul style="list-style-type: none"> • Attitude Towards Piracy (b=0.45) • Affordability (b=0.25) 	<ul style="list-style-type: none"> • Affordability (b=0.33) 	<ul style="list-style-type: none"> • Attitude Towards Piracy (b=0.51) • Affordability (b=0.15)
R ²	0.43*	0.46*	0.40*	0.56*

Table 7: Regression Analysis for Behaviour Intention by Scenario and Perceived Importance. Variables listed in order of significance (non-significant variables not shown)

A further moderating variable, organisational ethical environment indicates that where respondents felt the organisational environment is more tolerant of piracy, piracy intention of the respondents increased accordingly (see Table 8). The converse is also true: where the organisational environment is less tolerant of piracy, respondents are more likely not to pirate. This trend is most clear in the video and music piracy scenarios.

Table 8: Ethical Behaviour Intention by Organisational Ethical Climate and Scenario.

Scenario:	Software			Video			Music		
	Organisational Ethical Climate			Organisational Ethical Climate			Organisational Ethical Climate		
Piracy Intention:	Tolerant	Neutral	Anti-piracy	Tolerant	Neutral	Anti-piracy	Tolerant	Neutral	Anti-piracy
1-3 (Probable)	75.7%	72.7%	70.6%	72.5%	54.5%	51.8%	81.0%	72.7%	64.8%
4 (Neutral)	9.3%	12.1%	8.2%	8.3%	18.2%	9.6%	11.6%	15.2%	11.3%
5-7 (Improbable)	15.0%	15.2%	21.2%	19.3%	27.3%	38.6%	7.4%	12.1%	23.9%
Mean	2.4	2.6	2.9	2.8	3.3	3.8	2.1	2.8	3.0
Sample Size	107	33	85	109	33	83	121	33	71

DISCUSSION OF FINDINGS

For H₂, affordability, attitude towards piracy, perceived behavioural control, ego strength and personal normative beliefs influence piracy intention, moderated by perceived importance, organisational ethical climate and scenario. Therefore the null-hypothesis of no correlation is rejected at the 5 percent confidence level and stage 2 of the model is supported.

Affordability

Affordability of legal goods negatively influences piracy intention. Affordability explains most of the variation in piracy intention in the model across all three scenarios. Only in the case of music piracy was affordability not the primary explanatory factor. This appears to be particularly important for young people who have limited budgets. This supports the software, video and music piracy-related findings of Peace et al. (2003), Wang (2005) and Gopal et al. (2004) respectively. However, the moderating effect of perceived importance on the relationship between affordability and piracy intention is inconsistent across different scenarios.

Attitude Towards Piracy

Attitude towards piracy positively influences piracy intention. Attitude towards piracy was the second most powerful explanatory variable of piracy intention for the overall model and across all scenarios. This supports the findings of Peace et al. (2003), Leonard et al. (2004) and other researchers using TRA- or TPB-derived models who both found that attitude was an important factor in explaining piracy intention. For issues perceived to be unimportant (with the exception of the video piracy scenario), the explanatory power of attitude is even greater, meaning that individuals are more likely to act directly on their favourable or unfavourable evaluation of piracy. This is especially true in the case of music. This is consistent with the findings of Leonard et al. (2004).

Personal Normative Beliefs

Personal normative beliefs negatively influence piracy intention in the full model as well as in the cases of video and music piracy. This supports Leonard et al. (2004) as well as other TRA- and TPB-based studies. The relationship between personal normative beliefs and piracy intention is moderated by perceived importance. For scenarios that are considered unimportant, personal normative beliefs are not significant, while personal normative beliefs are significant for the overall model and two of the three scenarios when they perceived as important. This finding again supports Leonard et al. (2004).

Perceived Behavioural Control

Perceived behavioural control positively influences piracy intention. This supports the findings of much previous literature based on TPB, including Peace et al. (2003) and Chang (1998).

Ego Strength

Ego strength negatively influences piracy intention in the full model and in the case of software piracy. This is in line with the findings of Banerjee et al. (1998) and Leonard et al. (2004). This illustrates that individuals with high ego strength are generally less likely to have a higher intention to pirate whereas those whose convictions are lax are more likely to have a greater piracy intention.

Locus of Control

There is not enough evidence to conclude that locus of control influences piracy intention. The quantitative research did not show any correlation between locus of control (that is the degree to which one feels that one is in control of one's life) and intention to pirate. This is not consistent with Banerjee et al. (1998) or Leonard et al. (2004) who found that locus of control explains a statistically significant amount of variance in intention to behave unethically in certain IT-related scenarios.

Individual Characteristics

There is not enough evidence to conclude that individual characteristics influences piracy intention. This is inconsistent with the majority of literature on the subject (Cronan et al., 2005, Kreie & Cronan, 1998, Reiss & Mitra, 1998, Vartiainen, 1999), with the exceptions of Moores and Chang (2006) and Munro (2003, cited by Williams et al., 2003). In addition, from table 4.5 it appears as though men have generally greater piracy intentions than women, although this correlation is not statistically significant.

Convenience and Generational Expectations

Convenience of acquiring goods through piracy positively influences piracy intention. Most subjects were adamant that convenience is one of the biggest factors influencing piracy intention across all scenarios. That is people intend to pirate software, video and music because it is easier than acquiring these materials legitimately.

While, for certain goods this is a result of unavailability in South Africa, it is conjectured that another reason might be the generational expectation of instant gratification by youth.

Perceived Importance (PIE)

The relationship between affordability as well as personal factors and piracy intention is moderated by perceived importance. This is shown in table 5 and has been described above. This supports findings by Cronan et al. (2005) and Leonard et al. (2004).

Organisational Ethical Climate

The relationship between affordability as well as personal factors and piracy intention is moderated by organisational ethical climate. This moderating variable was not tested by Leonard et al. (2004). However, table 6 shows a clear trend linking organisational ethical climate and piracy intention. Where the organisational ethical climate is more tolerant towards piracy, the respondents’ piracy intentions increased, while the converse is also true. This supports Banerjee et al. (1998).

Piracy Scenarios

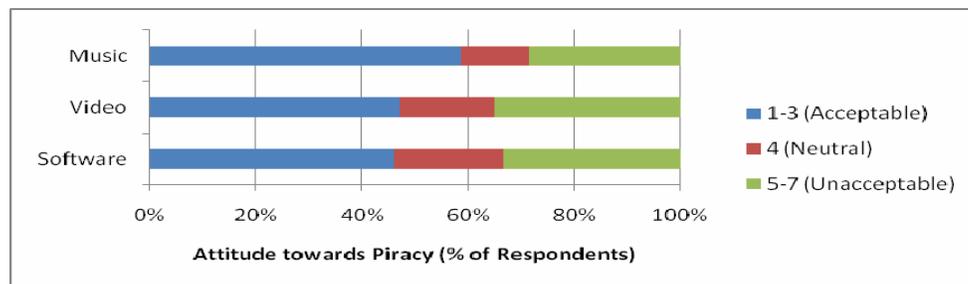
The relationship between affordability as well as personal factors and piracy intention is moderated by the three piracy scenarios: software, video and music. This is illustrated in tables and figures above. This supports the notion that differences between software, video and music are reflected in piracy intention and behaviour.

SVMP Stage 3 – What Influences Attitude Towards Piracy:

Environmental Factors, Personal Values, Belief System and Awareness of Consequences influence Attitude Towards Piracy.

An overview of attitude towards piracy among respondents is shown in Figure 3. At least 45 percent of the respondents found piracy to be acceptable whereas approximately 30 percent found it to be unacceptable. Music piracy is found most acceptable with 58 percent of the respondents feeling that it is acceptable to pirate against only 28 percent who felt that it was unacceptable.

Figure 4: Attitude Towards Piracy by Scenario.



Stage three of the SVMP model (E3) is used to test the significance of the relationship between the independent variables and one’s attitude towards piracy. Table 9 presents the attitude towards piracy model’s regression analysis results for all scenarios as well as for each individual scenario. For the full model, a relatively low 6 percent of the variation in attitude towards piracy is explained by the components of the model. In the full model, attitude towards piracy is explained by one’s belief system and the legal environment. This is true for the software

scenario as well. However, legal environment and belief system were the only significant variables in the video and music scenarios respectively.

Table 9: Regression Analysis by Scenario (E3).
 Variables listed in order of significance (non-significant variables not shown)

<i>Scenario:</i>	All	Software	Video	Music
Significant Variables	Belief System (b=-0.22) Legal Environment (b=-0.20)	Belief System (b=-0.31) Legal Environment (b=-0.22)	Legal Environment (b=-0.22)	Belief System (b=-0.24)
R ²	0.06*	0.09*	0.03*	0.05*

DISCUSSION OF FINDINGS

For H₃, belief system and legal environment influence attitude towards piracy. Therefore the null-hypothesis of no correlation is rejected at the 5 percent confidence level. However, even though stage 3 of the model is thus significant, much like with Leonard et al.’s (2004) findings, the model only explains a small percentage of variation (<10%) in attitude towards piracy.

Legal Environment and Belief System

Legal environment negatively influences attitude towards piracy in the full model and in the cases of software piracy and video piracy. This indicates that respondents were aware of the legal issues surrounding software and video piracy and that these issues impacted on their attitudes towards piracy. The legal environment did not affect music piracy however. Leonard et al. (2004) also found legal environment to be a significant factor influencing attitude towards piracy.

Belief system negatively influences attitude towards piracy in the full model and in the cases of software piracy and music piracy. This supports findings by Leonard et al. (2004).

Other Factors

There is no evidence to conclude that personal environment, awareness of consequences, societal environment and personal values influence attitude towards piracy. This is inconsistent with Leonard et al. (2004) who found that all these factors had a statistically significant influence on attitude. It also conflicts with Peace et al. (2003) who found that likelihood of consequences influenced attitude in addition to awareness of consequences.

CONCLUSION AND IMPLICATIONS

A three-stage Software, Video and Music Piracy (SVMP) model was proposed to explain software, music and video piracy behaviour. It is mostly based on Leonard et al.’s IT ethical behaviour model. The proposed SVMP model was tested empirically and validated.

Overall, most factors influencing piracy attitude, intention and behaviour as identified in the literature were upheld by the findings in this research. However, no statistical support could be found for the impact of personal environment, awareness of consequences, societal environment and personal values on an individual’s attitude towards piracy. Furthermore, there was also no support for the influence of locus of control on piracy intention.

Overall, the model provided a relatively low explanatory capability for stages 1 (with only belief system and legal environment have a small effect on piracy attitude) and 3 (piracy behaviour) but the factors in stage 2 explained piracy intention well. Affordability, attitude towards piracy and convenience are, amongst others, important

determinants of piracy intention. In addition, gender, perceived importance (of the ethical issue) and the organisational environment (namely its perceived tolerance of piracy) were all found to exert moderating effects on the above relationships.

The research is believed to have made a novel contribution in demonstrating the moderating effect of access to enabling technology as a key enabler of piracy behaviour. The study also found that the type or category of piracy (music, video or software) plays an important role, not only in explaining different levels of piracy intention and behaviour, but also in the relative importance of the explanatory factors.

IMPLICATIONS FOR FUTURE RESEARCH

The model could be tested and validated further using larger, more representative samples to establish the broader applicability of the model.– in terms of age, culture and socioeconomic status.. A longitudinal study could also be undertaken to establish how the relationships between the factors change over time and to predict further changes.

A qualitative research approach would shed more light on some of the variables, including other possible variables not identified in the model. For instance, an interesting but thus far neglected aspect of piracy is the effect of social networks on piracy behaviour (Huang, 2005).

It is conjectured that splitting the categories of software, video and music into more detailed subcategories such as commercial software, computer games, personal software, television series, films and music might increase the explanatory power of future piracy models even further.

IMPLICATIONS FOR INDUSTRY

Several implications for business are apparent. Firstly, piracy is considered to be socially acceptable behaviour amongst young South Africans: it is considered to be the “norm”. Altering this state of affairs is likely to be difficult and time consuming, especially considering the ineffectiveness of current measures employed by official bodies. It is thus clear that intellectual property owners and vendor organisations such as the Business Software Alliance cannot afford to focus solely on piracy awareness and prevention efforts. At the very least these organisations need to understand why consumers pirate goods and use some of these same motivating factors against piracy. With this in mind organisations need to devise creative ways of earning money through piracy and not in spite of it, while at the same time seeking to understand what influences piracy in order to curb it.

REFERENCE

- Ajzen, I. (1991). The theory of planned behaviour: some unresolved issues. *Organizational Behaviour and Human Decision Processes*, vol. 50, no. 20, (Dec. 1991), pp. 179-211.
- Banerjee, D., Cronan, T. P. & Jones, T. (1998). Modeling IT ethics: a study in situational ethics. *MIS Quarterly*, vol. 22, no. 1, (Mar. 1998), pp. 31-60.
- Bhattacharjee, S., Gopal, R. D. & Sanders, G. L. (2003). Digital music and online sharing: software piracy 2.0? *Communications of the ACM*, vol. 46, no. 7, (Jul. 2003) pp. 107-111.
- Bommer, M., Gratto, C., Gravener, J. & Tuttle, M. (1987). A behavioural model of ethical and unethical decision making. *Journal of Business Ethics*, vol. 6, no. 4, (May 1987), pp. 265-280.
- BSA. (2005). *BSA-IDC Study Illustrates Economic Gains to SA from Reducing Software Piracy*. Retrieved April 17, 2006, from <http://www.bsa.org>.

- Cappel, J. J. & Windsor, J. C. (1998). A Comparative Investigation of Ethical Decision Making: Information Systems Professionals versus Students. *The Database for Advances in Information Systems*, vol. 29 no. 2, (Spring 1998), pp. 20-33.
- Chang, M. K. (1998). Predicting unethical behavior: a comparison of the theory of reasoned action and the theory of planned behavior. *Journal of Business Ethics*, vol. 17, no. 16, (Dec. 1998), pp. 1825-1934.
- Chatterjee, S. (2005). A model of unethical usage of Information Technology. *Proceedings of the Eleventh Americas Conference on Information Systems, Omaha, NE, USA, 2005*, pp. 2891-2896.
- Cronan, T. P., Leonard, L. N. K. & Kreie, J. (2005). An empirical validation of perceived importance and behaviour intention in IT ethics. *Journal of Business Ethics*, vol. 56, no. 3, (Feb. 2005), pp. 231-238.
- Fang, M. L. (2006). Evaluating ethical decision-making of individual employees in organizations – an integrated framework. *Journal of American Academy of Business*, vol. 8, no. 2, (Mar. 2006), pp. 105-112.
- Freestone, O. & Mitchell, V. W. (2004). Generation Y Attitudes Towards E-Ethics and Internet-related Misbehaviours. *Journal of Business Ethics*, vol. 54 (2004), pp. 121-128.
- Givon, M., Mahajan, V. & Muller, E. (1995). Software Piracy: Estimation of Lost Sales and the Impact on Software Diffusion. *Journal of Marketing*, vol. 59, no. 1, (Jan. 1995), pp. 29-37.
- Gopal, R. D., Sanders, G. L., Bhattacharjee, S., Agrawal, M. & Wagner, S. (2004). A behavioral model of digital music piracy. *Journal of Organizational Computing & Electronic Commerce*, vol. 14, no. 2, (2004), pp. 89-105.
- Gopal, R. D., Bhattacharjee, S. & Sanders, G. L. (2006). Do artists benefit from online sharing? *Journal of Business*, vol. 79, no. 3, (2006), pp. 1503-1533.
- Huang, C. Y. (2005). File sharing as a form of music consumption. *International Journal of Electronic Commerce*, vol. 9, no. 4, (Summer 2005), pp.33-55.
- Hunt, S. D. & Vitell, S. J. (1986). A general theory of marketing ethics. *Journal of Macromarketing*, vol. 6, no. 1, (Spring 1986), pp. 5-16.
- Kini, R. B., Ramakrishna, H. V. & Vijayaraman, B. S. (2003). An exploratory study of moral intensity regarding software piracy of students in Thailand. *Behaviour & Information Technology*, vol. 22, no. 1, (Jan-Feb. 2003), pp. 63.
- Kohlberg, L. (1981). *The Philosophy of Moral Development: Moral Stages and the Idea of Justice*. San Francisco: Harper & Row Publishers.
- Kreie, J. & Cronan, T. P. (1998). How men and women view ethics. *Communications of the ACM*, vol. 41, no. 9, (Sep. 1998), pp. 70-76.
- Leonard, L. N. K., Cronan, T. P. & Kreie, J. (2004). What influences IT ethical behaviour intentions – planned behavior, reasoned action, perceived importance, or individual characteristics? *Information & Management*, vol. 42, no. 1, (Dec. 2004), pp. 143-158.
- Loch, K. & Conger, S. (1996). Evaluating ethical decision making and computer use. *Communications of the ACM*, vol. 39, no. 7, (Jul. 1996), pp. 74-83.
- Moores, T. & Chang, J. (2006). Ethical decision making in software piracy: initial development and test of a four-component model. *MIS Quarterly*, vol. 30, no. 1, (Mar. 2006), pp. 167-180.

- Morris, S. A. & McDonald, R. A. (1995). The role of moral intensity in moral judgements: an empirical investigation. *Journal of Business Ethics*, vol. 14, no. 9, (Sep. 1995), pp. 715-726.
- Peace, G., Galletta, D. & Thong, J. Y. L. (2003). Software piracy in the workplace: a model and empirical test. *Journal of Management Information Systems*, vol. 20, no. 1, (Summer 2003), pp.153-177.
- Prins, T. (2005). *A Perspective on the Effect and Impact of the Phenomenon of Counterfeiting on the South African Economy*. Retrieved 15 April, 2006 from http://www.saps.gov.za/docs_pubs/legislation/country_report/part_five.pdf
- Reiss, M. C. & Mitra, K. (1998). The effects of individual difference factors on the acceptability of ethical and unethical workplace behaviors. *Journal of Business Ethics*, vol. 17 no. 14, (1998), pp. 1581-93.
- Sumner, M. & Werner, K. (1997). On-line ethics: a comparison of the attitudes of freshmen, MIS majors, and practitioners. *Proceedings of the 1997 conference on Computer Personnel Research*, (April 1997).
- Thong, J. Y. L. & Yap, C. H. (1998). Testing an ethical decision-making theory: the case of shoplifting. *Journal of Management Information Systems*, vol. 15, no. 1, (Summer 1998), pp. 213-237.
- Vartiainen T. (1999): Ethical attitudes among Finnish computer science students and computer professionals. *University of Joensuu, Department of Computer Science, Technical Report, Series A, Report A-1999-4*.
- Wang, C. C. (2005). Factors that influence the piracy of DVD/VCD motion pictures. *Journal of American Academy of Business*, vol. 6, no. 1, (Mar. 2005), pp. 231-237.
- Williams, B., May, K. & Smit, S. (2003). *A Study of Ethical Decision Making with regards to Information Systems in South African Information Systems Students*. Honours Thesis. University of Cape Town. Retrieved April 3, 2006, from University of Cape Town Printed Theses.

