Factors Influencing South African Attitudes toward Digital Piracy

Kimi van der Byl
University of Cape Town, Cape Town, South Africa
Kimi.vanderbyl@uct.ac.za

Jean-Paul Van Belle
University of Cape Town, Cape Town, South Africa
Jean-Paul.VanBelle@uct.ac.za

Abstract

Digital piracy has become an important issue in today's technology-driven world. This research looks at the factors that cause South Africans to choose digital piracy as a means of obtaining digital media. We tested a revised Digital Piracy Attitude Model incorporating individual and situational constructs using quantitative data. Constructs showing significant correlation to an individual's attitude toward digital piracy were age, Machiavellianism, cognitive beliefs, positive affective beliefs and perceived importance. Interestingly, no gender influence was found. The paper concludes with practical suggestions for South African educational, government and business institutions to reduce digital piracy based on our findings.

1. Introduction

Digital piracy, the illegal copying or downloading of copyrighted software and media files, can be seen as an extension of software piracy as it also includes the illegal copying of other digital media such as MP3s, DVD movies etc. [1]. The incidence of digital piracy appears to have accelerated due to the rapid expansion of the internet, as well as faster access to it [2].

It is estimated that, in 2006, thirty-five percent of all personal computer software was pirated, causing a loss of almost $40 billion to the software industry world-wide, thus encumbering the global economy [3]. In a increasingly digital world, it is important that businesses are able to protect their digital assets, especially companies that sell software or digital media, because the economic threat of digital piracy is considerable [4]. Many mechanisms have been implemented to make digital piracy more difficult but these have not been successful in significantly curbing it. Therefore digital piracy remains a problem, with no single clear solution in sight [5].

It was suggested [6] that government, business and educational institutions need to investigate the impact of digital piracy in a South African context hence this research aims to find out what factors cause South African individuals to choose digital piracy as a means of obtaining digital media. This objective will be achieved through looking at these individuals' attitudes towards digital piracy. Since attitude can be changed through persuasion, this may lead to a change in the individual's intention to pirate data which could lead to a favourable behavioural change in the individual [1]. Hopefully, by understanding the causes which are driving an individual's pirating behaviour, educational, government and business institutions will be able to better equip themselves with the tools to reduce digital piracy e.g. to change an individual's attitude towards digital piracy through persuasion in the form of education, policies and advertising.

2. Prior Research

Producers of digital media are losing out financially as the progression of hardware, the internet, digital media and file-sharing networks allows large volumes of data to be stored off-line and almost equally easily shared in an on-line environment [7]. What was initially mainly software piracy appears to have expanded to the piracy of digital media with an entertainment value such as music or video as this is easier to copy, more profitable to sell or more enjoyable to use [8].

2.1 Why Individuals Pirate Digital Media

When it comes to finding solutions to digital piracy, it is valuable if the factors influencing individuals to pirate are understood better. Many find it more convenient to gain access to pirated goods than to find the originals because it is relatively easy to digitally pirate media and, once copied, the quality of the copy itself is not significantly reduced [8] [9] [10] [11]. Another reason for digital piracy is to save money, no matter how much money the pirates actually earn, and they feel justified in pirating data because they think that original digital media is overpriced [1] [8]. Price is an important issue as it guides the individual in ascertaining value and fairness i.e. evaluating what comes out of allowing another individual to copy original products, as compared to what was put into the exchange [8]. Piracy may also be performed for social benefits e.g. to pay off a debt, for altruistic motives or in anticipation of future favours that could be received in reciprocation [12]. Another key piracy driver for

individuals is their need for the product, whether for entertainment or for aiding their work or studies [8]. Individuals are even willing to risk being caught, to get the digital media that they need, especially if they perceive that risk as minimal [13].

2.2 Response to Digital Piracy

Techniques used in order to reduce digital piracy include preventatives and deterrents [1]. Preventative measures make digital piracy so taxing that it eventually becomes less desirable than purchasing the item or, at least, will cause the individual to stop trying to pirate the item [13]. Deterrents use the threat of penalties or prosecution in order to make digital piracy undesirable. Unfortunately, there have not been any single protective measures that have been able to defeat digital piracy [5]. Past attempts to control digital piracy have therefore used a mixture of ethics education, pricing, technical and legal methods [5].

Education in ethical behaviour can be used in order to highlight digital piracy as unethical. When individuals are faced with ethical dilemmas they conventionally try to solve them by calling on moral principles and moral analysis which can be instilled at an organisational or individual level [8]. Studies have shown that individuals are less likely to digitally pirate if they feel that it is wrong to do so [13]. Merely educating individuals in computer ethics by way of training courses, however, may not necessarily change their behaviour if the individuals do not feel that digital piracy is an ethical dilemma [12].

Producers have tried to make copying digital media complicated by making products that only work with key disks, plug-in port keys or by using laser holes, burns, unformatted or strangely formatted disks [14]. These technical defences against digital piracy are of a static nature because once the preventative measures that have been built into the device have been infringed, there are no further avenues for the producer to protect that data [5]. In fact, some digital pirates derive pleasure from being able to break the protection barriers that have been put in place by producers [14].

Digital piracy infringes copyright law. Copyright law is, however, relatively new compared to the law protecting tangible assets [8]. In South Africa, the relevant legislation is the Copyright Act 98 1978, which specifically includes downloading digital media, as well as the more recent Electronic Communications and Transactions (ECT) Act of 2002 which contains sections specifically referring to digital piracy. Although these Acts can be – and have been – successfully applied to commercial counterfeiters and pirates, private individuals generally do not perceive this legislation as a major threat, as the probability that the individual will face prosecution is small [5].

2.4 Attitude

A significant and strong correlation has been found between attitude and incidence of digital piracy [4]. In this research, individuals whose personal attitude supports or is positively inclined towards digital piracy, are referred to as individuals who have a more lenient attitude towards digital piracy. Attitudes can be changed through persuasion causing individuals to have a less lenient attitude towards digital piracy[1].

2.5 Individual Attributes

Individual attributes have often been used to calculate decision-making in ethics, and have been shown to influence digital piracy attitudes and behaviours [1] [2]. Individual factors such as gender, age, cognitive beliefs, affective beliefs, moral judgement, perceived importance and Machiavellianism inimitably define an individual as a consequence of their birth or as a product of their development[15].

2.5.1 Gender

When it comes to digital piracy, gender can be a significant variable [9]. Gender is used as a variable in more empirical studies than any other variable [15]. Previous studies about the relationship between attitudes and gender have brought back contradicting results. Certain studies have indicated that there is no correlation between an individual's attitude toward digital piracy and their gender [1] [4] [8]. Digital pirates are usually profiled as males as the majority of studies have suggested that males purchase more pirated media than females [11] [16]. In similar studies, males were also found to pirate digital media more (as opposed to just buying it) than their female counterparts [2]. Females were found to be better at recognizing ethical from unethical acts [14] [17].

2.5.2 Age

Age influences an individual's attitude towards digital piracy in such a way that older individuals appear to have a less lenient attitude toward digital piracy than younger individuals [2] [8] [16]. This is in line with ethics literature that claims that that older individuals are more inclined to be concerned about ethical values in the situations that they find themselves in than younger individuals [1].

2.5.3 Machiavellianism

Machiavellianism (in the way that an individual will pursue a goal no matter what measures, however unethical, are involved in achieving the goal) is a factor that has been proven to effect ethical decision-making [1]. Individuals in a

situation with strong Machiavellianism do not see ethical problems as being serious issues and they are therefore unlikely to correct the situation [15]. Individuals who portray strong Machiavellianism will not "burden" themselves with ethical considerations when making decisions [1].

2.5.4 Cognitive Beliefs

An individual's behavioural thinking determines their attitude towards an ethical dilemma. Previous research has shown that cognitive beliefs can be used to foresee ethical behaviour. Cognitive beliefs are what an individual thinks about a situation where ethics are a factor. The overriding cognitive beliefs in relation to digital piracy are that individuals thought that digital media was too expensive and that it would be cheaper for them to buy pirated digital media or pirate digital media themselves than to purchase the original [1].

2.5.5 Affective Beliefs

Affective beliefs represent the emotion that an individual will feel when participating in a certain activity. Affective beliefs directly influence attitude and are a separate construct to cognitive beliefs [1]. Research on the impact of affective beliefs on an individual's decision to pirate digital media remains inconclusive with some studies finding significant relationships and others not [13]. *Positive* affective beliefs of happiness and excitement were found to have a significant influence an individual's attitude towards digital piracy and therefore it was deduced that individuals should be better informed about the risks and penalties involved in digital piracy which will hopefully bring out more negative affective beliefs instead of the positive affective beliefs [1].

2.5.6 Perceived Importance

Individuals' judgment is affected by the perceived importance of a problem [18]. [19] suggest that, where there are policies and procedures within organisations, individuals perceive the issues that the policies and procedures relate to as important, and therefore are more likely to positively affect their behaviour.

Perceived importance was found to have a considerable negative effect on attitude in the context of digital piracy [1]. The negative effect meant that individuals who digitally pirated media did not see digital piracy as an important issue. If individuals were aware of the negative effects of digital piracy, such as higher cost for original products and the negative effect on innovation, they would perceive digital piracy as a more important issue and would be less likely to pirate digital media.

2.6 Situational Attributes

Situational factors such as subjective norms and main activity are a result of the situation that individuals find themselves in [15].

2.6.1 Subjective Norms

Subjective norms are referred to as peer norms and significant others in varying ethics and attitudinal literature. There is significant research into subjective norms which leads to the suggestion that subjective norms have a substantial influence on the attitude of the individual [1]. If an individual thinks that subjective norms will act in a certain unethical way, this will affect that individual's attitude toward the behaviour [4] [13]. In the study by Al-Rafee and Cronan [1], subjective norms was the most influential variable effecting attitude: a lenient attitude towards digital piracy by peers correlated with a more lenient attitude by the individual.

2.6.2 Students versus Employed People

Many studies have used students are their sampling frame. However, generalisations suggesting that students are a representative sample to use as they will emulate the business world is not a sufficient reason. Students tend to behave differently in universities than how they behave when they become employed [13] [14]. Digital piracy and soft-lifting are also abundant in academia, suggesting that students will be negatively influenced into pirating data by their subjective norms [14].

Although there is much research suggesting that students are more likely to digitally pirate than business professionals, not all studies have indicated this. A few studies suggest that there were very little ethical differences between students in certain fields compared to business professionals in those same fields [15]. Some even suggest that business professionals are less ethical than academics; however, there are more studies to suggest that there are more ethical issues with regards to digital piracy in academia than in business [13] [15].

2.7 Summary

There are considerable ethical and reliability (i.e. self-reporting honesty) issues in asking people directly about their actual piracy behaviour or practices. But attitude towards digital piracy can be seen to be a key factor driving or motivating digital piracy practices because of the significant correlation between attitude and actual incidence of digital piracy [13] [14]. Attitude has been found to be impacted by situational factors of subjective norms and main activity and the individual attributes of gender, age, Machiavellianism, cognitive beliefs, affective beliefs and perceived

importance (see also Figure 1). This reflects the Digital Piracy Attitude Model which was suggested by Al-Rafee and Cronan [1] and this is used here as a model for our research hypothesis.

3. Methodology

The research adopts a quantitative and positivist research philosophy as it aims to test the Al-Rafee and Cronan's Revised Digital Piracy Attitude Model. In particular, the following null-hypotheses are tested:

H_1: Males will have a more lenient attitude towards digital piracy than the females.
H_2: Younger individuals will have a more lenient attitude toward digital piracy than older individuals.
H_3: Strong Machiavellianism will lead to a more lenient attitude towards digital piracy.
H_4: Individuals with strong cognitive beliefs will have a more lenient attitude towards digital piracy.
H_5: Individuals who are excited or happy about the prospect of digital piracy will have a more lenient attitude towards digital piracy.
H_6: Individuals who are fearful or distressed about the prospect of digital piracy will have a less lenient attitude towards digital piracy.
H_7: The more important the issue of digital piracy is perceived to be, will relate to a less lenient attitude toward digital piracy in the individual.
H_8: A more lenient attitude by peers and significant others (subjective norm) towards digital piracy will relate to a more lenient attitude towards digital piracy for the individual.
H_9: Students will have a more lenient attitude toward digital piracy than working individuals.

The strategy in obtaining the quantitative data required was to use a questionnaire adapted from the one used by [1]. The moral intention section of the original questionnaire had to be omitted because of copyright restrictions. Machiavellianism was tested using the MACH IV scale [19]. Machiavellianism comprised of the 20 questions, half of which were reverse ordered. Four questions, originated by Fishbein and Ajzen [20], measured whether the individual has a more lenient attitude towards digital piracy. Three questions tested subjective norms [1]. Four questions, tested whether the issue of digital piracy is perceived as an important issue [1] [9]. Nine questions measured affective beliefs within four categories namely excitement, elation, happiness and distress. Fourteen questions tested cognitive beliefs. The beliefs expressed are about saving money, the possibility of getting caught, whether it is more convenient to pirate media than to buy it, whether digital media is overpriced, whether quality is an issue with pirated media, whether time will be saved and whether other individuals who's intellectual capital went into the product will be affected [1]. It must be noted here that additional open-ended questions were included for purposes of qualitative analysis but space considerations did not allow the inclusion of its analysis.

The target population was to have a combination of students and working individuals in South Africa at the time that they completed the questionnaire (i.e. main activity). The methods used to distribute the questionnaire were both paper-based and electronic. A combination of convenience and snowball sampling was used based on a colleagues, personal contact list and two selected classes of students (under- and post-graduate). This rather ad-hoc sampling approach represents a strong limitation for the study since it is hard to establish the representativeness of the sample to the South African population at large. However, it is believed that this approach is more representative of the South African than a pure student based sample would be (as used in the original Al-Rafee & Cronan study) since there is a wider age profile as well as a more diverse spread of personal characteristics. It must be stated that the sample is geographically quite homogenous because most respondents were from the Western Cape Province, but there appears to be a reasonable spread in terms of gender and age. Other demographic variables such as home language, computer efficacy, culture, race, education etc. were not investigated in the questionnaire and thus the representativeness of these sample characteristics could not be established. Although it is therefore recognised that the sampling approach is rather weak from a methodological point of view, from a practical point of view it was deemed to be more representative than the more specific and focussed sampling frames of single organisations (e.g. students or employees) that many comparative studies have employed. This is supported by the fact that our results, despite the rather small sample, confirm most of the findings in prior research.

4. Data Analysis and Discussion of Findings

Only 88 respondents returned the questionnaires, 50 electronically and 38 from a hard copy. Of these, only 18 were from full-time students. The average age was 31.1 years (standard deviation 8.4 years) with the lower median of 29.5 years to be expected given the skewed nature of age distributions. 31 respondents (35%) were female. Although this is obviously below the South African population mean, it is roughly in line with the profile of the sampling frame. The rather small

number of respondents must be seen in context of both the sensitive nature and the length of the questionnaire. Although the researchers would have liked to have a larger sample, only the factor of student versus employeed people seemed to have suffered from small sample effects. The reliability and validity analysis as well as the major hypothesis tests seem to have adequate statistical support though of course a larger sample size would have improved the confidence in, as well as the strength of the findings.

4.1 Reliability Analysis

Cronbach Alpha was used to measure the reliability of the constructs within the questionnaire.

Table 1: Cronbach Alpha for All Constructs

Construct	Cronbach Alpha
Machiavellianism	α = 0.668
Importance	α = 0.943
Attitude	α = 0.720
Positive Affective Beliefs	α = 0.942
Negative Affective Beliefs	α = 0.926
Subjective Norms	**α = 0.147**
Cognitive Beliefs	α = 0.797

The Cronbach Alpha for the three questions relating to subjective norms is unacceptably low, indicating that these test items do not appear to map onto the same construct.

4.2 Validity

Factor analysis was used to measure the validity of the questions. The test items for attitude, importance, positive and negative affective belief all loaded cleanly on one single factor each. A factor analysis for Machiavellianism and Cognitive Beliefs shows that these constructs appear to consist of a number of smaller sub-constructs. However, these can be grouped naturally into the high-level constructs except for 3 test items relating to Machiavellianism. However, these test items were left in because it was found that removing them reduced the Cronbach Alpha score for Machiavellianism significantly.

4.3 Multiple Regression Analysis

Regression analysis was utilized to predict the value of one dependent variable on the basis of various other independent variables. The overall R^2 in the multiple regression analysis is 0.378 i.e. 38 % of the variance in the attitude toward digital piracy is explained by age, gender, main activity, Machiavellianism, subjective norms, importance, positive affective beliefs, negative affective beliefs and cognitive beliefs. The only two constructs with a statistically significant contribution towards explaining the variance are Age and Cognitive beliefs. The Beta coefficients were added to indicate the strength of the correlations [1].

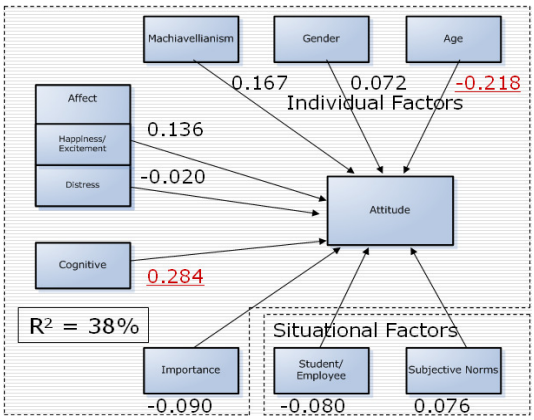

Figure 1: Multiple Regression Analysis for the Revised Digital Piracy Attitude Model

4.4 Correlation Analysis

However, the correlation matrix (omitted here due to space reasons) shows that there is significant correlation between many of the dependent variables. Multiple regression masks the importance of individual variables in cases of high multi-collinearity. Thus a correlation analysis was performed on the individual constructs to see if they were correlated with attitude (Table 2).

Table 2: Correlations with Attitude

Variable	r^2 with Piracy attitude	t	p
Age	**.1202**	**-3.427**	**.0009****
Gender	.0011	-0.305	.7610
Employee/Student	.0028	0.493	.6235
Machiavellianism	**.1396**	**3.735**	**.0003****
Subjective Norm	**.1304**	**3.591**	**.0005****
Importance	**.1032**	**-3.145**	**.0023***
Pos. Aff. Belief	**.1670**	**4.153**	**.0001****
Neg. Aff. Belief	.0385	1.857	.0668
Cognitive Belief	**.2376**	**5.177**	**.0000****

Correlation analysis performed on the respondent data set indicates that (with p = 5%), age, Machiavellianism, subjective norm, importance, positive affective beliefs and cognitive beliefs are significant variables in relation to attitude. The detailed hypothesis testing will testify to the significance of these variables.

4.5 Gender

Out of the 88 respondents, 31 were female. A T-Test was performed against all the constructs with gender as the grouping variable. For attitude, the mean for male respondents was 3.46 and the mean for female respondents was 3.37 indicating that there was a difference in means with regard to the attitude between males and females. However the

p-value of 0.76 indicates that this difference is not statistically significant. Therefore the H1 is rejected and the null hypothesis for gender is accepted:

$H1_0$: Males do not have a more lenient attitude towards digital piracy than their female counterparts.

Investigating the correlations with the other independent constructs further, gender had a significant correlation with Machiavellianism (r = -.33; p = 0.002) and cognitive beliefs (r = -0.24; p = 0.02) indicating that males have more significant Machiavellianism than females and males have more significant cognitive beliefs than their female counterparts..

The rejection of Hypothesis 1 is interesting since it conflicts with many older studies [9] [11] [15] [16] [17]. However, more recent studies [1] [4] [8] have also found an insignificant difference between the male and female respondents and their attitude toward digital piracy. It is possible that females have become more exposed to technology than in previous years, or the technology has become more gender-neutral, possibly due to its changed usability profile. Another possibility could be because the nature of piracy has changed i.e. previously it was software that was being illegally pirated whereas now digital media of entertainment value (that might be equally popular with males and females as they both mentioned pirating digital media of an entertainment value in their responses to the research questions) appear to being downloaded more frequently.

4.6 Age

The ages of the 88 respondents ranged from 18 to 58 years. The mean age was 31 years, with a slightly positively skewness. Through the multiple regression analysis, age was shown to explain a high proportion of the variation in attitude (beta = -0.218; p-value = 0.04). This correlation is re-iterated in the correlation analysis where age is shown to be negatively correlated to attitude (r = -0.35; p = 0.0009). Therefore, hypothesis two is supported i.e.

H2: Older individuals had a less lenient attitude toward digital piracy than younger individuals.

As well as indicating correlations with age and attitude, there were also significant negative correlations with age and positive affect (r = -0.21) and cognitive beliefs (r = -0.22). As can be expected, age was obviously also strongly correlated (r = -0.40) to main activity since students are on average much younger than working individuals.

The significant correlation of age with the attitude toward digital piracy was also found in [1], even though the age range in their student sample was much smaller. This could be because younger individuals were shown to have significantly stronger cognitive beliefs than the older individuals (cognitive beliefs having a significant correlation with attitude) as well as having stronger positive affective beliefs (also with a significant correlation to attitude).

4.7 Machiavellianism

The multiple regression analysis did not find that Machiavellianism explained a significant portion of the variability of attitude. However, the correlation between Machiavellianism and attitude is strong with r = 0.37 (at a highly significant p-value of 0.003). Machiavelianism is strongly correlated with some of the other variables and thus the indirect effects cannot be ignored. Therefore hypothesis three is supported i.e.

H3: Strong Machiavellianism leads to a more lenient attitude towards digital piracy.

Machiavellianism, when compared to the other individual constructs, was also found to be significantly correlated to gender (r = -0.33), positive affect (r = 0.47) and cognitive beliefs (r = 0.36). These correlations indicate that males have stronger Machiavellianism and individuals with stronger Machiavellianism have stronger positive affect as well as stronger cognitive beliefs. Thus the indirect impact and correlations of Machiavellianism cannot be ignored and support the inclusion of the construct in the model. However, it must be remembered that the factor analysis revealed the inherent complexity of the Machiavellianism construct and its de-composition into constituent sub-factors should be investigated further in larger studies. The significant correlation of Machiavellianism to attitude also confirms the findings of [1].

4.8 Cognitive Beliefs

Through the multiple regression analysis, cognitive beliefs had a significant explanatory value for attitude with Beta = 0.284 (p = 0.036). The individual correlation was a high 0.49 (with a highly significant p = 0.000001). Therefore hypothesis four is supported:

H4: Individuals with strong cognitive beliefs had a more lenient attitude towards digital piracy.

Cognitive beliefs was also strongly correlated with most other constructs: positively to Machiavellianism (r = 0.36), almost equally to both positive affective beliefs (r = 0.41) and negative

affective beliefs (r = 0.42), and negatively to age (r = -0.22), gender (r = -0.24) and importance (r = -0.50).

Cognitive beliefs where also shown to be significantly correlated to attitude in [1]. The cognitive beliefs relate strongly to issues such as price, affordability and saving money. Qualitative investigation (not reported in this study) confirms that there is a perception in South Africa that television series, movies, software and music take too long to be launched or are not (legally) available at all. These supply issues have created an increase in demand where the individual feels forced into piracy in order to obtain the latest digital media, and could possibly be one of the reasons why cognitive beliefs are strongly correlated to positive as well as negative affective beliefs. These individuals gain happiness and pleasure from being able to own the highly sought-after digital media but are also distressed about having to pirate the media which they would not have to do if it was available. Another popular cognitive belief is convenience which might be linked to the significant correlation between cognitive beliefs and Machiavellianism. Individuals may also believe that software and music industries receive publicity from digital piracy, which would lead others to purchase their products [7] [13].

4.9 Affective Beliefs

Through the multiple regression analysis neither positive nor negative affective beliefs added significant explanation of the variability of attitude. Through the correlation analysis negative affective beliefs was still not found to be correlated to attitude. However positive affective beliefs were significantly correlated with attitude with a relatively strong correlation of r = 0.409 (p = 0.00007). Therefore hypothesis five is supported and hypothesis six is rejected with the null hypothesis for hypothesis six being supported i.e.

H5: Individuals who are excited or happy about the prospect of digital piracy will have a more lenient attitude towards digital piracy.
$H6_0$: Individuals who are fearful or distressed about the prospect of digital piracy will not have a less lenient attitude towards digital piracy.

The reason why the multiple regression did not single out positive affective beliefs is because most of its effects are already accounted for through its strong positive correlations with Machiavellianism (r = 0.47) and cognitive beliefs (r = 0.41) and smaller negatively correlation with age (r = -0.21). In other words, individuals with stronger Machiavellianism, stronger cognitive beliefs or younger individuals have stronger positive affective beliefs.

The fact that negative affective beliefs were not significantly correlated to attitude whereas positive affective beliefs were significantly correlated to attitude, tallies with the conclusions of [1]. Individuals with stronger Machiavellianism were found to have a significant correlation to positive affective beliefs. Younger respondents also had a significant correlation to positive affective beliefs, possibly because they pirated digital media with entertainment value and thus received pleasure from such media. Positive affective beliefs were also significantly correlated to stronger cognitive beliefs, therefore respondents derived pleasure from saving money, convenience, ensuring the safety of their original copies etc. Negative affective beliefs, on the other hand, were not significantly correlated to attitude, though they correlated strongly with cognitive beliefs.

4.10 Perceived Importance

Through the multiple regression analysis, although the direction of the correlation was negative as was expected, perceived importance when grouped with the other independent variables was not found to add a significant explanation to attitude's variance. The correlation analysis, however, shows that importance on its own is negatively correlated with attitude with an r = -0.321 (p = 0.002). Therefore hypothesis seven is supported i.e.

H7: The more important the issue of digital piracy is perceived to be related to a less lenient attitude toward digital piracy in the individual.

Perceived importance was also found to be significantly negatively correlated with negative affective beliefs (r = -0.28) and, more strongly, with cognitive beliefs (r = -0.50). In other words, individuals with stronger cognitive beliefs or stronger negative affective beliefs do not perceive digital piracy as an important issue.

Perceived importance was also found to be significantly negatively correlated to attitude by [1]. As previously mentioned, perceived importance was significantly correlated with negative affective beliefs, with possible reasons of piracy for development or for charity. Perceived importance was also negatively correlated with cognitive beliefs indicating that individuals may use digital piracy for convenience, i.e. to save money or time, because they did not perceive digital piracy as an important issue.

4.11 Subjective Norm

Hypothesis eight cannot be tested in a statistically valid manner because its three test items did not

map reliably onto the subjective norm construct. Although these questions have been taken from a previously validated research instrument, in retrospect, it appears as if the questions are not necessarily asking the same thing. The first question asked if people important to the respondent thought that digital piracy was not acceptable. The second asked whether the respondent does what peers wish them to do. The third asked if the respondent's behaviour had an effect on the piracy behaviour of their peers. The questions therefore were asking about three different beliefs that may not be directly related to each other and might have confused the respondents. E.g. if you agreed with the first question this would probably have nothing to do with whether you agreed with the second or third question. A suggestion for further research is to test H_8 by asking more questions from these three different viewpoints and seeing if the construct of subjective norms will load on three factors.

4.12 Main Activity

Al-Rafee and Cronan [1] only used students for their sample and suggested that a more diverse sample be tested. Out of the 88 respondents, only 18 were students. This is too small for any significant statistical analysis. It may be interesting to note that there is a slight difference between the mean for student respondents (3.56) and the mean for employed respondents (3.39); but the p-value of 0.62 indicates that this difference is not statistically significant. Notwithstanding the small number of students in our sample, it must be noted that a lack of significant correlation between students and working individuals was also found by [15].

4.13 Summary of Findings

Figure 2 below summarizes the findings using the individual correlations of attitude towards piracy with the influencing factors according to the Digital Piracy Attitude Model. The situational construct of subjective norms has been crossed out to indicate that it was not a reliable or valid construct.

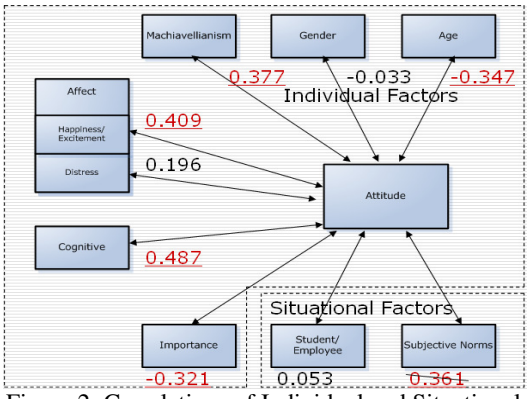

Figure 2: Correlations of Individual and Situational Factors with Attitude

From our data, it can be concluded that digital piracy is a function of Age, Machiavellianism, Positive Affective Beliefs, Cognitive Beliefs and Perceived Importance.

5. Conclusion and Implications

Digital piracy remains a grey area for many individuals as there are misconceptions about whether it is acceptable or unacceptable. Individuals' attitude toward digital piracy appears to be affected by age, cognitive beliefs, positive affective beliefs, lack of the perceived importance of the issue of digital piracy as well as Machiavellian beliefs. These constructs can be used by relevant stake holders in order to address digital piracy, thereby aiding them in formulating adequate policies, procedures, penalties and other strategies to prohibit digital piracy. Possible actors would include business, educational and government institutions. The Revised Digital Attitude Model can also be used in academia to test individuals' attitude towards digital piracy or, possibly, other ethical dilemmas.

5.1 Recommendations to Educators

Younger individuals were shown to have a more lenient attitude toward digital piracy. This indicates that there is a need to educate them about the negative effect that digital piracy has on the economy and how digital piracy reduces the incentive to create and innovate. Educational institutions also need to put in place clear anti-piracy policies and procedures; inform and educate students and enforce compliance. It is important to address the cognitive beliefs of students by informing them about the consequences of breaking the policies.

5.2 Recommendations to the Government

The relevance and implications of the ICT and Copyright Acts to digital piracy does not appear to be fully understood by the South African public. Government could make the general public more aware about the infringements of intellectual capital by making these laws more widely known and therefore be perceived as important. Radio and television could be used to broadcast the laws and the penalties involved in digital piracy as the medium of television and radio could be where the desire for certain digital media arises. A popular artist could be employed to run this initiative so that the public is aware that artists are affected by their pirating behaviour. The individuals should also be informed that, even when not purchasing the pirated data, that soft-lifting is also stealing from the artist. If individuals are prosecuted and there is press coverage (newspaper, television and radio) of their case, individuals might be dissuaded

from having a more lenient attitude toward digital piracy.

5.3 Recommendations to Employers

Employers needs to implement policies and procedures so that the employees are aware that pirating behaviour will not be accepted, as well as being informed of what the consequences will be if they are caught pirating digital media. Younger employees should be targeted first as they are more likely to have a more lenient attitude toward digital piracy.

5.4 Recommendations to Producers and Distributors of Digital Media

Producers of digital media should inform individuals about the costs of producing digital media through advertising in digital media stores or on rental copies of digital media. Producers should also reassess the pricing of digital media in South Africa since individuals are aware about the lower media prices available internationally. This is particular relevant in the context of the weaker purchasing power of most South Africans. Producers should make a concerted effort to promptly obtain international digital media by optimising their supply chains, so that these media are available for purchase for those individuals who are concerned about getting the latest international media on time. Producers could also advertise the dangers of digital piracy by informing individuals, through the same forms of advertising, that they make themselves susceptible to viruses when digitally pirating and using illegal copies. Other dangers could include the penalties that they will face if they are caught with pirated digital media. Producers can also advertise the often better quality of original digital media as well as the support that will become available to the individual should they purchase original digital media.

5.4 Limitations and Recommendations for Further Research

The revised digital piracy attitude model with attitude as an independent variable has shown significant correlations of a number of variables with attitude in a South African context. It would be interesting to see if this model holds in other developing countries and whether the relative importance of the various variables is of similar strength or, in the case of statistically non-significant correlations, appears to be equally irrelevant.

The significant correlations between the individual constructs can be used in other areas of interest for assessing attitudes to other ethical issues i.e. where individuals experience grey areas about the law or ethical behaviour.

A limitation of the study was the relatively small sample and the non-rigorous sampling frame. It would be highly desirable to re-test the model with a much larger sample and a more rigorous sampling methodology. Another issue was the fact that the test items for the construct of subjective norm were found to be particularly unreliable. Qualitative data on subjective norms could be collected so that better questions could be formulated and piloted to address the possibility that the attitudes of subjective norms will have a significant effect on the individuals' attitude toward digital piracy. Finally, only a relatively small 38% of overall variance in attitude towards digital piracy was explained. It is clear that other variables and additional explanations need to be sought so an extension of the model is required.

In conclusion, it is clear that digital piracy is an issue that needs increased focus by all the major role players in the South African economy. If South Africans' attitude can be changed to become less lenient of digital piracy, the economic gains for the economy as well as for producers and artists will be realised.

6. References

[1] Al-Rafee, S. & Cronan, T. P. (2006). Digital Piracy: Factors that Influence Attitude Toward Behaviour. *Journal of Business Ethics*, 63, 237-259.

[2] Lending, D., & Slaughter, S.A. (2001). Research in Progress: The Effects of Ethical Climate on Attitudes and Behaviours toward Digital Piracy. *SIGCPR*, 2001, 198-200.

[3] Business Software Alliance. (2006). *Fourth Annual BSA and IDC Global Study*. Retrieved May 14, 2007 from http://www.bsa.org/globalstudy/

[4] Kini, R. B., Ramakrishna, H. V. & Vijayaraman, B. S. (2004). Shaping of Moral Intensity Regarding Software Piracy: A Comparison Between Thailand and U.S. Students. *Journal of Business Ethics*, 49, 91-104.

[5] Anchaert, B., De Sutter, B., & De Bosschere, K. (2004). Software Piracy Prevention Through Diversity. *DRM '04*, October 25, 2004, 63–71.

[6] Baard, J. (2006). A Determinacy Study of Software Piracy Among South African Tertiary Education IS Students. Honours Thesis. University of Cape Town.

[7] Fetscherin, M., & Schmid, M. (2003). Comparing the Usage of Digital Rights Management Systems in the Music, Film and Print Industry. *ICEC,* 2003, 316-325.

[8] Kin-wai Lau, E. (2006). Factors Motivating People Toward Pirated Software. *Qualitative Market Research: An International Journal,* 9(4), 404-419.

[9] Simpson, P. M., Banerjee, D. & Simpson, C. L. (1994). Soft-lifting: A Model of Motivating Factors. *Journal of Business Ethics*, 13, 431-438.

[10] Cheng, H. K., Sims, R. R. & Teegen, H (1997). To Purchase or to Pirate Software: An Empirical Study. *Journal of Management Information Systems*, 13/4, 49 – 60.

[11] Moores, T., & Dhillon, G. (2000). Software Piracy: A View from Hong Kong. *Communications of the ACM*. 43(12), 88-93.

[12] Glass, R. S. & Wood, W. A. (1996). Situational Determinants of Software Piracy: An Equity Theory Perspective. *Journal of Business Ethics*, 15, 1189-1198.

[13] Limayem, M, Khalifa, M., & Chin, W. W. (2004). Factors Motivating Software Piracy: A Longitudinal Study. *IEEE Transactions on Engineering Management,* 51(4), 414-425.

[14] Sims, R. R., Cheng, H. K. & Teegan, H. (1996). Toward a Profile of Student Software Piraters. *Journal of Business Ethics*, 15, 839-849.

[15] Ford, R. C. & Richardson W. D. (1994). Ethical Decision Making: A Review of the Empirical Literature. *Journal of Business Ethics*, 13, 205-221.

[16] Borkowski, S. C. & Ugras, Y. J. (1998). Business Students and Ethics: A Meta-Analysis. *Journal of Business Ethics*, 17, 1117-1127.

[17] Khazanchi, D. (1995). Unethical Behavior in Information Systems: The Gender Factor. *Journal of Business Ethics*, 14, 741-749.s

[18] Robin, D. P., Reidenbach, R. E. & Forrest, P.J. (1996). The Perceived Importance of an Ethical Issue as an Influence on the Ethical Decision-Making of Ad Managers. *Journal of Business Research,* 35(17-18), 17-28.

[19] Kreie, J. & Cronan, P.C. (2000). Making Ethical Decisions: How Companies Might Influence the Choices One Makes. *Communications of the ACM*, 13(12), 66 - 71

[20] Fishbein, M. & Ajzen, I. (1975). *Attitude, Intention, and Behaviour: An Introduction to Theory and Research*. Reading, MA. Addison-Wesley.