The fight against digital piracy: An experiment

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ABSTRACT

With the increased reliance on the Internet, digital piracy is a hot topic that is receiving substantial interest. And while most studies concentrate on understanding piracy in developed countries, few studies have been done in developing countries. In order to fill this gap, this study reports on an experiment to deter/prevent digital piracy behavior in an Arab and a Middle Eastern country. The study used an experiment where different treatments (effect of religion, law, and awareness) were applied to the samples. Results revealed that only the religion and awareness treatments contributed to a decline in digital piracy, and that awareness having the higher effect on the piracy intention. This study discusses the study results and implications for both research and practice.

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1. Introduction

With high Internet speed connections, and an increased power of computing technologies, there has been an increasing trend toward digital piracy. This form of piracy goes beyond the classical and regular software piracy; where software piracy deals with illegally copying/downloading of software, digital piracy deals with a much broader concept. This paper defines digital piracy as "the illegal copying/downloading of digital material, such as software, music, videos, audio books, and other copyrighted material" (Al-Rafee, 2002). Examples of digital piracy include: downloading commercial software from illegal sites (usually called warez sites), using peer-to-peer technology to download the latest Hollywood movies, downloading a bestseller book in electronic format (either in audio or e-book format) from a newsgroup on the Internet’s Usenet, or downloading your favorite artist’s songs using torrent software.

Needless to say, losses due to digital piracy have been growing at an alarming rate. This growth is fueled by several factors such as: availability of untraceable peer-to-peer networks, availability of high storage media at low cost, an increased use of computers and digital devices connected to the Internet, and the spread of high-speed Internet connections at low cost. Such a trend enables users to download a newly released Hollywood movie in less than 15 min, less than the time that takes you to drive to your local cinema theater, and without incurring any cost. The Motion Picture Association of America (MPAA) (MPAA 2005) estimated worldwide losses of digital piracy about $18 billion in 2005, while the Recording Industry Association of America (RIAA) reported $12 billion yearly loss in the music industry. A recent study estimated losses of around $40 million per major Hollywood movie due to piracy (De Vany and Walls, 2007). And it is not just Hollywood, according to a recent estimate, Bollywood (India’s Hollywood) has lost close to $4 billion in 2007, with an estimated 800,000 jobs lost.
due to piracy (Joshi, 2008). According to the Business Software Alliance (BSA), software piracy had the highest annual loss of $48 billion in 2007, which represented an increase of 20% compared to 2006 (BSA, 2008). The BSA estimates that around half of all PCs (about 1 billion computers) contain unlicensed software, with an overall piracy rate of 38% in 2007. And unfortunately, this seems like a problem on the rise (Hill, 2007). The USA had the lowest piracy rates (20%), with Armenia, Bangladesh, and Azerbaijan having the highest piracy rates (93%, 92%, and 92%, respectively). In the Middle East, the software piracy rate was a whopping 59% in 2008 (according to the BSA).

The global piracy study by the BSA (in 2007) highlighted some of the disadvantages of digital piracy (BSA, 2008):

“Software piracy negatively affects much more than just the industry. It also puts a strain on technology companies’ ability to invest in new jobs and new technologies; harms local resellers and services firms; lowers government tax revenues; and increases the risk of cyber crime and security problems. A recent IDC study conducted for BSA found that reducing software piracy by ten percentage points over four years could deliver billions in economic growth and hundreds of thousands of new jobs”.

A lower digital piracy rate can lead to economic growth, save jobs, encourage and promote innovations and new products, and lower the price of digital material. While media companies have tried many approaches to combat piracy, these have mostly failed in reducing piracy (Taylor et al., 2009).

This study will examine the digital piracy within an Arab and a Middle Eastern country (in the Gulf area, where countries share common cultures). The study reports on several experiments to assess the effectiveness of three factors that might deter/prevent digital piracy behavior. These factors are as follows: (1) Religious factor: “whether a religious ruling/edict (fatwa) will help in deterring the digital piracy behavior”, (2) Awareness factor: “whether awareness about the dangers of piracy deters the digital piracy behavior”, and (3) the law/legal factor: “will new regulations/enforcement regarding piracy help in deterring the digital piracy behavior”.

2. Theoretical background

2.1. The effect of culture

This study focuses on an Arabic country in the Gulf area, which is a moderate and a conservative Islamic (typical of the area). Within a society, many studies have examined the effect of culture on behavior within a society (Bodega, 2002). And while there are several cultural models, Hofstede (1980) is the most widely known and used. According to his model, four dimensions determine the cultural differences among countries/cultures (Hofstede, 2008):

(1) **Power distance**: refers to the extent of equality or inequality within a society. Where inequality also suggests that followers endorse the society’s level of inequality as much as their leaders.
(2) **Individualism vs. collectivism**: refers to whether the society is based on individuals rather than groups.
(3) **Masculinity vs. femininity**: reflects masculine dominance over feminine influence within a society. It measures whether roles are distributed equally between genders.
(4) **Uncertainty avoidance**: refers to the society’s tolerance of uncertainty. “It indicates to what extent a culture programs its members to feel either uncomfortable or comfortable in unstructured situations” (Hofstede, 2008).

In his landmark study about national culture, Hofstede (2008) provided scores and results for more than 70 countries. Regarding the gulf region, his results suggested a high score of power distance (indicating the existence of a caste system). It also indicates a low score for individualism vs. collectivism (indicating a collectivist culture, where societies are based on family and extended families), a high uncertainty avoidance score (indicating that people are used to laws and rules governing their lives; thus reducing uncertainty), and have a relatively high masculinity score which he attributed to Islam and not to the national culture (Hofstede, 2008).

Many past studies have asserted that culture plays a significant role in affecting behavior related to technology (Rouibah, 2008). Several studies found significant and positive relationships between the effects of different cultural variables on piracy behavior (Husted et al., 1996; Shore et al., 2001; Depken and Simmons, 2004; Proserpio et al., 2005). Since culture was implemented in term of several variable including, gender, religion, national or country level; regional and/or ethnic, social class level; and organizational level, this study aims to study the impact of culture through the effect of religion.

2.2. Behavioral research

Previous research has been undertaken to understand and predict human behavior in general. Several behavioral theories exist, and are well validated within the literature. The Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975) and the Theory of Planned Behavior (TPB) (Ajzen, 1991) are among the most well known behavioral theories within the academic literature. They have been used extensively to determine/understand human behavior in a variety of situations (Sheppard et al., 1988; Madden et al., 1992; Legris et al., 2003).
According to TRA, behavioral intention is determined by two variables: attitude and subjective norms. Attitude is defined as “a person’s feeling of favorableness or unfavorableness towards a specific behavior”, while subjective norm is defined as “a person’s perceptions of that most people who are important to him think he should or should not perform the behavior in question” (Ajzen, 1991).

The TPB was based upon the TRA, adding perceived behavioral control as a third factor that influences behavioral intention. Perceived behavioral control refers to “how easy or difficult is it for the subject to perform a specific behavior”. And while there are other behavioral methods, the TPB and TRA are considered to be among the most frequently used/validated theories in the research field (Flannery and May, 2000). Both TRA and TPB rely on the notion that intention is the best predictor of actual behavior.

2.3. Previous piracy research

While most studies try to understand and explain software piracy, few have examined digital piracy. Previous piracy research had examined strategies for protecting (Armitage and Conner, 1999), deterring/preventing (Gopal and Sanders, 1997), and detecting software piracy (Straub and Nance, 1990). Some research introduced and tested general software piracy models (Eining and Christensen, 1991; Simpson et al., 1994; Thong and Yap, 1998; Limayem et al., 1999). According to d’Astous (2005) and Gopal et al. (2004), music piracy is analogous to software piracy; Thus, some of the variables used will be used in this study will be based on variables used in software piracy studies.

Moore (2007) examined piracy rates with regards to culture and national wealth, and found that countries with lower incomes did exhibit higher rates of piracy. That study also found that some of Hofstede’s (2008) cultural dimensions did have an effect on piracy rates. Yang and Somnez (2007) examined the effect of culture on piracy in 76 countries. They found that three cultural variables (religion, individualism, and education) directly influenced the degree of piracy. Hill (2007) examined different causes of digital piracy, economic consequences of piracy, and discussed strategies to counter digital piracy. Those strategies included lowering prices, offering extras to legal owners of digital material, and increasing the penalty of piracy, among others. D’Astous and Montpetit (2005) used the TPB to measure respondents’ intention to pirate digital music on the Internet. Cronan and Al-Rafee (2008) used a modified version of the TPB (including moral obligation as a factor effecting intention) to further understand why student pirate digital material. Taylor et al., (2009) used both attitude and intention to better understand digital piracy.

In this study, an experiment is used to assess what factors might deter/prevent digital piracy behavior in a developing country in the Middle East. By separating the respondents into groups, and applying different treatments to each group, this study is able to better understand what factors work in deterring digital piracy.

2.4. Factors effecting digital piracy

This study aims to assess the impact of three factors on piracy behavior. By using different treatments within a controlled environment, we will be able to examine if there are any effects on the piracy behavior of the subjects. These factors are discussed below.

2.4.1. Religion

The first factor selected in this experiment to deter digital piracy is religion. Arabian countries in the gulf are known to be very conservative countries, where most of their population is considered to be religious. As studies have found, more religious people do find suspect behaviors as being unethical (Goles et al., 2008), thus, not performing those suspect behaviors. Past studies have found that religion affects behavior in general (Bommer et al., 1987; Goles et al., 2008). Religion has also been used within IS behavioral research (Simpson et al., 1994; Kreie and Cronan, 1999; Yang and Somnez, 2007; Goles et al., 2008).

For example, if an edict/fatwa (an announcement by major religious scholars) was announced and proclaimed that digital piracy was against Islamic principles (the sample did confirm that all the respondents in this study were Muslims). Would that help curb piracy? This is based on the fact that religion plays a predominant role in society. We advocate that an edict/fatwa will tackle piracy directly by curbing the piracy behavior.

2.4.2. The law

The second factor is concerned with laws and regulations on digital piracy. That country had passed laws within the last few years protecting Intellectual Property (IP). Back in 2004, stores had publicly showed pirated software/movies/music that can be purchased for less than $3 per disc (in 2009, pirated material is being sold still, but are not publicly displayed for sale). Even though the laws still exist, the problem is that laws are not always enforced. With the increase of international pressures and treaties such as the World Trade Organization, the government seems to be very strict on the enforcement of these new IP laws. This situation is somewhat similar to the situation in China, where the Chinese government is trying to enforce the IP laws because of pressure from the US government (Mertha, 2005).

With regard to the effect of law, some IS studies found that laws positively affect behavior via the mediation of attitude (Eining and Christensen, 1991; Simpson et al., 1994; Kreie and Cronan, 1999; Proserpio et al., 2005; Green, 2007; Goles et al., 2008; Lysonski and Durvasula, 2008). A study on student subjects (Lysonski and Durvasula, 2008) in the US found that fear of
prosecution does play a factor in the piracy behavior. The RIAA took such approach in the United States, taking legal action against 382 users (randomly chosen) of peer-to-peer networks for copyright infringement. Although this approach enjoyed some initial success in reducing piracy numbers, the legal battle enjoyed mixed results, and a year later, the number of users of peer-to-peer networks was at an all time high (Borland, 2003). Britain is also contemplating a law that targets digital pirates, similar to one that bans Internet service to pirates in France (REUTERS, 2008).

The second factor used in this study is the law and legal threat. That is, whether the existence/enforcement of IP protecting laws would work in deterring digital piracy.

2.4.3. Awareness

The third factor deals with awareness of the subjects about the harms of piracy. Piracy-fighting organizations (such as the MPAA, RIAA, and the BSA) have been trying to fight piracy in different ways. One of the main and common methods employed deals with spreading awareness about the consequences of piracy. Different leaflets, brochures, studies, websites, reports, advertisements, have been showing up explaining the effects of digital piracy. It is yet to be known whether the awareness method is successful in deterring digital piracy. The third factor used in this study will be awareness, and that is, whether awareness can play a role in deterring/preventing behavioral intention to pirate in a non western culture. Although industries use awareness as the main factor to fight against the widespread of digital piracy, we observed a scarcity of scholar papers that experiment this factor.

To recap, this study aims to assess the effectiveness/impact of three factors (religion, law, and awareness), an experiment is undertaken, to examine the treatments’ effect on the digital piracy behavior.

3. Method

In order to shed light on the effect of the three factors, a quasi-experimental design is used for this study (Cook and Campbell, 1979). It is a quasi-experiment because subjects were not randomly assigned to treatment conditions. Instead, each course section was selected for one of the treatment conditions (with the assumption that random students register in a particular course); all students enrolled in that class received the same treatment. The study employs a pre-treatment and a post-treatment questionnaire design (adding more validity to the notion that all groups had a similar position on digital piracy before the treatments are applied).

The study used a convenient sample composed of students at a leading college of business administration. This is a common practice in the IS field (Legris et al., 2003). Using the ultrafast Internet connection available at the campus, as well as home broadband, coupled with economic limitations, provide an incentive for students to pirate. Many studies previously had used students in studies relating to piracy (Bhattacharjee et al., 2003; Yang and Sonmez, 2007; Cronan and Al-Rafee, 2008). In addition to the ease of data collection, several studies recognized that a greater piracy problem exists in the academic community than in the business community. Moreover, the study focused on young ages, because findings of recent studies (Cronan et al., 2006) found that age does significantly affect the ethical decision-making process; younger people are more likely to engage in piracy than older people.

Four groups were selected: a control group, and three treatment groups (that is based on the factors previously discussed). Twelve classes were selected for the study (three class sections per group). Target participant were students enrolled in the ‘Introduction to Computers’ course (a bachelor level class), or an ‘Introduction to MIS’ (a sophomore level class), both a prerequisite course for all undergraduate studies. The third class was an MIS junior level class taught within the same college.

The hypotheses for this study are as follows:

H1: The control group’s (no treatment) intention to pirate digital material will not change significantly (as measured in the pre-questionnaire and the post-questionnaire) (Fig. 1).

H2: The religion group’s (where the religion treatment was used) intention to pirate digital material will be lowered significantly (as measured in the pre-questionnaire and the post-questionnaire) (Fig. 2).

H3: The legal group’s (where the legal/law treatment was used) intention to pirate digital material will be lowered significantly (as measured in the pre-questionnaire and the post-questionnaire) (Fig. 3).

H4: The awareness group’s (where the awareness treatment was used) intention to pirate digital material will be lowered significantly (as measured in the pre-questionnaire and the post-questionnaire) (Fig. 4).

These hypotheses are summarized in the Table 1.

![Fig. 1. Hypothesis H1: the control group.](image-url)
3.1. Experiment design

A pre and a post-questionnaire were used before and after the treatment in this experiment. During the first month of the semester, each group was asked to fill up a questionnaire regarding their intentions towards piracy (without any intervention by the researcher). Special care was taken to insure that all the questionnaires were filled out in the same manner, and a detailed procedure was printed out for the researcher handing out the questionnaires. Prior to filling the questionnaire, the concept of digital piracy was briefly explained to the subjects. The questionnaire took about 5–10 min to complete. The classes were carefully selected where the class did not involve any material related to piracy (that is done to insure that no other factors might attribute to the results at the end of the experiment).

Towards the end of the same semester, the same classes filled out the post-experiment questionnaire. A different procedure was used for the post-questionnaire for the treatment groups (the control group's procedure was similar to the pre-questionnaire), which also employed the treatment for the three groups before filling out the questionnaire. The researchers visited the classes, again using a specific procedure that was agreed upon previously. Prior to filling the questionnaire, the concept of digital piracy was briefly explained again to the subjects. The authors introduced and discussed the treatment (read a printed statement for each group), gave the sample a 5 min Q&A session (while carefully trying not to influencing the sample). The researchers were careful in trying to maintain the same environment for all classes. Then, the researchers asked the students to fill the post-treatment questionnaire, which was the same as the pre-treatment questionnaire.

The questionnaire used was based on intention to pirate (the main factor used in the TRA/TPB). According to the TRA/TPB, intention is the best predictor of behavior (Fishbein and Ajzen, 1975; Ajzen, 1991; Legris et al., 2003). The questionnaire utilized three items derived from the TPB (Madden et al., 1992), as well as other demographical variables. The items included the following: “I intend to pirate digital material in the future”, “I will make an effort to pirate digital material in the future”, and “I will try to pirate digital material in the future”. Each item in the questionnaire included both English and an Arabic version of the question. This was done in order to insure that respondents clearly understood each of the items in the questionnaire for both Arab and English student speakers. Each item was evaluated on 7 point likert scale.

After the data collection, and removing any missing/incomplete questionnaires, statistical methods were used to assess the results. A simple mean comparison was undertaken to assess potential statistical differences between the pre-treatment and the post-treatment questionnaires for each of the four groups. The simple mean comparison allows researchers to test whether the subjects’ intention towards piracy changed after the treatment was introduced.

3.2. Sample

A total of 12 classes were selected (representing three classes per group). Each group had a freshman, a sophomore, and a junior level class in it. The total sample included 319 students; 190 were females, and 129 were males. This is typical since about 70% of the college's students are females. The average age was close to 19.7 years, with a minimum of 17 years and a maximum of 33 years. Data was coded and entered in SPSS, means and t-tests were used to analyze the data.

Table 2 lists the number of students used in each group for both pre and post-questionnaires. Note that there were some differences because not all students attended classes on the days where the questionnaires were distributed.

Fig. 2. Hypothesis H2: the legal/law group.

Fig. 3. Hypothesis H3: the religion group.

Fig. 4. Hypothesis H4: the awareness group.
Table 1
Groups used in the experiment.

<table>
<thead>
<tr>
<th>Group name</th>
<th>Treatment</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group</td>
<td>None</td>
<td>H1</td>
</tr>
<tr>
<td>Religion group</td>
<td>New religious ruling (edict/fatwa) related to digital piracy</td>
<td>H2</td>
</tr>
<tr>
<td>Law group</td>
<td>New laws regarding digital piracy</td>
<td>H3</td>
</tr>
<tr>
<td>Awareness group</td>
<td>Spreading awareness regarding digital piracy</td>
<td>H4</td>
</tr>
</tbody>
</table>

Table 2
Number of respondents per each group.

<table>
<thead>
<tr>
<th>Group name</th>
<th>Number of subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-experiment</td>
</tr>
<tr>
<td>Control group</td>
<td>78</td>
</tr>
<tr>
<td>Law group</td>
<td>86</td>
</tr>
<tr>
<td>Religion group</td>
<td>79</td>
</tr>
<tr>
<td>Awareness group</td>
<td>76</td>
</tr>
</tbody>
</table>

4. Results

For each experiment group, a table showing the mean of the intention measure for both the pre and post-questionnaire is shown, taking into account that the mean score for intention is a score from 1 to 7. A higher score indicates a higher intention to pirate digital material, while a lower score indicates a lower intention to pirate. Then, a t-test of the equality of means is conducted to test whether there are any significant differences between the two means. Table 3 shows the means and standard deviations for the groups.

4.1. Results for the control group

For the control group (no treatment), Table 4 shows the results of the intention variable for the pre and post-questionnaires. Results indicate that the two means are not statistically different, meaning that no statistical significance was found, as shown in Table 4.

With a p-value of 0.53 ($t = .63$), we conclude that the control group intention towards digital piracy did not significantly change during this experiment. This result was expected, as no treatment was applied to this group. As expected, we accept H1, and conclude that the control group’s intention did not change significantly (no treatment was applied). This would indicate that there were no external influences on the subjects, influencing their digital piracy behavior.

4.2. Results for the law/legal group

The law group is composed of students whom were informed about new laws/regulations/enforcements of new laws related to digital piracy. Table 5 shows the results of the intention variable for the pre and post-questionnaires. Results indicate that the two means are not statistically different, meaning that no statistical significance was found.

Table 3
Statistical analysis related to the four groups: mean and standard deviation.

<table>
<thead>
<tr>
<th>Group</th>
<th>Subjects</th>
<th>Intention (mean)</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention mean for the control group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Questionnaire</td>
<td>78</td>
<td>4.63</td>
<td>1.77</td>
</tr>
<tr>
<td>Post-Questionnaire</td>
<td>74</td>
<td>4.42</td>
<td>1.80</td>
</tr>
<tr>
<td>Intention mean for the law group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-questionnaire</td>
<td>86</td>
<td>4.57</td>
<td>2.03</td>
</tr>
<tr>
<td>Post-questionnaire</td>
<td>81</td>
<td>4.55</td>
<td>2.01</td>
</tr>
<tr>
<td>Intention mean for the religion group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-questionnaire</td>
<td>79</td>
<td>4.64</td>
<td>2.14</td>
</tr>
<tr>
<td>Post-questionnaire</td>
<td>84</td>
<td>3.86</td>
<td>2.01</td>
</tr>
<tr>
<td>Intention mean for the awareness group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-questionnaire</td>
<td>76</td>
<td>4.61</td>
<td>1.81</td>
</tr>
<tr>
<td>Post-questionnaire</td>
<td>80</td>
<td>3.76</td>
<td>1.83</td>
</tr>
</tbody>
</table>
With a $p$-value of 0.99 ($t = 0.1$), we conclude that the legal/law group intention towards digital piracy did not significantly change during this experiment. This result was not expected for this group. We reject H2, and conclude that the law/legal group’s intention did not change significantly (with the application of the legal/law treatment).

### 4.3. Results for the religion group

Table 6 represents the results of the religion group, which is composed of students whom were informed about a new edict/fatwa that considers digital piracy to be of immoral from a religious point of view. Results indicate that the two means are statistically different, meaning that were statistical significance in the intention variable between pre and post-questionnaires.

With a $p$-value of 0.03 ($t = 2.13$), we conclude that the religion group intention towards digital piracy did significantly change during this experiment (was lower after the application of the treatment). As expected, we accept H3, and conclude that the religion group’s intention did change significantly (with the application of the religion treatment).

### 4.4. Results for the awareness group

Table 7 shows results for the awareness group, which is composed of students who were informed about the consequences of piracy, something organizations have been using as the main method to fight piracy. Results related to mean value of the intention variable indicate that the two means are statistically different, meaning that were statistical significance in the intention variable between pre and post-questionnaires.

With a $p$-value of 0.01 ($t = 2.55$), we conclude that the awareness group intention towards digital piracy did significantly change during this experiment (was lower after the application of the awareness treatment). As expected, we accept H4, and conclude that the awareness group’s intention did change significantly.

### 5. Discussion

This study examined the effect of three factors on the intention to pirate digital material. Awareness and religion were found to have a significant effect on the respondents’ intention to pirate digital material; however the law factor was not found to be significant. The following section discusses and analyzes the results of this study.

### Table 4

Intention results for the control group.

<table>
<thead>
<tr>
<th>Group</th>
<th>Subjects</th>
<th>Intention (mean)</th>
<th>Standard deviation</th>
<th>$p$-Value for mean difference</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-questionnaire</td>
<td>78</td>
<td>4.63</td>
<td>1.77</td>
<td>0.523</td>
<td>No significant difference</td>
</tr>
<tr>
<td>Post-questionnaire</td>
<td>74</td>
<td>4.42</td>
<td>1.80</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 5

Intention results for the law/legal group.

<table>
<thead>
<tr>
<th>Group</th>
<th>Subjects</th>
<th>Intention (mean)</th>
<th>Standard deviation</th>
<th>$p$-Value for mean difference</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-questionnaire</td>
<td>86</td>
<td>4.57</td>
<td>2.03</td>
<td>0.99</td>
<td>No significant difference</td>
</tr>
<tr>
<td>Post-questionnaire</td>
<td>81</td>
<td>4.55</td>
<td>2.01</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 6

Intention results for the religion group.

<table>
<thead>
<tr>
<th>Group</th>
<th>Subjects</th>
<th>Intention (mean)</th>
<th>Standard deviation</th>
<th>$p$-Value for mean difference</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-questionnaire</td>
<td>79</td>
<td>4.64</td>
<td>2.14</td>
<td>0.03</td>
<td>Significant difference</td>
</tr>
<tr>
<td>Post-questionnaire</td>
<td>84</td>
<td>3.86</td>
<td>2.01</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

With a $p$-value of 0.03 ($t = 2.13$), we conclude that the religion group intention towards digital piracy did significantly change during this experiment (was lower after the application of the treatment). As expected, we accept H3, and conclude that the religion group’s intention did change significantly (with the application of the religion treatment).

### Table 7

Intention results for the awareness group.

<table>
<thead>
<tr>
<th>Group</th>
<th>Subjects</th>
<th>Intention (mean)</th>
<th>Standard deviation</th>
<th>$p$-Value for mean difference</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-questionnaire</td>
<td>76</td>
<td>4.61</td>
<td>1.81</td>
<td>0.01</td>
<td>Significant difference</td>
</tr>
<tr>
<td>Post-questionnaire</td>
<td>80</td>
<td>3.76</td>
<td>1.83</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5.1. Law treatment

In this group, the respondents were told about new laws that are specific to fighting digital piracy with harsh penalties, and that tough enforcement of these laws will be imposed. Results of the study revealed that this had no significant effect on digital piracy intentions, and thus, contradicts with major trends of digital media organizations, which are employing this approach to fight against digital piracy. The results can be attributed to three main reasons. First, there have been few cases where Intellectual Property (IP) laws have been enforced in developing countries. Second, while there are already laws protecting IP, piracy and breach of IP are a common practice, where pirated material can be purchased almost everywhere. Third, people in developing countries country have a general perception that laws are not always being enforced.

The results are consistent with other studies that found that laws are not always successful in changing the piracy behavior. Eining and Christensen (1991) found that legal attitudes were not significant in their effect on attitude towards piracy. Green (2007) found that U.S. students did have knowledge about IP laws, nonetheless, they still pirated. Hill (2007), Priest (2006, in China), and Peng (2005, in China) found that lack of enforcement, coupled with lenient penalties do not have an effect on lowering piracy rates. According to Peng (2006), a typical counterfeiter’s fine in the United States is up to $2 million and up to 10 years in prison, while it is it’s a mere $1000 in China. Lau (2006) found that one of the main reasons why people pirate digital material in China is the poor enforcement of IP laws, coupled with disrespect for the legal system. Peace et al. (2003), also found that both punishment severity and certainty do have an effect on one’s attitude towards digital piracy, and indirectly on intention. Zhang’s et al. (2009) study also found that punishment certainty was a strong predictor of digital piracy. In China, while many laws protecting IP have been passed, weak enforcement have lead to little gains in combating all types of piracy. Proserpio et al. (2005) found that the existence of laws alone is not enough to deter piracy; instead it must be coupled with strong enforcement.

While it is worthwhile to use the legal system to fight piracy, it might not be the best strategy to use in less developed countries (right now, though this might change in the future). The enforcement is lacking in these countries, and where there is general disrespect for the law. Digital corporations might have an option of exerting pressure on these countries via the WTO and other international organizations/treaties to enforce IP laws.

5.2. Religion treatment

The respondents in this group were presented with a religious treatment, as follows: they were told of a fatwa/edict from all major Islamic scholars that pronounced all types of digital piracy as immoral from a religious point of view. The average score for the intention to pirate went down from 4.64 to 3.86 (a statistically significant .78) after the application of the religious treatment. An item in the questionnaire was related to how religious the subjects were (1 being not religious at all, and 7 being very religious), the subjects had an average of 5.7 out of 7 for the religiousness scale, indicating a highly religious sample, as expected in this conservative religious country.

While the religion treatment had a significant effect on deterring digital piracy, it isn’t being well utilized in the Gulf region as of yet. This approach hasn’t been used much in well-developed countries, but this approach might be of value in the Gulf region. In a world with diverse cultures, using the same and western approaches may not be the appropriate strategy when applied to other parts of the world.

A leading satellite broadcasting company (ART TV) had used a similar religious approach. The company had suffered from high number of illegal viewers, i.e. who are using advanced satellite receivers to break the channels’ encryption and view the pay channels for free. Due to this problem, the company started broadcasting advertisements emphasizing the immoral nature of such practice and how it is against the teachings of Islam principles. The ads displayed various scriptures from Islamic sources to support their claims.

5.3. Awareness treatment

Participants in this group were lectured briefly about the negative effects of digital piracy, as well as the future ramifications of such actions. The average score for the intention to pirate went down from 4.61 to 3.76, meaning a significant decrease of 0.85 after the application of the awareness treatment. This was the highest drop in the digital piracy intention in this study, compared with a 0.78 drop for the religion treatment.

After the students had filled the post-questionnaire, researchers asked them if they had been exposed to any campaigns related to the education/awareness about the pitfalls of digital piracy. The vast majority of the subjects had not been exposed to any such campaign. Currently, there are no visible campaigns directed toward fighting digital piracy. This approach is being used in well-developed countries, while it is not being used in the Gulf area.

6. Limitations

There are two limitations in this study which are addressed next. The first limitation deals with the fact that the study used students as subjects of the experiments. While the rationale behind the decision to use students was explained in
the sample section, nonetheless, the study might not be generalized to the general public. Instead, different samples can be employed, such as employees, and older subjects.

A second limitation can be the experimental design setting. As in any other experiment, it is hard to control external factors from affecting the outcome of this study. And while this study was an in-class experiment, in which the time between the pre and post-questionnaire was about two months. No major news regarding digital piracy was observed during that time, and the instructors of each class were specifically told not to discuss any subject related to digital piracy during the class. And while the study could have used just a post-questionnaire the authors chose to do both a pre and post-questionnaire in order to ensure research rigor and reliability of the study.

7. Research implications

The study has several implications for both research and practice, mainly, with regards to how the industry should fight digital piracy.

From a research perspective, this study suggests continuing investigation of digital piracy from two important directions. First, there is a need to replicate the study in other environments and cultures. An interesting future research is to initiate a comparative study between other Arab countries (who share same culture) and others from western cultures. Different cultures may produce different results when it comes to fighting digital piracy. A second research direction consists of adding more variables to the research model that might have an effect on digital piracy. While this study only examined intention as an antecedent of the actual piracy behavior, other variables can also be examined in a similar experimental setting. For example, additional studies could examine the effect of other TPB/behavioral/personal factors on intention to pirate. Strategies employed to target males could be different than the ones used for females, and hence needs to be examined in a different study. From a practical perspective, this study suggests a few propositions for the piracy-fighting industries. Firstly, the industry has to understand that different cultures behave differently, and react differently to piracy-fighting approaches. What is successful in one culture (e.g. in the West), might not work in a different culture (e.g. an Arabic or Islamic one) and vice versa. A culture-specific approach is desirable, where each culture is studied and analyzed to better understand what works in fighting digital piracy within that culture. For example, while the law factor was not significant in this study, other studies did find it as a significant factor affecting digital piracy within the USA for example. Also, digital piracy-fighting efforts in Arab culture can employ different and effective techniques such as using religion and awareness as seen in our results.

This study has highlighted two approaches that worked (within an experimental setting) in lowering digital piracy within the Gulf area. In this region, where a high level of piracy exists, these two approaches need to be considered by the industry as an effective mean for fighting piracy. Better awareness should be employed to educate the society about the ramifications of the continuous growth of digital piracy. As the results have shown in this study, the intention to pirate digital material decreased significantly in this study. Also, as many in this region are considered to be devout Muslims, this can make such an approach a fruitful one. By emphasizing digital piracy as being against the teachings of Islam, this can be proven as an effective method to fight piracy here in this region.

8. Conclusion

This study employed an experimental approach to examine whether three methods of fighting digital piracy actually work. Authors of the study conducted experiments in which three groups were exposed to different treatments to identify which of these treatments had a negative effect (lowering) on the subjects’ intention to pirate digital material. The three treatments were based on religion (whether a religious ruling will help in deterring digital piracy), legal (will new regulations/enforcement regarding piracy help in deterring piracy), and awareness (whether awareness about the dangers of piracy deters digital piracy). The study employed a pre (before applying the treatment) and a post (after the application of the treatment) questionnaire.

Results of the study found that both religion and awareness treatments were significant factors in reducing intention toward digital piracy, while the law (legal system) treatment was not significant in reducing the behavior. With awareness being the factor responsible for the largest drop in digital piracy intention.

References


