

Unauthorized File Sharing of  
Digital Culture Products Over P2P Networks:  
The Influence of Product and Interface Attributes

by

William Hampton-Sosa

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dissertation requirement for the degree of Doctor of Philosophy.

Marios Koufaris

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Date

---

Chair of Examining Committee

Joseph Weintrop

---

Date

---

Executive Officer

Dr. Marios Koufaris  
Dr. Linda Weiser Friedman  
Dr. Hyokyoung Hong  
Supervisory Committee

THE CITY UNIVERSITY OF NEW YORK

# **Unauthorized File Sharing of Digital Culture Products Over P2P Networks: The Influence of Product and Interface Attributes**

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**William Hampton-Sosa**

**Advisor: Dr. Marios Koufaris**

## **ABSTRACT**

Because of the special nature of digital culture products, such as the near zero costs of duplication and distribution, and easy manipulation of digital bits, preventing unauthorized file sharing is challenging. Digital rights management tools are not foolproof and may be circumvented by hackers or rendered obsolete by new technologies. Business strategies that attempt to manipulate the product value proposition are not always effective. Deterrence methods are sometimes impractical or not socially feasible. This paper presents the results of an empirical analysis that links the attributes of digital culture products, and the characteristics of the interface through which they are acquired, to unauthorized file sharing over P2P networks. Key attributes include website usefulness, ease of use, system quality, and information quality. They include website community facilitation and creativity facilitation. Essential product attributes include ease of product modification and ease of product time shifting.

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## 1 INTRODUCTION

### 1.1 General Research Question

*Do the attributes of **digital culture products** and **digital exchange interfaces** influence the consumer's intention to engage in unauthorized downloading over P2P networks?* This is a narrowly focused question that addresses one form of unauthorized file sharing involving a particular class of products. There are many other forms such as the unauthorized copying of corporate business software for personal use, direct exchanges of digital copies among friends, and large-scale commercial piracy of all types of digital goods. It may not be valid to assume that the motivations that drive each specific type of behavior for a given class of products will be uniform across all forms of unauthorized file sharing.

Digital product and interface attributes can be a function of product type, product design, business model, acquisition process, technologies, usage agreements, copyright law, and social norms. For example, we could define ease of sharing as a product attribute. We might then say that the ease of sharing a digital document in an educational context is high because it is generally supported by the principles of fair use, it is socially accepted, and because there are widely available, easy to use technologies such as e-mail, which facilitate sharing. By comparison, the sharing of cable content, even for educational purposes, tends to be more difficult. The reason is that even when it is legal to share cable content it is more difficult to do so because it is generally broadcast within a closed, proprietary environment.

The results of this study do show that certain product and exchange attributes motivate unauthorized file-sharing behavior. Effective responses to unauthorized file sharing, therefore, require a more nuanced examination of the product characteristics and the context in which they are acquired and consumed. This is an approach that has not been addressed previously, but one

that offers promise in more effectively understanding and addressing the issue of unauthorized file sharing.

## **1.2 Justification for this Study**

Over the past thirty years there have been numerous studies that have addressed the issue of unauthorized file sharing. These studies generally fall under the rubric of software, music, and video piracy. The issue has often been treated as a legal matter that could be addressed through legal enforcement and technology. Compliance could be encouraged and facilitated by the fact that pirated materials were largely inseparable from physical media such as removable disks and hard drives. In addition, the narrow bandwidth of dial-up service limited the scale of file sharing via the Internet.

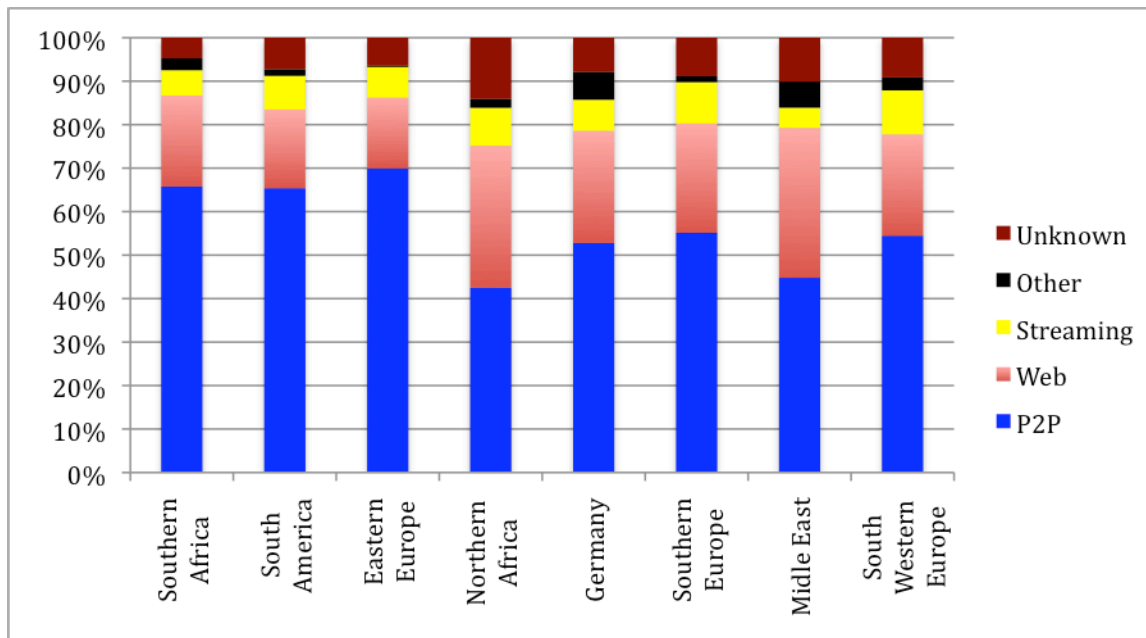
In the past decade, however, quickly evolving technological, economic, and social developments such as the growing global Internet commons, the increasing pervasiveness of social networks, and the rising value, importance, appeal, and digitalization of intellectual property have led to high levels of unauthorized file sharing that persists to this day. The increasingly dynamic environment has made it difficult for product rights owners to anticipate, assess, and craft appropriate and effective responses.

Moreover, now that P2P networks, broadband connections, and inexpensive, high-powered computers have become commonplace, the issue has become more complicated and intractable. Long established methods of deterrence continue to lose their effectiveness. Distance, laws, the anchoring of digital goods to physical media, costs, and the lack of processing power are no longer effective barriers to the degree that they once were.

The mainstream acceptance of P2P file sharing networks in particular poses special challenges to product rights owners because they allow greater numbers of users to much more

easily search and exchange digital goods with a degree of anonymity that threatens traditional business models and potentially erodes commercial value for intellectual property [167]. In spite of the many efforts to curtail the unauthorized exchange of digital products over file sharing networks using network clients such as LimeWire, FrostWire, and Azureus, file sharing continues largely unabated. Even when one network is shut down, new ones emerge. According to studies by the International Federation of the Phonographic Industry and Jupiter Research, the rate of unauthorized file sharing is as high as 95% [126]. They estimate that 40 billion files were shared without authorization in 2008 and continues to increase [126]. Figures 1 through 5 give an overview of file sharing activity in various geographic areas.

**Internet Activity in 2008 [244]**



“Other” includes VoIP, Instant Messaging, Tunneling, and Gaming

**Figure 1**

## P2P file sharing in Southern Europe over BitTorrent Networks [244]

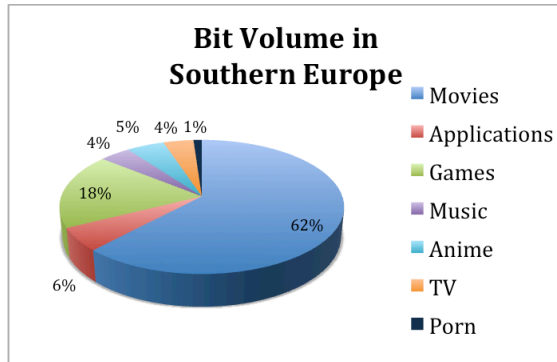


Figure 2

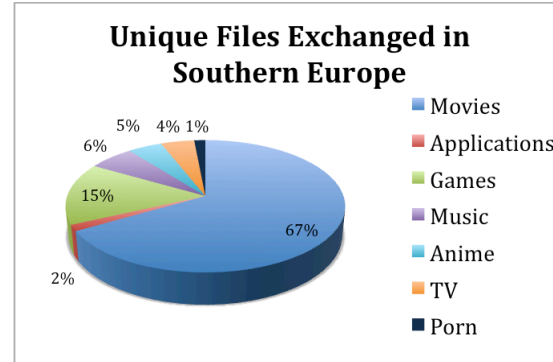


Figure 3

## P2P file sharing in Germany over BitTorrent Networks [244]

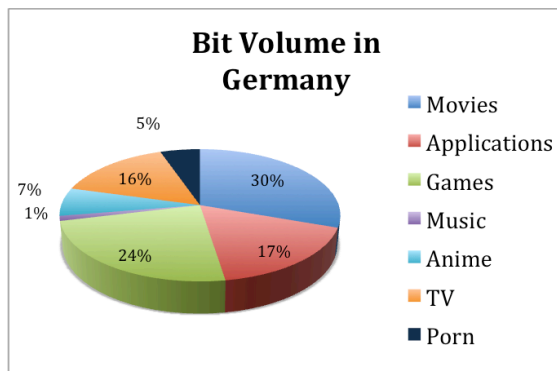


Figure 4

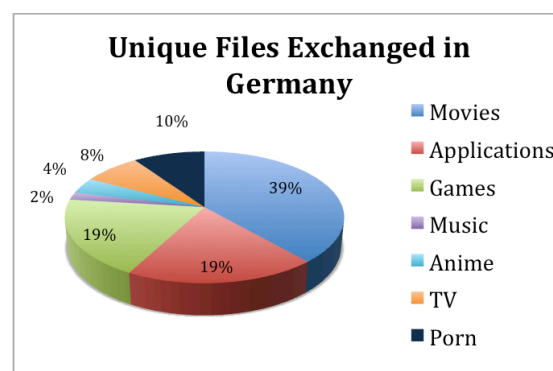


Figure 5

The Institute for Policy Innovation in 2007 estimated that the total harm to the U.S. economy due to P2P file sharing, including multiplier effects, was approximately \$3.7 billion [254]. The Business Software Alliance reported that the software industry lost \$40 billion worldwide in 2007 due to pirated software [38]. A large portion of these losses can be attributed to unauthorized file sharing over P2P networks [244].

One could argue that the extent of unauthorized file sharing threatens the incentive to produce and meet demand for high quality products because producers become discouraged over the prospects of recovering fair compensation for their efforts. This has the potential to not only

harm product rights owners directly, but also consumers over the long term [43]. The potential downside for consumers is less quantity and variety.

Quantifying the actual harm caused by unauthorized file sharing is difficult to do with any degree of accuracy. While most product rights owners view the problem as serious [79], there is some debate regarding the true extent of the problem. Figures cited by the Business Software Alliance, the Recording Industry Association of America, and other sympathetic parties are probably overstated because they are based on certain assumptions that may not be valid. For example, many studies assume that those who misappropriate digital products would otherwise have purchased authorized copies. This is unlikely because of financial constraints, lack of genuine interest, or the availability of attractive substitutes. In addition, with respect to software, a successful download does not necessarily mean a successful installation.

It is also possible that allowing greater freedom in how users are permitted to consume digital products may not necessarily impact product rights owners negatively [30, 212, 272]. Under certain conditions, such as the existence of significant network externality effects, or the extent to which a product can be differentiated, a limited amount of file sharing may be beneficial because it permits sampling, experimentation, and the acceleration of diffusion and adoption of authorized products [53, 80, 129, 146, 154, 255].

Sampling through unauthorized file sharing may lead to better matches between products and consumers. In the long run, this can lead to a greater willingness to pay for authorized content such as software upgrades or new product releases [221]. Many who use P2P networks to share files often go on to make legal purchases. They are often early adopters and sources of product and market knowledge. As a result, they can accelerate product diffusion that in the long run benefits all parties [80, 102].

An example of this diffusion process was noted in a study that examined the market for spreadsheets and word processors in the United Kingdom. Researchers concluded that 80% of product sales were generated through word-of-mouth recommendations [80]. Another study noted that within P2P networks, while there was evidence of unauthorized file sharing, there was also evidence of significant pre-purchase sampling [28]. But in spite of all the benefits of unauthorized file sharing, a preponderance of evidence seems to indicate that unauthorized file sharing remains a significant problem [167, 168, 235, 305]. This warrants a closer look at the motivations that drive this behavior.

### Unauthorized File Sharing Behavior in the United Kingdom Among 16 to 24 Year Olds [286]

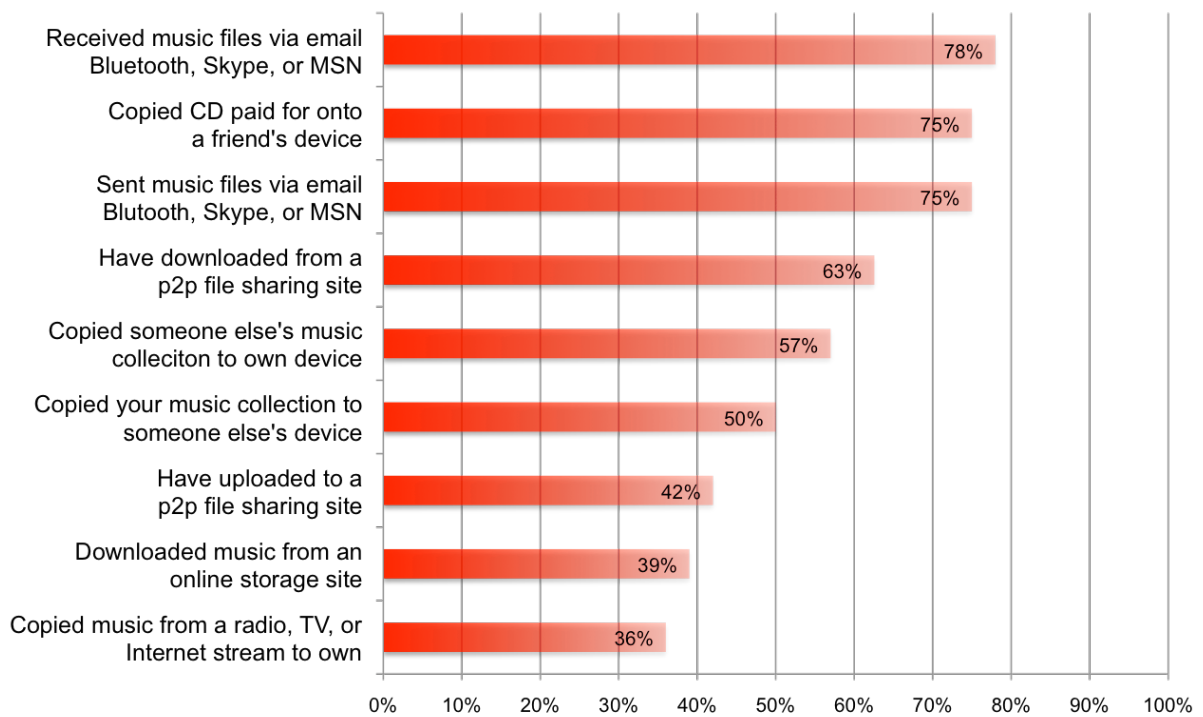


Figure 6

### **1.3 Previous Responses to Unauthorized File Sharing**

There have been several responses to unauthorized file sharing. Product rights owners have successfully lobbied for more restrictive laws and stepped up enforcement [175]. They have tried various digital rights management strategies. Some have approached the problem as a moral or ethical issue that could be influenced by raising public awareness [15, 78, 213]. Others have suggested new business models that create compelling value propositions to discourage unauthorized file sharing [139].

Some business models allow consumers to use digital products liberally at low cost. Revenues instead are generated on the hardware associated with consumption [76, 118]. An alternative would be to charge Internet service providers or consumers fees that then go into a general pool that is distributed to content providers based on the popularity of files trafficked over networks. Fees could be collected from consumers as part of the billing process or through hardware sales. Another potentially effective approach is the subscription-based model [118].

The subscription-based model, commonly used by cable service providers, has promise and is becoming increasingly popular. It is used by online music websites such as Rhapsody, Spotify, the reincarnated Napster, and numerous other vendors. This model has become feasible because of the increasing availability of easy access, always-on broadband service, which allows for high quality, reliable transmission of music data.

The effectiveness of various strategies to reduce unauthorized file sharing has been mixed. Not only do motivated hackers routinely circumvent technical controls, large numbers of unprotected files already exist in cyberspace [130]. Those files can no longer be easily protected after the fact since there is no effective way to purge them from the Internet. This undermines the efficacy of any digital rights management strategy.

Extreme deterrence based methods have been tried, but they often alienate consumers [262]. Moral and ethical norms often do not dissuade individuals from opportunistic behaviors if the specific act is not viewed in moral or ethical terms [27]. Hardware taxation or collecting fees requires administrative overhead and can be politically difficult to implement. In spite of the rising popularity of subscription based business models, its impact on reducing unauthorized file sharing is not yet well understood.

The challenge of controlling unauthorized file sharing is further magnified by a dynamic marketplace in which influential stakeholders with conflicting interests continue to emerge. It has become increasingly difficult to achieve consensus and accommodation regarding how consumers should be allowed to consume digital products. Many recent market participants, including companies such as Apple, Google, and Tivo, have taken advantage of new technologies to challenge the status quo and some of the philosophical assumptions of copyright law and usage agreements, as well as the technologies and business models that are based on them.

Apple prefers to sell music not overly encumbered with digital rights management technology in order to facilitate how and when users can consume music [132]. Google wants to scan and make books and other digital goods searchable [88]. Tivo wants to liberate consumers from appointment television and facilitate the consumption of different media products via their digital video recorder [282]. Instead of threats these firms recognize emerging usage norms and opportunities. Questioned are many of the restrictions applied to the digital consumption environment, especially when they are inconsistent with traditional norms associated with the use of analog products. Imposing restrictions could be counterproductive by engendering consumer hostility towards product rights owners, artists, and vendors.

#### **1.4 Furthering Our Understanding of the Drivers of Unauthorized File Sharing**

Given the continuing challenges associated with regulating unauthorized file sharing, the need to better understand the motivations that drive it is apparent. This can begin first by recognizing that unauthorized file sharing should not be viewed and addressed as a generic form of digital piracy, as it is often done. Unauthorized file sharing is highly variable and many studies have not been careful to clarify how specific findings may apply only to circumscribed set of cases.

Second, any effort to address unauthorized file sharing should take into consideration the special nature of digital products. To an extent not always possible with other types of goods, and in ways that are different, they can be imbued with a wide range of attributes. Many attributes are unique to digital products. These attributes can be determined by code that controls their use. They can be a function of the consumption environment. They can also be a function of the economics associated with different forms of consumption. How certain product attributes influence unauthorized file-sharing behavior, and which are dominant, has not been examined in the literature.

Third, products are increasingly sourced through a finite number of dominant online channels, which vary in terms of exchange process characteristics. The extent to which the variable attributes of the exchange process, principally involving websites or mobile applications, can influence unauthorized file sharing over P2P networks has not been explored.

#### **1.5 Specific Research Questions**

In light of the issues raised with respect to unauthorized file sharing, this study focuses specifically on the unauthorized downloading of digital culture products, music in particular, over P2P networks. The specific exchange interface and product attributes addressed are those related to website usability and enjoyment and the rights and restrictions associated with product

use. How these factors may impact unauthorized file sharing intention could be explained through justice and social exchange theories.

The concept of justice is multidimensional and includes interactional, procedural, and distributive conceptualizations. Social exchange theory takes into account the importance of intrinsic benefits and the norm of reciprocation. Both theories could be used to explain various opportunistic behaviors. Specific research questions include the following.

1. Does the overall usability and enjoyment of both the product and exchange interface influence unauthorized file sharing?
2. Do specific product characteristics such as ease of sharing, ease of modification, ease of platform shifting, ease of space shifting, ease of time shifting, and ease of product trial influence unauthorized file sharing?
3. Do specific characteristics of the exchange interface such as the presence of community and creativity facilitation tools influence unauthorized file sharing?
4. Does the quality of the exchange interface influence unauthorized file sharing?
5. Do perceptions of justice influence unauthorized file sharing?
6. Does the usability and enjoyment of both the product and exchange interface influence perceptions of justice?

The balance of this paper is organized as follows. An extensive, more detailed literature review is presented, along with an assessment of the limitations and several open questions, and how they are addressed by this study. This is followed by the theoretical development of the models that address unauthorized file sharing over P2P networks. Next the research methodology is introduced in detail followed by the results and analysis. The paper ends with a discussion of the findings, implications for theory and business, limitations, future research possibilities, final remarks, and acknowledgements.

## **2 PRIOR RESEARCH**

Unauthorized file sharing, in its various forms, has been examined in numerous theoretical, analytical, and empirical studies from many different perspectives. A fair amount of knowledge has been accumulated resulting in numerous prescriptions for addressing the challenges of controlling unauthorized file sharing. However, judging by the amount of unauthorized file sharing that continues to take place, especially over P2P networks, the issue is clearly unresolved. Additional research is warranted. The first step is to assess what we do know in order to understand how the results of this research fit in.

The findings in the literature are numerous and somewhat disparate. Unauthorized file sharing is often motivated by personal gain, social and legal factors, and various situational factors. Other studies have found that a consumer's personal characteristics such as age, education level, and self-efficacy can be significant predictors of unauthorized file sharing as well. The following review organizes the findings according to economic, social, contextual, technical, and psychological factors.

### **2.1 Micro Economic Factors**

Unauthorized file sharing can be motivated by product utility. In general, if a user finds that the cost to acquire an authorized product outweighs the benefits then the consumer could be motivated to obtain the product without paying through P2P networks. In other words, there is a positive relationship between the costs/benefits ratio and unauthorized file sharing. Affordability, perceived need, and urgency will moderate this relationship [160].

There are numerous studies with results that are consistent with this utility perspective [53, 157, 181, 215, 284]. What vary are the salient costs and benefits. The price of the digital product is the most obvious cost factor and numerous studies do point to this as a key driver of

unauthorized file sharing [31, 46, 89, 159, 160, 161, 203, 207, 219]. Given the significance of price it should come as no surprise that unauthorized file sharing is very sensitive to factors such as personal or household income [26, 96, 120, 142, 160]. In other related findings, studies have shown that as national wealth rises and relative costs of software declines, rates of unauthorized file sharing diminish [14, 64, 89, 90, 124, 237].

But addressing consumer utility and developing an optimal pricing schedule that maximizes producer surplus can be difficult because of the variability of product characteristics, especially in terms of its usage restrictions, and the conditions under which transactions take place.

Assuming the presence of unauthorized file sharing, monopolistic conditions, and reasonably effective technologies to prevent unauthorized file sharing, an effective strategy could be to set aggressive price points that tracks a product's diffusion pattern [209]. Efficient producers with low profit margins can discourage competitors and ensure maximum profit over the long-term.

Alternatively, in the absence of effective copy protection, a skimming strategy starting with higher price points may be optimal in order to make up for lost sales [209].

Optimal pricing may be partially a function of network externalities [53]. A product with greater network externality and greater market penetration is often perceived as having greater value and is therefore more appealing to the consumer. This could justify higher pricing levels and lower levels of copy protection. As the value proposition increases, the appeal of unauthorized file sharing may diminish.

The range of benefits that determine product utility and its influence on opportunistic behaviors can include factors that are utilitarian and hedonic. Relevant factors could include those that provide the user with emotional satisfaction and entertainment, or a means of establishing and enhancing personal connections through sharing. Some products could afford

the user a degree of prestige. This might be the case with products that have some form of collection utility.

In an analysis of consumer file sharing of film, it was found that obtaining illegal movie copies was motivated by its collection utility [276]. Collecting is for many a form of entertainment and very satisfying. The desire to collect objects is not only driven by practical needs, it could also satisfy emotional and actualizing needs as well [24].

Opportunistic attitudes and behavior, such as unauthorized file sharing, could be driven by anti-industry utility [276]. Many consumers and critics have complained about the low quality and high costs of products from the film and music industry. Some have suggested that the majority of the culture products produced by dominant industry players are homogenous, over-produced, and highly formulaic.

Tim Renner, the former CEO of Universal Music in Germany, has suggested that the quality of recent albums could have been better supporting the suggestion that many albums have been simply compiled with “filler” music [125]. This lack of perceived quality, the high price demanded by many product rights owners, and the overall lack of satisfaction could evoke an urge to exact “revenge” by obtaining unauthorized copies without paying [276]. When consumers are not satisfied with their purchases they could be much less motivated to purchase new authorized products in the future [49].

Product utility could be affected by the manner in which digital goods, such as music, are packaged and sold. Many product rights owners prohibit the sales of individual tracks—a consumption restriction—at a time when consumers are increasingly demanding greater choice. Instead, product rights owners often promote the sales of non-refundable music bundles, i.e., albums, almost exclusively, forcing consumers to purchase unwanted tracks [257]. Record

companies continued to push the album as the primary musical unit even after it became clear that consumers wanted the flexibility of purchasing individual tracks [125]. The success of Apple's iTunes Store, which has become one of the largest sellers of music online [2], reflects the consumer's desire for choice, flexibility, and ease of use.

Product utility could be addressed and manipulated in various ways. One way is to create appealing product bundles as Microsoft does with its Office suite of applications. The perceived value of a bundle could be, if well integrated, a greater value than the individual components sold separately [248]. Two common product bundling strategies are the bundling of software with textbooks and the bundling of digital products with service agreements, technical support, and software updates.

Versioning is a strategy in which products are modified and tailored in an effort to address the varying utilities of consumers in different market segments [44, 248, 293]. It is a common strategy with respect to software that could be extended to most types of digital products. Versioning can be achieved through functional degradation, in which features of a digital product are removed or disabled, quality degradation, and individualized pricing based on purchasing history [25].

Microsoft, Adobe, and other software companies all offer full or scaled down versions of many of their products at reduced prices targeting students. By offering products at more affordable price points, the hopes are that students develop loyalties and dependencies that discourage acquiring, using, and sharing unauthorized copies of the software. The product rights owner hopes to then capture future revenues from these consumers as they purchase new releases over the course of their careers when their income levels are higher.

Versioning is an important tool for dealing with unauthorized file sharing that takes place internationally, especially when such behavior is motivated by product price and differences in consumer purchasing power. Product rights owners can develop tailored versions of their products at prices that reflect local market conditions. This can be accomplished by rewriting software in the local language, by adding useful country specific features, and by pricing the product in a way that reflects local purchasing power. It can also be accomplished by maintaining separate technology standards, which has been shown to reduce the impact of global piracy [43].

Instead of lowering the price of digital products in order to make them more appealing, product rights owners could instead raise the costs of unauthorized file sharing. One way to do this is by raising search costs through product spoofing and by using decoys [153, 290]. Media Defender has been offering anti P2P piracy services using these approaches as well as others. The long-term efficacy has not been definitively established, but several companies are known to be adopting this strategy [290]. Some software designers have even patented P2P spoofing techniques [63].

Spoofing is an inexpensive approach that can be useful in dealing with the unauthorized exchange of files in P2P networks. It works by flooding the networks with adulterated copies of digital files. The goal is to increase the amount of time and effort that a consumer spends locating and downloading a “clean” digital file and thereby encouraging the user to instead purchase a legal, authorized copy. Decoy files can contain white noise randomly dispersed throughout the track, messages encouraging users to purchase legal copies, or advertising.

Raising the costs of a product could be accomplished in other ways as well. A product rights owner could provide the consumer with limited timed usage in order to sample a product after

which the consumer would have to reinstall the product. Or the product rights owner could send the user constant reminders to purchase an authorized copy, which could become a nuisance to the consumer. In both cases, the utility of an unauthorized product is diminished.

While the cost of a product can influence consumer attitudes and behaviors, they can also be influenced by the structure of those costs and other unique characteristics of digital goods. Unlike tangible goods and services, acquiring a digital product without paying does not lead to there being one less unit available for the owner or anyone else. In addition, there is no rivalry of consumption. Since digital products can be duplicated for essentially zero marginal costs, and each duplicate is as good as the original, the normal consumer awareness, sensitivity, and response associated with the misappropriation of a tangible product may be very different. This is supported by the results of a study that indicated a negative relationship between the marginal costs of producing a product and the degree to which consumers are willing to misappropriate that product [210].

## **2.2 Deterrence**

Deterrence is a form of disutility and its efficacy in reducing the unauthorized use of digital products has been addressed in several studies. It involves the application of a penalty that can be economic or social. Under the right conditions, it can be a very effective strategy that works by combining the consumer's risk aversion and perceived probability of being caught together with meaningful, convincing, and appropriate legal threats and penalties [46, 49, 91, 123, 169, 170, 204, 207, 219]. It is often more effective than preventative measures such as those that are based on digital rights management technologies [91].

Deterrence can be expressed formally as a set of laws such as Title 17, which is the U.S. Copyright Act, or through legally enforceable contracts. Deterrence can also be expressed

informally, as is often the case in social networks, where social norms and group culture signal acceptable behavior. To be effective, however, it is essential that the rules outlining the use of a digital product and the associated penalties for misuse be clearly communicated and understood.

Sometimes the mere knowledge of the rules can have an impact on reducing certain forms of unauthorized use [84, 160, 161]. Lack of awareness may partially explain unauthorized file sharing in certain social circles and countries. In many Asian societies, for example, the concept of copyright is somewhat less familiar and not as widely accepted. There tends to be a more collective tradition regarding the use of intellectual property that encourages sharing [269].

The potential success of deterrence based strategies is enhanced when the perceived probability of being caught is made convincing through enforcement that is visible, vigorous, and credible [119]. This could be more important than the severity of the punishment itself [113]. When users become aware of someone who has been caught pirating digital products the effectiveness of deterrence for that activity rises [218].

Awareness campaigns and the threat of sanctions appears to have discouraged the unauthorized use of software specifically in corporate environments [38]. Globalization appears to have sped up the process by enabling greater awareness and the transference of social norms that value intellectual property and discourages its misuse. Globalization expands the number of countries and institutions with a potential stake in protecting intellectual property.

Nevertheless, software remains widely traded among individuals on P2P networks [244]. Deterrence could lead to a reduction of unauthorized file sharing over these networks, but it matters how these strategies are implemented. Publicized threats of legal action, and reports on the initiation and continuation of legal action has been shown to reduce the amount of time users spend online engaged in unauthorized file sharing [29].

However, the announcement of legal threats may not reduce the actual number of files available for sharing in P2P networks. It is when lawsuits are reported and sellers announce ongoing enforcement that the number of unauthorized files available on P2P networks tends to decrease [29]. This is consistent with other reports that have shown that consumers not only reduce their file sharing activities, they also remove unauthorized files from their computers after widely publicized enforcement efforts [262].

When deterrence does fail it is often because copyright law and user agreements are too lengthy, detailed, complex, or confusing [175]. Deterrence may fail because aspects of copyright law are internally inconsistent [175]. For example, the Digital Millennium Copyright Act restricts the circumvention of digital rights management technology even if it impedes the fair use of a digital product as permitted by Title 17. Consumers may record video streaming off their cable systems for later consumption, but the same is not true for audio captured over the airwaves [35].

The effectiveness of deterrence could be further diminished by the fact that copyright law is inconsistent with many traditional and emerging usage norms. Information technologies are not just enabling interactivity, but encouraging consumers to actively engage with their digital products. They are transforming passive consumers into active participants and creators of new digital products. For example, Apple's iWeb product allows users to easily create customized websites without having to know HTML, CSS, JavaScript or sophisticated development tools such as DreamWeaver. Web 2.0 tools enable users to add third party data products in the form of widgets such as stock tickers, weather portals, and googleMaps without having to write any programming code.

Effective deterrence requires elevating perceptions of risk, which can take many forms. Performance risk, for example, can be an important consideration for consumers [119, 270, 284]. Compression, which reduces quality, is often used in order to fit the contents of commercially released double-sided media onto single-sided recordable blank DVDs. These are the types of DVDs that are required by the basic DVD burners used by most consumers. Quality is also an issue given that many films are shot in theatres using handheld camcorders. The image and sound quality of these movies is notoriously poor. And, as with most digital products, it is often difficult to ascertain the quality without first experiencing the product. This means that the consumer has to first take the time and effort to acquire the product.

Performance risk may be less of an issue with music and software, but it is still significant. Music is often down sampled in order to reduce file size. Illegally obtained software generally does not come with manuals or product support. This presents product rights owners with a strategic option because it has been shown that when users are informed of the benefits of authorized software, such as reliability, manuals, service, support, and trustworthiness, and the downsides to acquiring unauthorized products, users tend to increase their purchasing intention of authorized products [84, 123].

Social risk has been negatively linked to unauthorized file sharing [119, 270]. Individuals generally seek the approval of others, especially their immediate peers. This is motivated by a need to feel accepted and part of a community. To develop a sense of belonging requires a positive self-image portrayal that could be affected by an individual's outward behavior. This may explain unauthorized file sharing behavior among different age groups.

Older, educated individuals are more reluctant to engage in unauthorized file sharing [12, 31, 90, 96, 120]. But college students tend to engage in this activity much more freely in part

because there tends to be little social stigma attached to it. In fact, it is often viewed as an important way through which students can develop and maintain friendships. It is a means of developing a sense of community. Because of reciprocation norms those willing to share files may expect benefits in return. Deterrence that involves potential exposure may therefore work for older individuals, but not for younger users.

Notwithstanding the potential effectiveness, a deterrence strategy is sometimes inappropriate or not feasible for various reasons. First, it may require the ability to identify and track users and the specific nature of their unauthorized use and this may raise privacy concerns [39, 105, 174, 201, 211]. Second, it may lead to prosecutions and sanctions that appear to be overzealous and inappropriate. Record companies wound up suing teenagers and their parents for downloading pop songs. While this strategy was effective to a certain degree in reducing a particular form of unauthorized file sharing, it alienated a large portion of the customer base and harmed the corporate image [3, 51, 262, 277]. As a result, record companies began moving away from this confrontational strategy [195].

### **2.3 Contextual Factors**

There are numerous environmental factors that can influence how digital products are consumed. These conditions can be grouped into four categories—macro-economic, market, social, and political. These contextual factors vary over time and have cumulative effects. They define the product exchange environment and largely exist beyond the influence of any single entity. Each of these contextual factors can influence channel selection for the acquisition of a digital culture product, which can include unauthorized file sharing through P2P networks.

Macro-economic factors can include national wealth, economic growth rate, and income distribution. It can be characterized by the dominant industrial sectors and their interconnections,

how an economy is structured and organized, the degree of regulation, and a country's overall competitive positioning vis-à-vis other countries. It can also be a function of a country's general infrastructure and investment, and the degree to which they have been developed.

Market conditions are determined by the factors that influence the transactions of a specific product or class of products between buyers and sellers. Relevant factors include product availability, product demand, and the presence and influence of complementary products. They include facilitating conditions such as product specific infrastructure and availability of product support. They can include the nature of the balance of power and influence between buyers and suppliers, and the availability of substitutes.

Social conditions are determined by the broad factors that help define the culture of a particular environment in which products are consumed. The environment can vary in scope, ranging from small groups up to the country level. Culture can be defined in terms of common values, the patterns of interaction, common expectations, and mutually shared realities. It can be defined by shared symbolism, perceptions, and meanings.

Political conditions are a function of governance structures, processes, and their scope and mandate. It can be defined by the nature and role of regulatory institutions, as well as their interrelationships. They include the legal frameworks that govern or affect transactions among individuals and institutions. Political conditions are a function of the extent to which those who are governed perceive they have a role and a stake in the process. It can be defined by the extent to which individuals feel their government is responsive to them and their concerns. How these various factors affect unauthorized file sharing are discussed in the following sections.

### ***2.3.1 Macro Economic Factors***

One of the important macro economic factors is per capita income, which is a measure of national wealth. Generally, as countries become wealthier they tend to exhibit lower rates of unauthorized file sharing as authorized products become more affordable [203, 205]. This is consistent with prior research that examined the influence of product pricing. But national wealth has other effects besides its impact on individual purchasing power.

Greater national wealth means that countries may be able to afford the necessary resources to respond to unauthorized file sharing on a national scale through public awareness and educational campaigns and also through law enforcement. It enables countries to create the required infrastructure, such as advanced telecommunication systems, to monitor compliance and to facilitate the easy availability of authorized products.

There are exceptions, however, to the relationship between national wealth and unauthorized file sharing. Several countries with a high per capita income, such as Chile and Saudi Arabia, show much higher rates of digital piracy than those with lower per capita income [38]. This suggests the presence of other significant factors, such as income inequality. Large disparities in wealth could engender general perceptions of unfairness, which may lead consumers to feel less inclined to pay for products. And indeed, several studies have found a positive relationship between income inequality and unauthorized file sharing [13, 124, 142, 237].

Greater national wealth also does not necessarily mean greater discretionary income that could be used to acquire authorized products. High costs of living, high taxes, or the manner in which taxes are structured can result in lower net income and perhaps a feeling of injustice that is not reflected in national wealth statistics. This may explain the results in one study that examined

the impact of taxes. It found a positive relationship between tax rates and the rates of unauthorized file sharing of software [26].

The impact of national wealth may be moderated by its growth pattern. A growing economy is often associated with a rising sense of affluence, a positive future outlook, and a general sense of well being. One might expect that economic growth would therefore be associated with a lower rate of unauthorized file sharing and other forms of copyright infringement as products become more affordable and accessible. But this is not always the case. In research that examined the relationship between growth rates and piracy rates in Latin America, a positive relationship with economic growth and digital piracy was observed [238]. This seeming paradox could be explained in a few ways.

In emerging markets during periods of high rates of economic growth, companies and individuals often find themselves under competitive pressures to quickly adopt new technologies at a time when cash flow and other resources may be very constrained. Individuals may feel pressure to quickly learn new software that they cannot easily afford. This may encourage companies and individuals to acquire technologies in ways that are unauthorized or illegal. This could have a corrosive affect on attitudes that may lead to unauthorized file sharing more generally of music, film, and books.

Another important macro economic factor is the openness of the economy to trade and investment. An open, liberal trading environment has been found to be consistent with reduced rates of unauthorized file sharing [19, 26]. Such an environment may create a sense of prosperity and optimism about the future that reduces the temptation to circumvent rules and laws. Open trading environments tend to discourage corruption and the emergence of black markets and

other illicit activities. Illegal activities, when they occur on a large scale, can feed a perception of lawlessness that could lower inhibitions towards prohibited and opportunistic behaviors.

Finally, countries with large software industries tend to show lower rates of software piracy and other forms of unauthorized file sharing [38, 90]. The same has been observed for other types of digital products such as film. As the creative and knowledge based industries, such as entertainment and software, become more important, there is often an associated shift in attitudes that is less tolerant of unauthorized file sharing [38, 90, 142]. Stakeholders at all levels begin to recognize the need to protect intellectual property, as a matter of mutual self-interest, as the economic impact becomes clearer. In time, this may lead to stable social and cultural norms regarding the use of intellectual property. A greater willingness to update, enforce, and comply with anti-piracy laws and other forms of protection for intellectual property can emerge often resulting in lower rates of unauthorized file sharing [14, 16, 90, 142, 152].

### ***2.3.2 Political Factors***

Unauthorized file sharing can be influenced by the political climate. The political climate is a function of social conditions and norms, economic conditions and trends, dominant religious and philosophical value systems, and the influence of major stakeholders. The political climate in turn gives rise to new norms, trends, values, and laws. The political climate influences whether the necessary infrastructure, institutions, regulatory frameworks, legal systems, and enforcement mechanisms are realized in ways that can effectively reduce unauthorized file sharing.

The impact of deterrence, as noted earlier, is partially a function of well-developed laws and their active enforcement. Countries with strong laws and legal systems generally exhibit lower piracy rates [152, 190]. But for these laws and systems to exist requires the political will to develop the legal, regulatory, and technical infrastructure. Unfortunately, the protection of

intellectual property is often of low priority when there are more immediate concerns such as poverty, deficient educational systems, political and economic instability, and corruption.

Developing countries may neglect or actively refuse to protect intellectual property because of economic and educational disadvantages. As a developing country during the 19<sup>th</sup> century, with a relatively poor and largely undereducated population, the United States government decided as a matter of policy to encourage broad, inexpensive access to intellectual property in the form of books and inventions [164, 196]. There was little incentive to collect and send royalty payments to Great Britain, which at the time was among the leading economically developed countries.

Similar attitudes are prevalent among many developing countries today. This may partially explain why there tends to be lower rates of piracy among developed and higher income countries [142, 190]. In China, for example, highly organized software, film, and music pirates have been able to operate openly, and on a large scale with little fear of prosecution [300].

The governing philosophy can influence the climate for unauthorized file sharing by the extent to which it promotes economic freedoms. The lack of economic freedom, as suggested earlier, can elicit attitudes that tolerate various unauthorized activities [237]. In highly regulated environments, or those environments characterized by high tariffs, fees, and taxes, one can often observe the emergence of black markets for goods. Environments in which black markets thrive can be highly corrosive to the norms and attitudes that would otherwise discourage illegal, corrupt, or unethical behavior.

High levels of corruption could lead to perceptions of inequality. As a consequence of perceived inequality, individuals may adjust their attitudes towards unauthorized file sharing. An individual may become unwilling to be among the perceived few to pay full price for authorized

copies when others are perceived to be acquiring the same product at much lower cost or for free. Several studies have noted the positive relationship between corruption levels and unauthorized file sharing [16, 19, 237].

An economically liberal environment is often associated with democratic systems. Such systems are often characterized by increased respect for civil and political liberties. They have been positively linked to lower rates of unauthorized file sharing and other behaviors associated with digital piracy [19, 223]. An environment characterized by certain political and social liberties tends to foster a general sense of equality and justice. When individuals experience otherwise they may resist or find some way of restoring a personal sense of justice. A generalized feeling of injustice might influence consumers to not respect norms and other standards of behavior whenever they can. They may do so without necessarily targeting any single entity, but rather by doing so opportunistically. This could include choosing not to respect intellectual property rights.

Finally, unauthorized file sharing can be a function of political and economic instability [152]. Instability may lead to uncertainty about the future. This may engender anxiety regarding future income and well-being. Individuals may respond defensively by avoiding unnecessary expenses and conserving resources. This may include avoiding payment for digital products whenever possible. Individuals may become increasingly open to engaging in various forms of opportunistic behavior.

### **2.3.3 Market Factors**

Market factors are affected by economic, social, political, and technological conditions. In turn, market factors affect the transaction conditions for businesses and consumers and can determine the feasibility and success of a particular business model. A small handful of studies have addressed the influence of market factors on unauthorized file sharing. Market factors include those defined by Porter's model [225]. They include intra-industry rivalry, the balance of power between buyers and sellers, the availability of substitutes, and barriers to entry. Other important factors include the availability of complementary products, the presence of network externalities, and the value proposition.

In many cases, product rights owners have been reluctant to abandon or adapt established business models that have become ill suited to current market realities. At the core of any business model is the value proposition. In the past, product rights owners, in collaboration with various intermediaries, provided value by sourcing talent, producing a finished product, providing information to consumers, and managing product distribution. Technology has dramatically reduced the value of these services and has led to a shift in the balance of power towards buyers, i.e., consumers, and away from product rights owners and associated suppliers.

Buyers are increasingly able to source and download products online directly. Artists are no longer as dependent on record labels for production, distribution, expertise, and other resources. There is a clear need to respond with a business model that emphasizes new products or consumer experiences in order to make the perceived value proposition more attractive [139].

Analog technologies used to serve as barriers that could limit unauthorized file sharing and other opportunistic behaviors. But similar barriers do not exist for digital products. Digital products such as software are easy to duplicate and manipulate and can be used in various

unauthorized ways [96, 204, 207, 218]. Easy to use enabling technology such as cheap computing power, inexpensive storage devices, Internet broadband, search engines, and online services such as YouTube and P2P file sharing services facilitate sourcing, distribution, and access to digital products. Inexpensive production technologies such as Adobe Audition, Adobe Premier, Apple's GarageBand, and Audacity permit talented individuals to exercise their creativity. Clearly, product rights owners and their partners are no longer indispensable. Knowledge and expertise is readily accessible via online resources and through professional and social networks [215].

Complementary products such as portable, low cost standalone MP3 players and smart phones with integrated music and video players has increased demand for both legal and illegal digital products [215]. Both legitimate and opportunistic behaviors are encouraged in much the same way that other sets of complementary products, such as VCRs and televisions, led to increases in the authorized consumption of movies as well as the piracy of movies [152].

#### ***2.3.4 Social Factors***

Beliefs regarding the acceptable use of digital products vary by group [134]. Academics, for example, tend to be more tolerant of unauthorized file sharing while business executives report lower rates within their firms [273]. There could be several explanations for this. For one, the consequences of unauthorized file sharing in a business environment can be severe. In a U.S. commercial setting, the unauthorized sharing of software can be punishable by up to ten years in prison and a \$1 million fine [5]. This creates strong incentives to supervise and ensure the proper handling of intellectual property to an extent that generally does not occur in academic environments. Over time, this can lead to the emergence of a stable and reinforcing consensus that influences behavior [11, 96].

This suggests a more generalized link between unauthorized file sharing and group culture, which is defined by norms, roles, values, and embedded knowledge [170]. As noted earlier, laws and the extent to which they are enforced can have a deterrent effect on various forms of unauthorized use. But this generally occurs if group norms are consistent or neutral with respect to a particular law [70]. The most successful laws tend to be those that emerge from a broad social consensus. In most cases, social norms can have a stronger effect than legal norms [70]. When laws are at variance with accepted social and cultural norms they can become difficult to enforce. And generally, norms of non-compliance have stronger affects, especially when motivated by self-interest [70].

The impact of subjective norms is one of the most examined constructs in information systems research. The influence of subjective norms, which are beliefs regarding the normative expectations of others, reflects pressures of conformity and the desire to be accepted by a particular group that is important to the individual. With rare exceptions [57], there is a consistent, strong positive relationship between subjective norms and various forms of unauthorized use [12, 50, 170, 219, 246, 284]. One of the reasons for the strong link between unauthorized file sharing and subjective norms, as suggested earlier, is that the act of sharing digital culture products can be used to develop strong social and cultural bonds. It is often a means of achieving social acceptance [121, 160, 161].

Social learning theorists note that individuals observe, learn from, and emulate their peers [108]. By observing the social consensus, individuals learn what behaviors are appropriate and acceptable [46, 49]. If peers are actively engaging in unauthorized file sharing through P2P networks an individual may choose to mimic this behavior without giving much thought to the positive or negative consequences. This may explain the usage patterns observed in certain

environments such as college campuses where unauthorized file sharing is widespread. Students can observe the norms associated with unauthorized file sharing and may conclude this to be a normal and acceptable way of using digital products.

The impact of social norms could also explain unauthorized file sharing in many emerging markets. When digital products are relatively expensive and scarce, underground exchanges often emerge. Over time this could lead to new behavioral norms. It may become acceptable to exchange products among friends or to walk into a store or stop by a street side kiosk and purchase low priced counterfeit digital goods.

Often usage norms are transferred to new contexts. This appears to be the case with respect to certain usage norms associated with the traditional use of analogue products. Consumers may reject the notion that there should be a distinction between how analogue products and digital products are consumed. For example, there has long been an established norm that encourages individuals to make back up copies, edit, and share analogue products with their friends and family. What is different with digital products is the ease with which users are able to satisfy their desires to create, modify, and share. Given that past behavior strongly influences future behavior [57], the attempt to restrict the use of digital products may be resisted and result in the emergence of new norms of non-compliance with laws, rules, and restrictions.

It is important to note that the impact of social norms is moderated. A key factor is normative susceptibility. It attenuates intentions to engage in unauthorized file sharing [119, 271, 285]. It is a measure of how sensitive an individual is to prevailing norms. Social pressures of conformity may not matter if the reference group is of little significance to the consumer.

Intentions regarding unauthorized file sharing may also be influenced by certain cultural traits and values. Researchers have often used Hofstede's cultural framework to address this

issue. Empirical evidence has established a positive relationship between collectivism and an individual's willingness to engage in unauthorized file sharing [64, 124, 190, 203, 205, 249, 251, 285]. This relationship is probably the easiest to understand. Essentially collectivist societies tend to place greater value on the sharing of resources. We can expect this attitude to be strong for goods that share some of the qualities of public goods such as digital culture products.

Other studies have indicated a positive relationship between unauthorized file sharing and both masculinity [205] and power distance [64, 251]. It has been suggested that in hierarchical societies there is less willingness to criticize the behavior of those occupying a higher social status. If high status individuals are engaged in unauthorized activities, they are not as likely to be questioned by others. In masculine societies there is an emphasis on ambition, which may encourage individuals to sacrifice ethics and morality in order to gain advantages. It is believed that both factors—high degree of power distance and masculinity—lead to conditions that promote corruption and its tolerance. Such an environment may encourage unauthorized file sharing and other forms of opportunistic behaviors.

There are few studies that address the impact of long-term orientation. This dimension relates to a society's time horizon and the importance that it attaches to the future rather than the present. Those with a long-term horizon tend to favor actions and values that benefit the future such as saving and thrift, patience, maintaining one's reputation, and avoiding shame. Those with a short-term horizon are more concerned with short-term stability, respect for tradition, avoiding personal embarrassment, and relationship reciprocity. The impact of this dimension has not been thoroughly examined, but in one of the few studies to date, a positive relationship between long-term orientation and unauthorized file sharing has been indicated [251].

Results regarding the impact of culture have not always been consistent across all studies. Potential problems with these results may be attributed to some of the weaknesses with the framework. Some believe that the framework may be too general, simplistic, or not sufficiently validated and suggest that there are more robust and useful frameworks [9, 148]. But to date, these alternative frameworks have not been examined in the context of unauthorized file sharing.

#### **2.4 Moral and Ethical Factors**

Among the most examined issues with respect to unauthorized file sharing is the impact of morality and ethics. Several studies have found both to be important factors that shape attitudes towards unauthorized downloading. Attitudes are one of the most important factors directly related to the intention to engage in unauthorized file sharing [50, 57, 219].

Before addressing some of the specific findings, it is important to delineate the distinction between what is moral and what is ethical. There is often a tendency to use the terms interchangeably, but they have distinct meanings and impacts that differ. We say something is ethical if the behavior in question is correct and acceptable. Or put another way, an ethical decision is one that is “both legal and morally acceptable to the larger community” [135]. This simple definition has certain implications.

The first is that ethics involves, in part, a teleological evaluation of behavior. This means that ethical behavior can be partially determined by the goodness of an alternative, which is in turn a function of the probability and desirability of the consequences [247]. This is an essential consideration in establishing laws. They are typically written in order to minimize some harm. The Sarbanes-Oxley Act, for example, was a response to the collapse of Enron and WorldCom, which adversely affected many investors. The lack of transparency of the firm’s accounting records allowed investors to unknowingly assume high levels of risk.

The second implication is that ethics is in part defined by an intrinsic set of moral values. This is a rule-based notion of right and wrong that develops over time through socialization. It is a function of philosophical orientations, religious beliefs, norms, and one's conscience. In this sense, morality is a deontological evaluation of behavior. Both deontological and teleological evaluations help define acceptable behavior and can have a strong influence on unauthorized file sharing [247].

The notion of ethics is context specific. There are, for example, ethical codes of conduct that apply specifically to sports, business, professions, academia, and even to organized crime. Ethical behavior among business competitors includes not sharing information beyond what is legally required. In other situations this could be construed as a certain degree of dishonesty. Police investigators are acting ethically when they lie to suspects in order to solve a case, even though lying is ethically wrong in other circumstances, such as during the trial phase of a criminal court proceeding.

In Western academic settings, the standards for citing work are clear and part of a well-defined notion of academic integrity. Any borrowed material must be fully referenced. But in certain Asian countries, what could be construed as plagiarism in the West, is viewed as precision in scholarship and respect for received wisdom [264]. What might be viewed as an egregious unethical act of plagiarism in, say, the United States, may not be construed as such in Taiwan.

Numerous studies have established a strong link between ethics and various forms of unauthorized file sharing [50, 90, 96, 178, 215, 247, 267, 268, 269, 273, 284, 289]. Again, it is context specific. Ethical evaluation of unauthorized file sharing varies by national culture [89, 155]. It can also vary among smaller groups such as college students. Among this group in

particular, there is an ethos that views unauthorized file sharing as not only acceptable, but desirable [41]. This is consistent with the research, noted earlier, that shows the importance of social consensus in shaping attitudes towards unauthorized file sharing [134, 270].

There are many ways in which ethics can be influenced. There is some evidence to suggest that past behavior is not only a strong indicator of future behavior [57, 84, 170], but it also tends to positively influence ethical attitudes [275]. Students that have never engaged in downloading, sharing, copying, or other forms of unauthorized distribution were much more likely to view such activities as unethical [275].

Ethical attitudes can also be influenced by raising awareness [183]. But the extent to which attitudes can be formed in this way depends on the process. In a interesting result, music business majors who had never downloaded music illegally, but *had not* taken an ethics course were *more likely* to view unauthorized file sharing as unethical than those *who had* taken an ethics course [275].

However, when the social costs and other consequences of unauthorized file sharing is made clear, consumers begin to view such behavior as unethical [183]. This is consistent with the teleological determinants of ethical disposition. This finding suggests that the full range of issues needs to be presented to the consumer as an ethical problem in the first place [85]. In many cases, the harm to product rights owners and consumers are not apparent.

Several studies have addressed the moral component of ethical behavior and have found a positive relationship between moral judgment and unauthorized file sharing [84, 121, 206]. But a significant number of studies show the impact to be weak. What researchers have found is that moral obligation is an important consideration that influences attitudes, but the impact is highly variable [57].

Moral obligation is a measure of guilt. If a consumer feels morally committed to behave in a certain way, the probability of not following through with the behavior is tempered by the potential feeling of guilt that may emerge. With respect to unauthorized file sharing, the sense of moral obligation is often low. For many, unauthorized file sharing does not stimulate an emotional guilt response, especially if an individual scores high in Machiavellian attitudes [12].

Researchers have also found that moral judgment is a function of moral intensity, which can also be very low towards unauthorized file sharing [178]. Moral intensity is a function of several factors. It is determined by the magnitude of the consequence of engaging in a particular activity, the probability of the effect, the social consensus regarding the behavior, and temporal immediacy [22, 147, 270]. Moral intensity with respect to unauthorized file sharing is notably low or absent among certain groups such as college students. It may also be one of the reasons that morality standards differ by region. Moral standards with respect to unauthorized file sharing, for example, tend to be lower among students from Singapore and Hong Kong [269, 289].

## **2.5 Psychological Factors**

Attitudes towards unauthorized file sharing can be a function of several psychological factors that influence how consumers perceive and interpret situations. Some of the significant factors that have been examined by researchers include the psychology of risk, bias, experience, self-control, and behavioral control. Among them perceived risk is perhaps one of the more important and interesting factors. Earlier we reviewed research that addressed unauthorized file sharing from a utility standpoint and found that users will engage in unauthorized file sharing if the benefits of doing so outweighed the risks of being caught and punished. Risk, however, does not always have the same deterrent effect for all consumers.

Some consumers are risk averse. Others are risk seeking. The distinction can vary by the type of risk confronted. Some are more sensitive to financial and prosecution risk. Others are more sensitive to social risk. In general, those who are more risk seeking will be more open to engage in various forms of unauthorized file sharing [84]. Their fear of being exposed is either diminished or adds an appealing element of excitement or challenge.

Unauthorized file sharing could instead reflect a consumer's need to seek out novelty, which overwhelms their fear of risk [57, 84, 170]. Or it could reflect a lack of self-control [106, 107, 108, 109, 110, 111, 112, 114, 157]. Risk seeking appeal suggests that unauthorized file sharing may be determined by affective considerations such as happiness and excitement [12, 170].

Sometimes the appeal of risk, especially if it is associated with a challenge, may be the result of self-positivity bias. Self-positivity bias is a measure of confidence in one's good fortune [157]. It is an irrational or unrealistic sense of optimism [199, 287]. Those with a high self-positivity bias believe that they are less likely than others to experience unfortunate events such as accidents, crime, or loss of employment. With respect to unauthorized file sharing they believe that they are less susceptible to being caught [199].

Self-positivity bias may be a function of perceived self-efficacy. Self-efficacy is a belief in one's knowledge and skill, which in turn is positively related to unauthorized file sharing [121, 157, 269, 276]. Self-efficacy often arises from past experience, which is also positively linked to unauthorized file sharing [57, 84, 170]. Self-efficacy is a precursor to the more complex construct of behavioral control, which takes into account facilitating conditions [216].

Facilitating conditions can include resource availability. It can include access to the appropriate technology, tools, and skills. It can include the lack of legal restraints and the availability of opportunity. Behavioral control is one of the main components of the theory of

planned behavior [10]. It has been cited in numerous studies as one of the most important determinants of unauthorized file sharing [46, 57, 219, 276].

## **2.6 Technological Factors**

Discussions regarding the impact of technology on unauthorized file sharing often entail a discussion of digital rights management technologies. Digital rights management systems can have a significant impact on preventing the unauthorized use of digital products [52]. These systems are a collection of technologies, not necessarily standardized or integrated, whose purpose is to enforce licenses that detail the terms of use for a particular piece of digital content such as software applications, music, or film. These systems must be able to evaluate an intended action against a list of rights, they must be able to properly authenticate a user as the valid holder of the license, and they must be able to associate the license with the correct digital content [304]. The use of digital rights management technologies has the potential to regulate unauthorized file sharing, provided that they are continually updated and maintained.

The components of a digital rights management system vary widely in terms of function and complexity. For instance, simple watermarking can preserve the provenance of digital content and facilitate tracking and monitoring [208]. Tamper-proofing and code obfuscation can thwart the ability to reverse engineer a product [52]. Hardware keys (also known as dongles) and code customization prevent unauthorized file sharing by tying a digital product to a specific user. They can be particularly useful in places where the enforcement of laws are lax [263]. Code customization in particular appears to be a growing trend among some businesses as a way of dealing with software piracy in particular [118].

Hardware keys and certain other digital rights management technologies may only be appropriate for high value software since the approach tends to increase the costs of the software,

undermines network externality effects, and may reduce ease of use [263]. It has been argued that preventative technical controls may generally lead to a decrease in profits for certain products, especially in the absence of network externality effects, because it raises the disutility of the product for consumers [130]. Preventative technical controls may encourage consumers to either forgo purchasing a product or instead drive them to circumvent protection schemes. In many cases, deterrence strategies, such as the threat of legal action, are superior and may increase profits [91].

There are certain products in which the use of digital rights management technologies is common. Cable operators generally permit the consumption of digital content only within closed or highly restricted environments. In order to view programming, the signal has to be captured through proprietary set top boxes. Tivo permits recorded programming to be viewed through the proprietary digital recorders. Apple used a digital rights management system called FairPlay, which allowed users that purchased music from the Apple iTunes store to consume their digital products on iPods and a limited number of authorized computers. Similar restriction schemes are used by Microsoft's Zune player and Rhapsody's "Take it With You" service. But while there is a trend away from digital rights management tools for purchased downloads, they remain common for subscription-based services such as Qtrax.

While many digital rights management technologies are effective, they can quickly obsolesce due to innovations or changes in the marketplace. One clear example is the Content Scrambling System used for DVDs. It was rendered obsolete when Jon Lech Johansen made the descrambling code available on the web. He was motivated to circumvent the CSS encryption scheme in order to provide Linux with DVD support [1].

Digital rights management technologies are often defeated by individuals intrinsically motivated by factors such as the challenge of circumventing software controls [86]. This is often the case among the warez community, which is an underground community that trades pirated software and the codes to unlock them. To a lesser extent, some users may be motivated by the prestige that is bestowed upon successful hackers [86].

It has not been empirically established yet, but some forms of digital controls, such digital finger printing and product verification, may encourage various forms of unauthorized use because of privacy concerns [105]. Users are becoming increasingly sensitive to issues of privacy because of the increasing awareness of identity theft and the inappropriate mining and use of consumer information for marketing purposes. Consumers are particularly sensitive to providing unidentified third parties with information regarding their consumption habits and online behavior [116, 191]. The confluence of adware, malware, viruses, trojans, and worms may all serve to create a general sense of unease towards certain forms of digital rights management systems.

Whatever the motivation, once the digital rights management technologies are breached, the product rights owners becomes vulnerable to unauthorized file sharing on a large scale. A few unprotected copies placed on a file-sharing network can easily result in the distribution of large numbers of unprotected copies. This is one of the main weaknesses of using technology to control the use of digital products. Once thwarted, a protection mechanism can be rendered obsolete.

## **2.7 Descriptive Correlations**

There have been several reports regarding the link between certain population characteristics and unauthorized file sharing. Many of the findings appear to be consistent over time. In general,

there is a negative relationship between age, gender (women pirate less), education level, and unauthorized file sharing [12, 31, 90, 96, 115, 120, 160, 253, 280]. Younger men tend to be the group most actively engaged in unauthorized file sharing [12, 31, 47, 108, 160, 218, 252].

These findings should be taken with a degree of caution. As with many aspects of human behavior, outcomes are the result of values, norms, and attitudes that define culture. It is difficult to make the case that some how objective, unalterable characteristics such as age is the direct causal element that governs behavior that is largely socialized.

What the descriptive correlations can do is point the direction towards the deeper, hidden relationships that can explain behavioral outcomes. For example, some studies show that women are more risk averse; however, this behavior is most likely the result of socialization [17]. It should not be surprising, therefore, that women would tend to avoid risk and respond to economic deterrence in a way that men do not [47].

## **2.8 Limitations of Previous Research Addressed by this Study**

Notwithstanding the large number of studies that attempt to explain unauthorized file sharing, successful strategies to curb it, with a few notable exceptions, have had inconsistent results. The unauthorized sharing of software in the workplace has greatly diminished over time in larger businesses [38], but as noted earlier, the amount of unauthorized file sharing of digital culture products over P2P networks and other channels continues largely unabated [244].

Some may argue that it is an intractable problem because of the liquid, free flowing, difficult to contain nature of digital products. As a result, the emphasis perhaps should be on developing new business models that are based on greater tolerance and acceptance of file sharing behavior. Product rights owners could instead focus on ancillary products and services. Firms could offer

paid consulting services to support free software. Artists could use free music to market concerts and merchandise.

But an analysis of the literature indicates several unexamined issues that could lead to an improved understanding of unauthorized file sharing over P2P networks and more effective strategies to control it. These unexamined issues are addressed by this study and concern the variable nature of unauthorized file sharing, the emergence of new usage norms, the variability of product types, the influence of product attributes, and the impact of contextual factors.

### ***2.8.1 Variability of Unauthorized File Sharing***

Upon examining the literature, it becomes apparent that many studies were not always careful to distinguish among the many different forms of unauthorized file sharing and how strategies to curb it may only apply within a narrow context. Unauthorized file sharing is sometimes considered synonymous with a generalized notion of digital piracy, which is the illegal copying of digital goods for reasons other than backup, without permission, and without compensating the product rights owner [260].

The nature of unauthorized file sharing, however, as it relates to digital goods, is *highly variable*. It can entail the unauthorized duplication and exchange of media between acquaintances, illegal anonymous file sharing over P2P networks, or the unauthorized transfer of software when hardware ownership changes hands. The impact and the motivations that drive individuals to engage in any one of these activities may differ. We know, for example, that the extent to which different forms of unauthorized file sharing are perceived to be illegal, unethical, or immoral varies [286]. As a result, certain strategies, such as those that rely on legal enforcement measures, or those based on ethics and morality, may not be appropriate or effective in every situation.

Furthermore, unauthorized file sharing can be separated into two distinct activities—receiving files and making files available to others. From the perspective of the product rights owner, the unauthorized distribution of a digital product is a more serious matter. However, it is one that most users are less inclined to actively engage in. This is evident in the ratios of providers and those who exclusively download files on many file-sharing services. In addition, the factors that drive users to engage in either of these activities may be different. *Therefore, future research should address specific forms of unauthorized file sharing that are narrowly defined.*

### ***2.8.2 Tensions Regarding Traditional and Emerging Usage Norms***

The easy accessibility and usability of various software tools, the untethering of digitized intellectual property from difficult to reproduce physical containers, and the emergence of global networks, allows consumers to cheaply and easily space shift, modify, transcode, repackage, copy, transmit, share, or recontextualize a digital product. Consumers are creating mixes, movies, collages, and sharing them with friends. This is allowing consumers to re-embrace traditional consumption norms. It is also leading to the emergence of new norms of active consumption.

Some forms of newly emergent consumption patterns are permitted under the principles of fair use and is consistent with copyright law. Some uses are protected under the First Amendment right to free speech. Some are viewed as fundamental moral rights. Examples include the right to share material among a small, private circle of friends and family. It can include the right to share material for the purposes of teaching and learning, and it can include the right to modify and share copyrighted material for the purposes of political speech, artistic expression, or satire.

*Strategies that interfere with the legal and perceived moral rights of consumers could elicit negative attitudes that encourage a general disregard for the rights of product rights owners and lead to unauthorized file sharing [121].* Therefore, efforts to restrain traditional and emerging usage norms may be doomed to failure. For example, the use of digital rights management tools implemented by subscription-based services such as Spiral Frog, Rhapsody, Spotify, and Qtrax often prevents consumers from selecting their platform of choice, which is a traditional right. Spiral Frog, for example, was not compatible with iPods or Mac computer systems. This lack of interoperability could motivate consumers to circumvent product restrictions and engage in unauthorized file sharing as a way to exercise their rights or as a punitive act.

In an overreach resulting in a great deal of negative publicity, Universal Music Publishing Group subjected Stephanie Lenz to a take down notice by the pursuant to the Digital Millennium Copyright Act [198]. Her transgression was a spontaneous home video recording of her 18-month-old toddler, dancing to Prince's recording of *Let's Go Crazy*, which had been playing in the background, and uploading the video to YouTube, in order to share the video with friends and family. The audio recording of the song was of very poor quality. Clearly, the product rights owner of the song was not exposed to any harm. Only after a lawsuit by Stephanie Lenz, filed with the support of the Electronic Frontier Foundation, was the order rescinded. The video was considered fair use.

### **2.8.3 Variability of Product Types**

*The objects of unauthorized file sharing can vary a great deal.* It has been suggested that consumer attitudes towards unauthorized file sharing may vary by product type [92]. Consumers may have different attitudes towards certain products, such as music, that differ from utility products, such as business software. Previous studies have addressed a narrow range of digital product types that includes software, music, and to a lesser extent film, but products can be classified in a variety of other ways that have not been examined.

Products can be distinguished by size, format, and other file characteristics. Some are defined by whether they are associated with a separate set of services such as product support. They can be classified as utilitarian or hedonic products. They can also be classified as either culture or non-culture products. Products can vary by their associated risk characteristics.

Non-culture products may not evoke emotional responses to the extent that culture products do. Culture products may be viewed with a collective sense of ownership. There may be differences between utilitarian and information-based products such as spreadsheets and word processing programs versus entertainment products such as gaming software and music. The use of utilitarian products may not be motivated by emotional considerations. With respect to risk, unauthorized copies of software generally do not suffer from performance risk to the extent that unauthorized copies of films do. *Future research should consider how products might be classified and the relationship to unauthorized file sharing.*

#### **2.8.4 Impact of Product Attributes**

*There has been a tendency to overlook how the full range of specific attributes that characterizes intellectual property, and digital culture products specifically, can influence behavior.*

Intellectual property in a given class should not be treated as if its many characteristics are homogenous and immutable. The digitalization of intellectual property not only allows users to consume products in new ways, they also allow product rights owners to offer different product configurations and new value propositions.

Through the combination of new digital technologies, evolving digital usage norms, laws and enforcement mechanisms, digital culture products can incorporate a wide range of attributes. Some of these attributes can be related to the ways in which the digital culture product is consumed, the privacy associated with its usage, or the ways in which it can be modified and shared. The presence or absence of these various attributes may engender attitudes towards product rights owners and the exchange process that can in turn influence certain consumer behaviors.

Digital culture products packaged in ways that do not allow consumers to freely share, modify, or consume their products could lead to the emergence of attitudes sympathetic towards certain forms of unauthorized use. Consumers could become motivated to hack a product's code to modify restrictions. They could become motivated to seek out restriction-free copies through P2P file sharing, or to discover and share code cracks and serial numbers. In the process of removing time shifting restrictions, they may create and disseminate copies of intellectual property free of digital rights management controls. If consumers cannot enjoy products without be monitored they may choose to acquire products through alternate channels. In a study by Cheng et al., the authors found that one of the reasons that individuals pirate software is because

the license is perceived to be too restrictive [46]. The nature of these restrictions, however, was not specified in the report.

### ***2.8.5 Impact of Contextual Factors***

*Finally, there are several unexplored contextual factors they may influence unauthorized file sharing.* New technologies and business models provide product rights owners with new ways of interacting with consumers. There has been a substantial change in how consumers acquire digital products. Increasingly, consumers use services from firms such as Apple (iTunes store), Amazon, Last.fm, or Napster. Instead of packaged delivery of physical media and printed manuals, consumers are choosing downloadable binaries or consuming products as web services.

In 2008, the sale of downloaded music tracks exceeded the sale of physical units. Given these shifts in consumer behavior it is important to examine how the attitudes engendered by the exchange interface and process could influence subsequent file-sharing behavior. Sites that are difficult to use, of poor quality, unappealing, or that lack utility may engender negative attitudes that drive consumers away. A consequence could be that they become amenable to other alternatives that include unauthorized file sharing over P2P networks.

For digital products, websites are increasingly becoming the dominant channel of interaction. However, for many digital products, the number of websites through which a particular product can be acquired can be very narrow. Website catalogues vary and are finite. In addition, depending on the website, a digital product could be offered with a set of usage rights and restrictions that differ from other websites.

If a song in a particular format is not available to the consumer at a particular website the easiest option for the consumer may be an unauthorized download via a P2P network. Keep in mind that many websites require an investment in time and resources that the consumer may not

want to replicate each time they wish to access a specific product. For example, Rhapsody has been requiring that the user agree to monthly credit card billing. Spiral Frog required that the user install software in order to use the service.

Websites also vary in terms of privacy protections, degrees of anonymity, usability, appeal, and numerous other characteristics. Websites that are pleasant, friendly, personalized, and permit sampling are characteristics that may affect attitudes towards unauthorized file sharing. Websites and digital product attributes may convey information about the product rights owner and the product creator regarding shared values and other social benefits that could be important to the consumer. This may have an impact on the perceived value of a product and affect consumer attitudes towards the product rights owner that may have a bearing on the willingness to engage in unauthorized file sharing.

### **3 THEORETICAL DEVELOPMENT AND RESEARCH MODEL**

The theoretical model in this research addresses the limitations noted in the previous sections. First, it addresses the issue of product variability by focusing specifically on digital culture products. Second, it focuses on a specific behavior, which is the unauthorized downloading of products over P2P networks. Third, it examines the impact of various product attributes in terms of how easy it is to use a product for specific purposes. Four, this research focuses on characteristics of the exchange process, specifically website attributes related to usability and enjoyment. How product attributes relate to unauthorized file sharing can be understood using four compatible theoretical perspectives—the theory of planned behavior (TPB), the technology acceptance model (TAM), social exchange theory (SET), and justice theory.

The theoretical development of the model is in six parts. The first section (3.1) discusses the object of analysis, which is the digital culture product. Discussed is its significance to consumers and how digital technologies could change consumer and producer expectations in ways that are sometimes incompatible. This incompatibility, as noted earlier, is a source of tension that could motivate opportunistic behaviors by the consumer.

The second section (3.2) discusses the TPB and introduces the associated variables of attitude and intention. These variables have been established in prior research as important in explaining various forms of unauthorized file sharing. The use of this theoretical model and associated variables is motivated not only by a desire to confirm previous studies, but to provide a foundation for the new variables being explored in this research.

The third section (3.3) introduces SET. It explains attitudes and outcomes that result when the consumer receives benefits in an exchange. The use of SET is justified on the basis that classical economic exchange theories do not satisfactorily address many factors that motivate consumer behavior. For example, SET specifically addresses the fact that many exchanges between groups and individuals are social, can be part of a continuing relationship, are often guided by expectations of reciprocity, and may involve the exchange of intangible resources that are expressive, emotional, and instrumental [18, 54, 66, 117, 173, 234].

The fourth section (3.4) introduces justice theories and the associated variables of perceived distributive, procedural, and interactional fairness. In the literature, there has been little attention focused on how perceptions of fairness may explain certain forms of unauthorized file sharing. What little work has been done, mostly regarding distributive fairness, has yielded inconsistent results. One explanation could be that the concept and impact of justice has been too narrowly defined. It could also be that most previous studies have not addressed the unauthorized downloading of digital culture products specifically, which have unique characteristics.

The final two sections (3.5 and 3.6) discuss specific product and website attributes. Product attributes are introduced within the context of a larger framework, but the main interest concerns the ease of product sharing, modification, platform shifting (i.e., interoperability), and the ease in which a product can be time and space shifted. In addition, the model includes the ease of product trial, which is the extent to which a product can be sampled before purchase.

Website attributes of interest are perceived usefulness, perceived ease of use, perceived information quality, and perceived system quality. They also include perceived community facilitation, perceived creativity facilitation, and perceived enjoyment. None of these product and website attributes have been examined within the context of unauthorized file sharing. The models are represented in Figures 1, 2 and 3. Figure 1 represents the general model. The other two focus on specific product attributes.

### General Model

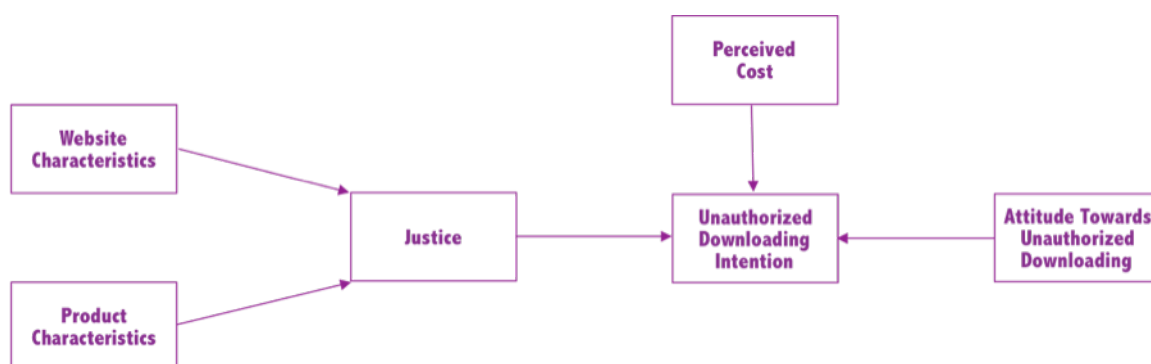


Figure 7

### Model Focusing on Specific Website Attributes and Justice

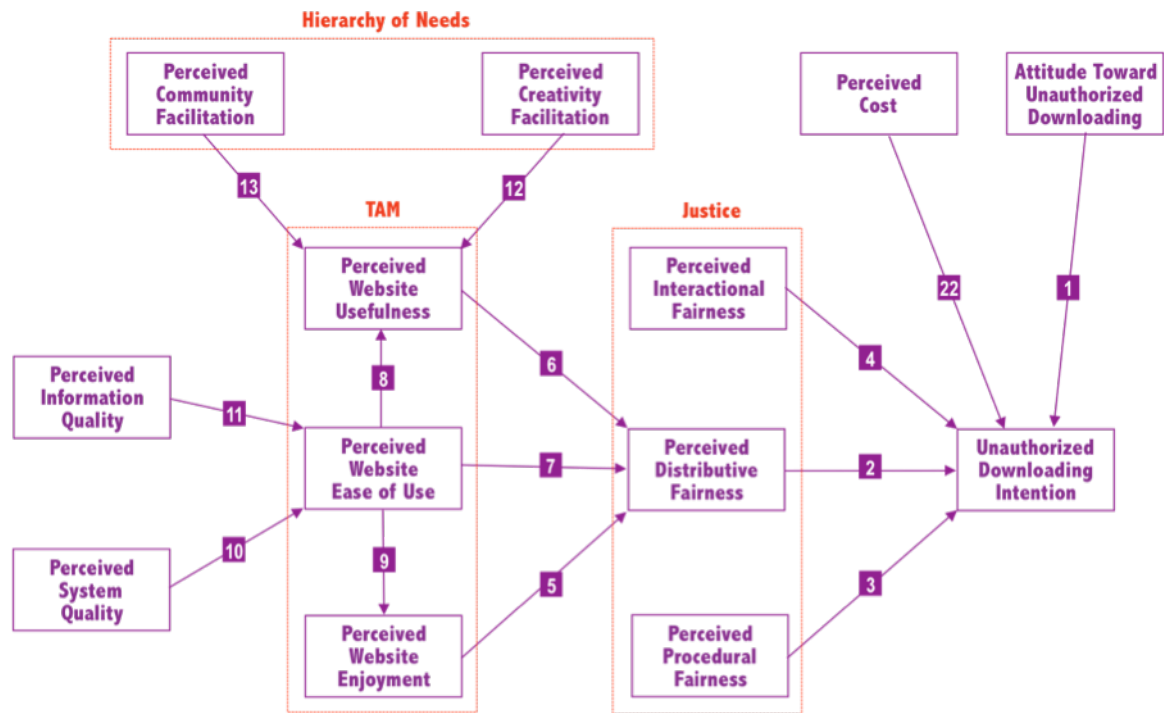


Figure 8

### Model Focusing on Specific Website Attributes Excluding Justice

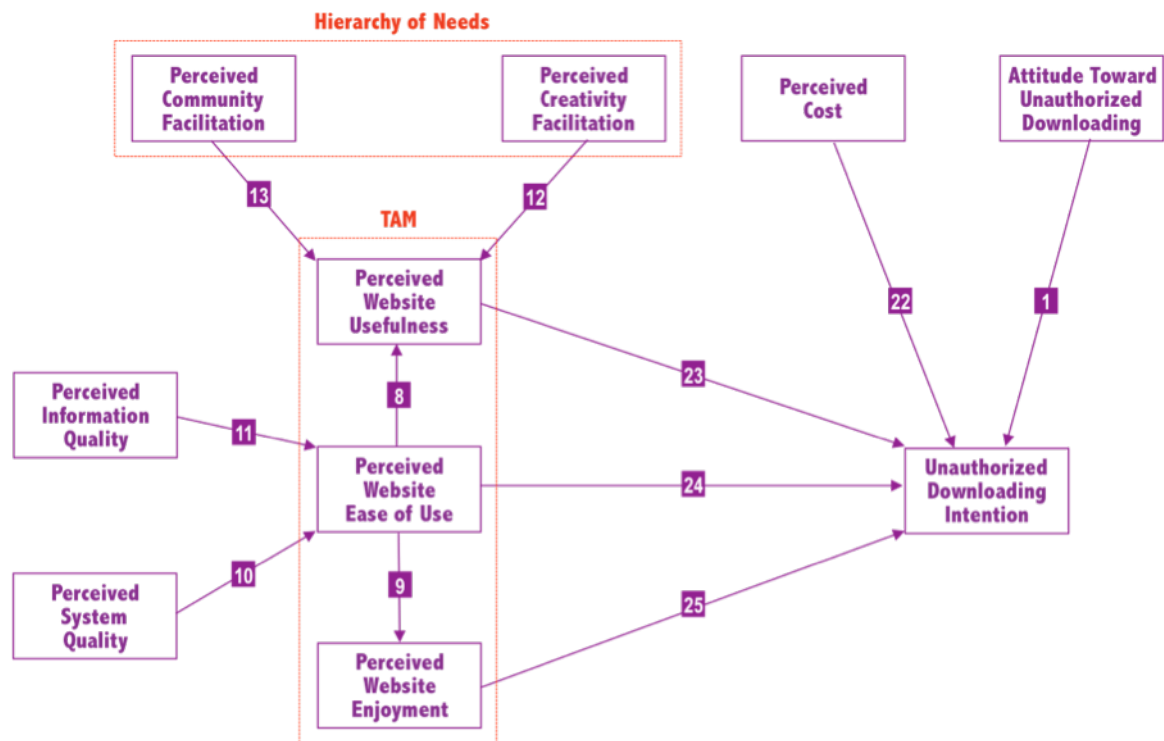


Figure 9

### Model Focusing on Specific Product Attributes and Justice

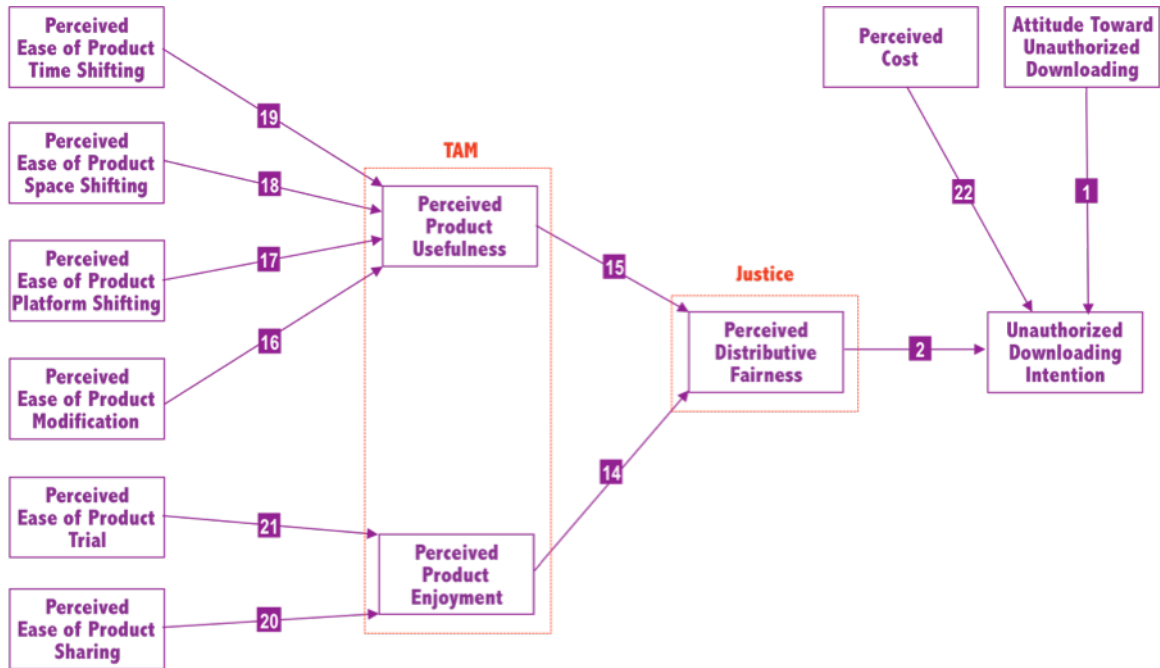


Figure 10

### Model Focusing on Specific Product Attributes Excluding Justice

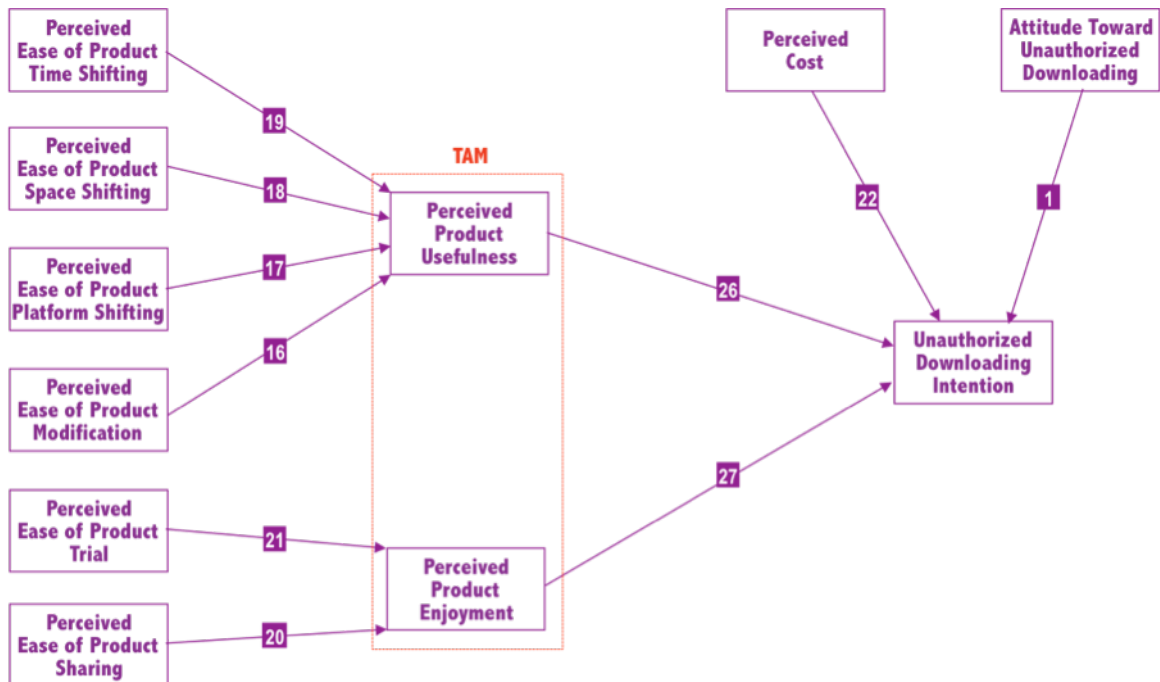


Figure 11

### **3.1 Object of Analysis**

Unauthorized file sharing has mostly involved culture products, which was the focus of this study, music in particular. The focus on culture products was motivated not only by its preponderance on file sharing networks, but also by its special significance to consumers. When culture products exist in digital form they can be associated with a distinct and variable set of attributes that are a function of a product's digital encoding and the process through which they are acquired. Its properties also result from the laws and social norms surrounding their use. These attributes can influence attitudes towards different forms of unauthorized file sharing. This section further elaborates on the nature of culture products.

#### ***3.1.1 Culture Products***

Culture products are distinguished from other types of products by the extent to which they are imbued with symbolism and values that can be widely shared. They enable individuals to assess and navigate the social contours of their environment. They can facilitate mutual understanding among members of a community. They are often a source of entertainment and pleasure. In the process of sharing, culture products can be used to establish and strengthen social bonds. They are an important means through which the patterns of human interaction, values, ethics, and moral principles are conveyed. They can be used as a vehicle to explore, express, and communicate ideas.

There is a natural desire to not only consume culture products privately, but also to share, perform, modify, and repurpose these products. Fundamental needs of community and self-expression can be satisfied. It should not be surprising, therefore, that the majority of Internet bandwidth is consumed by P2P exchanges of culture products such as video and music [4, 244].

While the creation of culture products is often the result of deliberate commercial activity, much of it emerges in a grassroots manner. It emerges from various social processes and interactions that can lead to the emergence and development of new cultural trends and products. The source materials are the collective experiences of individuals and other culture products that are continually recycled and re-imagined. Examples of these processes are films such as *The Graduate* and music from bands such as The Who. Both became iconic culture products of the times because they reflected and reinforced the rebelliousness of the 1960s. They reflected a younger generation's dissatisfaction with the status quo, a rejection of conformity, and criticism of the prevailing social values and mores.

The recycling of culture is exemplified by the influence of Bo Diddley, a Rock-n-Roll pioneering bluesman. He was heavily influenced by African musical traditions and created many of Rock's signature guitar riffs and percussive rhythms [239]. In turn, his influence can be clearly heard in the syncopated rhythms of the following disparate group of songs: *Magic Bus* by The Who; *Faith* by George Michael; *Mr. Brownstone* by Guns N' Roses; *How Soon is Now?* by The Smiths; *Desire* by U2; *Screwdriver* by The White Stripes; *Not Fade Away* by The Rolling Stones.

Because culture products consist of borrowed material and can become highly identified with the ideas, aspirations, and emotions of movement, individuals often feel a special connection and sense of entitlement regarding the use of these products. Asserting claims of ownership and attaching other rights and restrictions to digital culture products can be controversial. It becomes difficult for product rights owners to assert usage rights when the inputs of a creative endeavor are derived in part "free" from the collective zeitgeist of a particular time and place. Culture products do not emerge out of a vacuum. The 19<sup>th</sup> century romantic notion of original art that emerges from pure independent thought is easily challenged. For these reasons, we can expect consumers to feel

a right to consume, share, and modify culture products, notwithstanding the objections of copyright holders.

### ***3.1.2 Digital Culture Products and Consumer Expectations***

Culture products consist of two parts—the ideas themselves and their tangible expression. The two have been inextricably linked and this has facilitated the enforcement of rights and restrictions, especially those defined by copyright laws and usage agreements. When culture products are represented in a physical form it becomes relatively easy to define terms of use in ways that are clear, familiar, and readily enforceable. For this reason, even though the intricacies of copyright law and user agreements can often seem arcane and abstruse, it has not mattered much to the consumer.

For the consumer engaged in the passive consumption of culture products and other forms of intellectual property, such as books and vinyl recordings, the terms of use defined by copyright law and contracts seem similar to those associated with many other types of products. For all practical intents and purposes, given how tightly bound intellectual content has been to the physical container, there has often been little distinction. But the set of rights that attach to the expression of intellectual content are separate and distinct from the set of rights that attach to the container itself.

The distinction has been brought into sharp relief because digital technologies have made it possible to untether culture products and the ideas they represent from difficult to reproduce, unmalleable physical containers. Culture products in the form of analog information, such as the text on a page, the sound recording on magnetic tape, or the moving images on film can be easily represented in a digital format. This allows consumers to exercise a greater degree of control,

manipulation, and customization of digital goods. New ways of using digital products can be perceived as rights by consumers.

As the links between ideas and their tangible expression weaken, the distinction between a digital culture product and the idea it represents is conflated. This leads potentially to changes in attitudes and expectations regarding the manner in which consumers interact with digital culture products. Expectations and attitudes that exist regarding the consumption of ideas can transfer and become associated with digital culture products as well. New consumption norms begin to emerge. Consumers may begin to view digital culture products more as pure expressions of *ideas* that can be easily manipulated and shared with digital tools.

Ideas can be exchanged, but they have the qualities of a public good. They cannot be traded as ordinary physical commodities. Once they are exchanged, they can be difficult to protect. They cannot be subsequently withdrawn. They could be used for personal benefit in ways that does not demand some form of reciprocation. If you discuss the general outlines of a potential new business venture or the plot of a great story, others cannot be prevented from following through and realizing the concept as a tangible product. Ideas are non-rivalrous. Sharing an idea is not necessarily impoverishing because it does not deprive anyone of certain benefits such as enrichment and edification.

There is an expectation in open societies that the free flow of ideas should be unencumbered. Individuals should be able to freely exchange, consume, and rework ideas. As the distinction between ideas and digital culture products blurs, the expectations in how they can be consumed blur as well. Individuals begin to view the digital culture product as a vehicle for discovery, creativity, personal growth and enrichment, and social connectedness. Digital technologies can

support these expectations through the enhanced abilities of search, discovery, and delivery of digital goods.

With respect to creativity, digital technologies provide consumers with new opportunities for modification and reuse. Some modifications are simple and involve nothing more than the repackaging of music and other content to create playlists or blogs. Playlists can be designed for different occasions such as exercise, relaxation, or festive occasions. Different collections of songs can be used to communicate different sentiments and moods.

For the more ambitious user there are new tools that greatly expand the ability to create new products. The iLife suite by Apple Computer Corporation makes audio and video editing much more accessible and mainstream. The MT9 and MPX4 audio formats allow users to change the volume and mute individual tracks, which greatly facilitates the creation of remixes. Switch ([www.nch.com.au/switch/](http://www.nch.com.au/switch/)) and MotionBox ([www.motionbox.com](http://www.motionbox.com)) have made it possible to more easily copy, modify, repackage, share, and repurpose digital products.

Creative consumers can easily strip sound from video, rearrange scenes, and create new stories through the overlay of new voices and sounds. Sound elements can be sampled, dynamically altered, and incorporated with other sounds in order to create new works. Seminal culture products such as the Beatles' *Sergeant Pepper Album* and the Sugar Hill Gang's *Rapper Delight* are highly creative artistic products created through sampling that required working with relatively difficult to modify analogue inputs. And it required expensive studio equipment and a high degree of skill. Modern digital technologies have greatly reduced these hurdles for the average consumer.

Digital editing tools facilitate parody and criticism through recontextualization. *The Daily Show* and the *Colbert Report* have collected the statements of politicians and other public

personalities in order to create montages to make a statement, expresses some idea, or shed light on some perceived absurdity. Comic strips have been adapted with new language to create derivative works. In *Wondermark*, David Malki took 19<sup>th</sup> century illustrations and added contemporary language (see Figure 12) in order to create humorous storylines [189].



Figure 12 [188]

Some of the work by the more advanced user can be highly imaginative. Examples include anime music videos, which recombine video sequences from animated films with music. They also include machinima, a popular artistic genre in which the interactive video engines of computer games are used to create movies with complete storylines [21, 182, 184, 185].

When consumers create new products many are motivated to share them. With the emergence of global networks and media file sharing sites such as Vimeo, GoogleVideo, YouTube, Flickr, and PhotoBucket, consumers are able to cheaply and easily store, access, retrieve, and organize virtually any conceivable type of digital product. Users can tag content, apply ratings, add commentary, and have recommendations made for them.

Social networking sites such as MySpace and FaceBook also facilitate the sharing of digital products. These sites obviate the role of digital gatekeepers. Consumers are much less dependent on the highly trained computer specialists that were once needed to interact with complex, difficult to understand information systems. Consumers are less subject to controlled access when they choose to consume digital products. The emancipation of digital products from physical containers permits easier storage in digital libraries, databases, and individual computers that are networked through the broadband connections that are now ubiquitous.

One example of the popularity of consumer produced, shared content is the amateur music video mashup by Gary Brolsma [71]. He took the song *Dragostea din te* performed by the Moldovan pop band O-Zone and lip-synced the lyrics while doing his own original dance routine. The video turned out to be wildly popular and has been viewed more than 12 million times on YouTube [36]. He received wide media coverage and invitations to appear on several shows such as the David Letterman Show and Good Morning America.

### ***3.1.3 Digital Culture Products and Product Rights Owner Expectations***

Digital technologies present product rights owners with many new opportunities. They can offer consumers a variety of value propositions based on different delivery options, product formats, and various portability options. Product rights owners can deliver content within environments supported by hardware and software that gives users control over the consumption experience or within strictly defined parameters.

Digital technologies can be used to enrich the consumer experience by customizing products in ways that are difficult to do with analog content. Essentially, the rights and restrictions enabled by technology, and other terms of use and acquisition, allows the product rights owner to modify product and exchange interface attributes. For example, films on DVD are frequently

offered with multiple endings, easy to find chapterized film clips, outtakes, or other background material. The DVD release of the film *28 Days* had two alternate endings. One of endings, the director's preferred cut, was deemed too bleak for the general audience and was not shown in the theatrical release.

Digital culture products can also be used to drive the sales of other products. Nokia had a sales promotion called *Comes with Free Music Now*, which offered certain handset buyers a one-year free subscription to a music download service [42]. Gaming software can be bundled with service, support, and linked to a social network. Apple has used culture products such as music and video to drive sales of iPods and vice-versa. The halo effect, attributed to the success of iPods and its seamless integration into Apple's family of products, has helped to drive sales of Mac computers and other products [128].

The interests of product rights owners often conflict with consumer expectations. Since digital culture products are no longer anchored to a physical object, product rights owners have been using new strategies to assert control over their content. The intent has been to ensure some form of remuneration and to protect their perceived rights. Strategies have included strengthening and enforcing copyright laws and contracts. It has included using digital rights management technology to control the use of their products.

One technology response has been to attach code to digital products and the consumption environment that defines permissions and restrictions. The frequency, timing, and circumstances associated with consumption can be specified. The extent that users can share a product or modify a product can be restricted. Repurposing and recontextualizing a product can be curtailed. Media companies can set different rates for the right to choose the consumption device,

the right to store the track on a device independently owned and controlled by the consumer, or for the assurance of permanent, continuing access to purchased tracks.

Potential usage restrictions, facilitated by evolving information technologies, are extensive. Digital culture products and the supporting infrastructure through which they are consumed and exchanged can be easily modified to enable strict monitoring, control, and licensing to a degree that was not previously possible. The technologies that can be used to restrict unauthorized use can be used to commoditize every aspect of product use far beyond social and legal norms.

Product rights owners can use laws and technology to enforce a monopoly on the creation of derivative products. It is a way to preserve the brand as well as to profit from any new works. Marvel Comics, for example, has successfully used its deep library of copyrighted comic book characters and storylines to develop highly successful films. Disney has used its political influence to successfully extend copyright protection to prevent its properties from falling into the public domain. But many usage restraints are inconsistent with consumer expectations and that can be perceived as overly restrictive or unfair. This could lead to tensions between consumers and product rights owners that could engender hostile consumer attitudes that result in a willingness to engage in unauthorized file sharing and other opportunistic behaviors.

### **3.2 Social Exchange Theory and Relevance to Unauthorized File Sharing**

SET has been widely applied in various disciplines including sociology, anthropology, organizational behavior, marketing, and political science. It tries to explain the motivations that drive exchanges between individuals that are not explicitly coerced and that can involve a range of resources including those that are intangible, social, and emotional [33, 234].

It has been used to explain how individuals form and maintain relationships and the nature and characteristics of those relationships. It attempts to explain how respect, prestige, and loyalty

can be acquired. It addresses the nature of power, its various forms, its sources, and how it emerges. It has been used to provide insight into the motivations that drive and characterize group dynamics and their outcomes [33, 234].

Specific topics that have been addressed by SET include how leaders emerge within groups and how social structures form [33]. It has been used to explain employee motivation and satisfaction [229], the nature of marketing relationships between buyers and sellers [150], and how corporate alliances form [32]. SET has even been used as a basis for understanding how relationships between countries evolve [18, 66, 140, 158].

In the information systems literature, there have only been a few studies that adopt a social exchange perspective, with notable exceptions in areas regarding knowledge sharing through electronic repositories and digital libraries [138], outsourcing [141, 163], and some forms of computer mediated collaboration [98, 259]. The paucity of research with a SET perspective is notable because of the nature of information systems research, which is concerned with the use of information technologies within social contexts that often involves the exchange of resources.

Examples of subjects that can be examined with a social exchange perspective include why individuals exchange knowledge and expertise in open source development projects, motivations to volunteer and help users troubleshoot problems on message boards, and the motivation to exchange digital products in virtual communities. Many of these behaviors cannot be easily explained from a traditional economic exchange perspective, which focuses on transaction costs, tangible resources, and explicit incentives. Individuals are often motivated by non-economic, intangible incentives such as empathy and concern for the well being of others. This has been noted by many, including Adam Smith, the author of some of the earliest and most influential works on capitalism and market economic theory [256].

SET provides an alternative way of addressing non-economic exchanges. It can shed light on ways to discourage unauthorized file sharing that does not rely on explicit coercive measures. The theory can be used to explain why an individual would volunteer resources or refrain from engaging in opportunistic behaviors. It addresses why reciprocity norms exist, how goodwill is established, and why the need to explicitly enforce certain behavior is sometimes unnecessary [33].

SET is based on concepts associated with rational choice theory, behaviorism, social capital theory, and resource theory. Rational choice theory asserts that individuals act rationally with purpose and intent in maximizing benefits and minimizing costs [234]. This is clearly evident in most economic exchanges, but because of differences in ontological perspectives, parties engaging in a social exchange could sometimes appear to be acting irrationally. This generally reflects differences in the process of social exchange, exchange motivations, and in the characteristics of salient exchange resources.

Behaviorism is the notion that individuals, through a process of operant conditioning, learn to associate certain actions with rewards and benefits and are therefore likely to continue similar, positive types of exchanges in the future [234]. The expectation of rewards is attributable to a universal norm of reciprocity [234]. When a benefit is granted there is the expectation of an appropriate exchange resource in return, subject to relational norms. As positive exchanges are realized, trust, affiliation, friendship, commitment, and other forms of social capital emerge that adds to the overall perceived relational benefit.

Social capital is defined as resources that exist within networks of relationships. They can include expressive and instrumental resources, refer to the number and strength of social connections, and can be a function of the location of an individual within the network of

relationships [99, 173]. They can include factors such as trust, relational norms, and identification with a relational partner or group.

The prospect of emerging social capital leads to a deepening and long-term view of the relationship in which the involved parties become increasingly committed to its maintenance, further motivating continuing reciprocation. Over time, the nature of the exchange becomes focused on the on-going relationship between exchange partners rather than individual, one-time transactions, which is the emphasis in an economic exchange [234].

Social exchanges differ from economic exchanges in other ways. In economic exchanges, the transaction or relationship is between an entity, such as an individual or firm, and a market in which the dominant coordinating fact is the price for some product or service. The rules governing economic exchanges are generally specific, usually unambiguous, enforceable, and there is not the expectation of *voluntary* reciprocation. There are clear expectations between the exchange partners, whether trading directly or through intermediaries.

In a social exchange, the nature of the exchange cannot be contractually stipulated, codified, specified in advance, or compliance enforced [33]. Resources cannot always be quantitatively expressed with precision, but are instead expressed in general, diffuse terms [33]. One cannot, for example, demand a certain amount of respect or admiration by offering a specific sum of money in return. In a social exchange a consumer can reciprocate in many ways. One way would be to avoid opportunistic behaviors that could harm the exchange partners.

The resources that matter in a social exchange are suggested by resource theory, which explains the different types of resources and their importance to individuals [73]. Whereas economic exchanges are generally comprised of tangible resources that include physical goods, services, information, and money, social exchange resources may also include intangible intrinsic

(i.e., emotional) resources such as gratitude, love, joy, and respect. Social exchange resources can also include intangible extrinsic (i.e., instrumental) resources such as honor, status, prestige, admiration, affirmation, and affiliation. There is evidence that suggests such resources can be important factors that can influence various forms of unauthorized file sharing and other opportunistic behaviors towards product rights owners. For example, one study found that singer/band idolization and perceived proximity will positively influence music piracy intention [49].

**Table 1 Social Exchange Resources**

achievement	fellowship and friendship	obligation
admiration	fun	pleasure
affiliation	generosity	prestige
affinity	goodwill	respect
affirmation	gratitude	safety and security
appeal	guilt	self-efficacy
association	happiness	self-esteem
approval	honor	satisfaction
compassion	integrity	spiritual satisfaction
commitment	fairness	social rank or status
community	kindness	sympathy
creativity	legitimacy	utility
excitement	liberty	validation, emotional
enjoyment	love	validation, intellectual
empowerment	obedience	validation, spiritual

In general, the benefits that an individual receives in a transaction will encourage the individual to reciprocate with benefits of equal or greater value [33, 54]. In an exchange between a product rights owner and a consumer involving music, the consumer may reciprocate with loyalty and commitment, a willingness to pay for product, or the avoidance of opportunistic behaviors, such as unauthorized file sharing. Benefits that the consumer may enjoy are emotional and spiritual gratification, affirmation of values, and cultural affirmation.

There are several important benefits with regard to music consumption highlighted in the theoretical model presented in this study. They include usability related factors of perceived ease of use and perceived usefulness. They include creativity and community facilitation, and enjoyment. They are each benefits that can elicit a positive response from the consumer. But the net impact could be determined by what the consumer is also required to give in return, and whether the consumer perceives the transaction as fair. The costs of consuming digital culture products include money, time, and the effort associated with setting up the consumption environment. Balancing costs and benefits contributes to perceived sense of distributive fairness.

One could argue, based on SET, that the perceived fairness of an exchange, and other associated benefits, will elicit responses on the part of the consumer. The consumer will be motivated to reciprocate in positive ways towards a product rights owner who offers positive benefits. One way could be by avoiding opportunistic behaviors such as unauthorized file sharing. We can expect this reciprocity effect to operate to some degree at every stage of the model.

### **3.3 Theory of Planned Behavior**

The TPB, which is an extension of the theory of reasoned action, was proposed by Ajzen [10] and has been validated and widely applied in information systems research [243]. It has been used as a basis for understanding opportunistic behavior such as unauthorized file sharing [59]. It is a model for understanding behavioral outcomes and is predicated on the assertion that before any behavior is realized the intent must first be established. In this study, intention refers to an individual's readiness to engage in unauthorized downloading of digital products over P2P networks.

Behavioral intention in turn has several antecedents. Positive attitudes towards the behavior, subjective norms that encourage or sanction the behavior, and having the perceived ability (behavioral control) to carry out the desired action are all strong determinants of intent. These factors have been shown to consistently account for much of the variation leading to behavioral intention in numerous studies including those that focus on the unauthorized use of digital products [219]. The goal of this study is to consider more specific antecedents.

Subjective norm is a variable that addresses how social pressures influence individual behavior [10]. The desire for acceptance and congeniality often motivates individuals to conform to certain approved modes of conduct and avoid socially undesirable behavior. The importance of subjective norms may partially explain the prevalence of unauthorized file sharing among certain groups such as college students [12, 57]. Among students, as noted earlier, there is typically no social stigma associated with the behavior. Instead, the opposite is often true. Downloading and exchanging music is often viewed as positive social activity. Sharing music products, whether through an outright exchange or performance, can be used to develop bonds between individuals.

Perceived behavioral control reflects an individual's perceived ability to perform an action [10]. It has been established as a key factor that explains unauthorized file sharing [156, 166, 219, 280]. Having a positive attitude towards unauthorized file sharing, and the existence of social norms that encourage and reinforce certain behaviors, is not sufficient to motivate behavior if one does not believe they have the technical ability or the resources to do so. Many forms of unauthorized use require a certain degree of technical knowledge and skill. For example, the copying of DVDs became much more widespread after the code to do so was made available and packaged in a way that made its installation and use accessible and relatively simple.

Attitude refers to the degree to which some outcome is positively or negatively valued [10]. In this study, the issue is an individual's positive or negative evaluation of the unauthorized downloading of digital products over P2P networks. Individuals are not inclined to voluntarily engage in behaviors unless they feel positive about that behavior. This result, in itself, is not especially revealing. However, it is important to include in a cross sectional study because it controls for preexisting attitudes towards unauthorized downloading intention.

Perceived behavioral control and subjective norms have been omitted in the model developed for this study. Both have been verified in numerous studies to date. Dropping these variables helps to achieve a more parsimonious model that highlights the key variables of interest in this study, which are primarily product and website attributes, and its ultimate impact on downloading intention.

***H1:*** *A positive attitude towards unauthorized downloading is positively related to unauthorized downloading intention.*

### 3.4 Justice Theory and Relevance to Unauthorized File Sharing

There are many new ways in which product use can be restricted and product rights owners have sometimes been very aggressive in implementing these methods. As noted earlier, they have gone so far as to sue their customers, make extensive use of digital rights management technologies, and charge what are perceived to be high prices for their products. Often consumers have had little recourse but to accept the terms imposed by product rights owners.

But when a consumer reluctantly accepts a product rights owner's conditions, lingering resentments may fester because of the perceived injustice of the transaction terms. The perception of justice could have a significant impact on attitudes that ultimately has negative consequences for the product rights owner. Consumers may decide to condone or tolerate unauthorized file sharing through P2P networks. They may retaliate by engaging in it themselves. This reaction can be understood both from a justice and social exchange perspective. The nature of this impact has been little discussed in the literature. The following sections discuss three aspects of justice—distributive, procedural, and interactional.

#### 3.4.1 *Distributive Fairness*

The concept of distributive justice emerges from equity theory, which explains how individuals assess and respond to the fairness of an exchange [7]. It is a belief regarding the equality of exchange ratios between transaction partners [33, 81]. Equity theory has been used to explain behavior in organizational studies [95, 136] and to explain voluntary compliance such as tax reporting [288]. An exchange will be perceived as fair if an individual believes the ratio of their inputs to their outcomes are equivalent to the ratios of the salient referent other ( $\text{Input}_{\text{Individual}} / \text{Outcome}_{\text{Individual}} = \text{Input}_{\text{Referent Other}} / \text{Outcome}_{\text{Referent Other}}$ ).

The relevance of distributive fairness is based on several factors including an individual's innate desire for consistency or the need to efficiently allocate resources among members of a group [200]. One way to satisfy both is to apportion resources based on member contributions. Given a certain level of input to an exchange there is often an almost natural expectation of an appropriate and commensurate outcome.

The inputs and outcomes of an exchange can vary and can include time, effort, money, and various forms of social capital. Based on perceptions of distributive fairness, an individual will come to a decision regarding whether or not to voluntarily follow through with an exchange [7]. The assessment may lead an individual to adjust their inputs or insist on a different outcome. A transaction perceived to be fair could elicit positive attitudes such as satisfaction. Informed by a social exchange perspective, we could expect that a just outcome could lead to the emergence of trust, cooperation, and commitment. This could predispose the participants to consider and engage in future transactions as part of an ongoing relationship.

When ratios are not equal, cognitive dissonance tends to emerge. It could manifest itself as guilt when the individual perceives a ratio greater than their referent other, or resentment in the opposite case. In order to rectify an imbalance, an individual may take steps to adjust their perceived exchange ratio by explicitly or psychologically modifying the perceived level of inputs and outcomes. If individuals are forced to follow through an exchange perceived to be unjust, residual resentment may linger. According to SET, the reciprocity norms can manifest themselves by the individual choosing to engage in various opportunistic behaviors.

The referent other in an exchange can be either directly or indirectly involved in the transaction. What matters is who the individual considers to be the salient referent other. The exchange partner could be a commercial actor, as is the case when someone purchases a digital

product from a particular online vendor. Or the exchange partner could be personal, as is the case when an individual requests a free copy of a digital product from a friend. In a commercial transaction, the referent other could be the creator of a product or any of the various intermediaries. It could be another consumer engaging in a similar, parallel transaction.

Producer imposed limitations on consumption rights may be perceived as unfair by the consumer. The consumer may feel that the restricted terms of use inflate the true value of the product. The consumer may then become sufficiently motivated to engage in various opportunistic behaviors in order to adjust the perceived imbalance of the exchange ratios. This may lead to acquiring unauthorized copies of the digital product, making them available to others, or circumventing digital controls.

There are certain assumptions and contingencies regarding how consumers evaluate exchange ratios that should be taken into account. Perhaps the most important of these is the impact of social exchange on perceptions of distributive fairness. Equity theory, from which the concept of distributive fairness emerges, tends to focus on the short term. The focus tends to be on specific, individual transactions. The notion of justice is often narrowly construed and does not always consider fairness associated with an ongoing system or process. There is a tendency to emphasize, to a certain extent, an economic exchange model in which resources are tangible and quantifiable. The impact of reciprocity norms is not always taken into account.

In contrast, a social exchange emphasizes relationships and recognizes that the process of exchange may lead to the emergence of additional resources that could alter the perceived exchange ratio. SET would lead us to recognize that the evaluation of exchange ratios should take into account future benefits and costs as part of a series of actual and potential future exchanges. Keeping this in mind, the notion of distributive fairness, as defined here, is broader

than the traditional equity theory definition. It includes the idea of a broader relationship, reciprocity, and the full range of benefits associated with an exchange.

*H2: Perceived distributive fairness of an exchange is negatively related to unauthorized downloading intention of digital products.*

### **3.4.2 Procedural Fairness**

The results from a small number of studies examining the impact of distributive fairness have been inconsistent. One study determined that distributive fairness did play a substantial role in explaining digital piracy [81] while another found an effect on attitudes towards a specific form of digital piracy, but not on intention [156]. In other words, distributive fairness does not always have an impact on actual outcomes.

These inconsistencies could be attributable to the nature of the product, the type of unauthorized file sharing, and the research methodology used. It could also indicate that an examination of justice requires a more complete treatment that includes other forms of justice. One additional modality of justice is procedural. It is largely defined by how allocation decisions are determined. Procedural fairness is a belief that a process is transparent, consistent, unbiased, participatory, ethical, and that participants have recourse for unsatisfactory outcomes [87, 229].

The importance of procedural justice has been established by research indicating that regardless of an allocation outcome, the process itself could change perceptions of fairness [87]. With respect to digital products, the inability to sample, customize, and return digital goods such as software and music could be construed as procedurally unjust.

The relevance of procedural justice as a contributing factor to overall perceived justice is justified on several grounds. By enabling transparency and the opportunity to challenge an allocation the perceived risk that an individual's contributions to an exchange will be

undervalued or benefits overvalued is reduced. Individuals can feel more at ease about becoming involved in exchange transactions because of an expectation that mistakes in allocations can be reviewed and satisfactorily remediated.

With respect to digital goods, the issue of procedural justice is particularly relevant. Many digital products are packaged and sold in a manner that prevents adequate sampling. And unlike most physical goods, once a digital product is purchased and the seal broken, it usually cannot be returned except under very limited conditions. If the medium is defective or program file corrupt, which is rare, the vendor will usually permit an exchange. Rarely will the purchase price be refunded or an exchange allowed for a different product.

With respect to product satisfaction, there are typically no guarantees for most digital goods. Lack of satisfaction is generally not considered a sufficient reason to warrant a refund. The vendor may attempt to minimize the potential for dissatisfaction with the product by offering a trial usage period, by providing the option to sample a product with a significantly reduced feature set, or by allowing the use of an excerpted or low resolution version of the digital product. A vendor may offer extensive third party product reviews and customer testimonials in order to help the buyer make a more informed decision.

The issue of procedural justice is relevant because of restrictions that are often associated with digital products. Consumers are often prevented from having a say in how they consume their products to an extent that is not the norm for many other types of goods and services. Product rights owners often design their products to be consumed within certain parameters. Parameters can be defined by time, place, and device restrictions. For example, music from the Zune marketplace is only playable on certain supported devices. DVDs are often only playable on region specific devices. Software is sometimes valid for only a set period of time.

Many of these decisions by the product rights owner can often seem arbitrary from the consumer's point of view. They are examples of what may be construed as procedurally unfair because the consumer is generally not involved in the decision-making process regarding consumption. In other words, the consumer often is not afforded the opportunity to customize their consumption experience. But when the level of procedural justice is perceived to be high, based on SET, the recipient could be inclined to reciprocate in positive ways.

As with other forms of justice, contextual factors can have a significant moderating role. Individuals that assume more of a personal as opposed to relational orientation will tend to be more sensitive to procedural justice. Personal orientation tends to occur in the absence of strong relationship ties between the exchange partners. The lack of strong relationship ties tends to reduce feelings of trust and increase the need for procedural justice mechanisms. When the opposite is true and there are strong relationship ties, there is an expectation of future transactions. This creates an unwillingness to jeopardize the relationship through short-term inappropriate or opportunistic behaviors. In this case, procedural justice is often less important.

***H3: Perceived procedural fairness of an exchange is negatively related to unauthorized downloading intention of digital products.***

### ***3.4.3 Interactional Justice***

A third modality of justice is interactional, which is primarily concerned with how decisions are communicated [87, 229]. It is a belief regarding the extent to which interactions are dignified, polite, pleasant, and respectful [87, 229]. A pleasant and friendly exchange often matters a great deal. It can signal respect and concern for the transaction partner's well being. It can signal benevolence. It can express important social values and indicate available resources that could

contribute to a positive exchange relationship. When the level of interactional justice is perceived to be high, SET suggests that the recipient would be inclined to reciprocate in positive ways.

One could view interactional justice as a sort of social lubricant that can ease fears and concerns regarding outcomes. When a salesperson is surly, it can evoke a negative feeling regarding the purchasing process or the potential sales transaction. It can signal lack of interest or concern with the well being of the customer. Occasionally, under certain circumstances, interactional justice can be more important than distributive or procedural justice [192, 229].

During the acquisition of a digital culture product there are many opportunities during which interactional justice could become important. A website of poor design quality that is difficult to read, and where pertinent information is hard to find, may have the effect of a surly or unpleasant salesperson. A site that uses pop-up ads, splash pages, and various other intrusive interstitials could be construed as unfriendly, difficult to interact with, and time consuming. The consumer could consider this disrespectful. This could engender attitudes towards the site and the vendor that negatively impacts overall perceptions of justice.

Interactional justice could also become a factor with respect to how the product rights owner communicates the restrictions attached to the digital product and how infractions are handled. Unauthorized use that is explained in a manner that is respectful, appreciative, courteous, and attempts to inform the consumer of the basis for the usage restrictions could increase perceptions of interactional justice. The opposite may occur when product rights owners refuse to justify usage restrictions or issues threats in the form of lawsuits in order to coerce users into certain patterns of behavior.

Interactional justice is subject to various contingencies that may moderate its impact. Increases in the depth of the relationship, the duration of an encounter [166], and the affect

content of a relationship [164] all tend to magnify the importance of interactional justice. In addition, the identity orientation of the relationship may also moderate the importance of interactional justice.

The identity orientation of a relationship can be characterized as ranging from the personal to the relational. Personal orientations take a short-term view of the relationship, focusing on the immediate outcome of the exchange with little regard for the welfare of the transaction partner. In this case, the impact of interactional justice could be minimal.

At the other end of the spectrum, the partner who assumes a relational orientation tends to view a transaction as part of a series that constitute an ongoing relationship. Partners tend to be concerned with each other's welfare and take steps to continually nurture the relationship. This includes signaling respect through courtesies and positive gestures. A strong relational norm tends to magnify the importance of interactional justice.

*H4: Perceived interactional fairness of an exchange is negatively related to unauthorized downloading intention of digital products.*

### **3.5 Technology Acceptance Model**

One of the important theories that explains the acceptance of an information technology is Davis' technology acceptance model [61]. Perceived usefulness and perceived ease of use are the original constructs. The model has proved to be a consistent and robust indicator of system adoption across many diverse settings. Perceived usefulness has tended to be the stronger factor, especially for utilitarian systems [6, 187, 274, 279]. It builds upon the TPB, which states that attitude precede intention [10].

Perceived usefulness is defined as the "the degree to which a person believes that using a particular system would enhance his or her job performance" [61]. This construct addresses the

utility aspect of an information system, which concerns the ways in which a system can be used to accomplish specific work related tasks that are important to the user. Perceived usefulness does not directly take into consideration the efficiencies, mental and physical effort, or the fun associated with using a particular information system.

Perceived ease of use is defined as “the degree to which a person believes that using a particular system would be free of effort” [61]. This construct is hypothesized to impact system acceptance directly and also indirectly through perceived usefulness. The usefulness of a system, no matter how substantial, can be easily undermined by its complexity. Regardless of the functional benefits of a system, complexity could discourage users from adopting a system.

The use of an information system is not always driven by utilitarian factors. Sometimes the use of a system is motivated by hedonic factors. In other words, users sometimes adopt a system simply because it is fun to use. We may surmise this to be the case with entertainment systems such as those related to gaming, film, and audio. As a result, the construct of perceived enjoyment was added to the TAM [62].

Perceived enjoyment, an intrinsic benefit, is defined as “the extent to which the activity of using a computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated” [62]. This extended model was examined in productivity-oriented (i.e., utilitarian) information systems and pleasure-oriented (i.e., hedonic) systems and the results indicated that perceived enjoyment and ease of use were more important for hedonic systems [104]. This result has important implications in the context of this study because the consumption of digital culture products, such as music, is primarily for pleasure and entertainment. The next two sections examine in closer detail exchange interface and product attributes and how the TAM can be used to explain the relationship to unauthorized file sharing.

### **3.6 Exchange Interface Attributes**

File-sharing behavior may be influenced by the characteristics of the exchange process, in particular those related to the website through which products can be acquired. Increasingly, websites are becoming the most important channel through which most consumers access various types of digital culture products [244]. Even when the consumer does not acquire a digital download and instead selects a physical product, the website facilitates various aspects of the transaction such as search and payment.

The rising importance of the website is evidenced by the declining sales of digital culture products at brick and mortar sites. The number of retail outlets dedicated to music, books, software, and video continues to shrink, and the shelf space devoted to these types of products at general purpose stores is also declining, as consumers shift to making their purchases online [232]. The percentage value of music delivered as digital downloads has risen from approximately 0.2% in 2001 to 11.2% in 2007 [232]. Other forms of delivery, such as the streaming of audio and video, have also become increasingly popular.

Websites can be characterized by numerous attributes. Table 2 below lists some possibilities. The website attributes that were of interest in this research were those that pertained to website ease of use, usefulness, enjoyment. They included system quality and information quality, which contributes to overall website design quality. This research also examined website characteristics that were related to the individual desire for community and creativity. These attributes are examined in more detail below.

**Table 2 Website Attributes**

Appeal [100]	Loading speeds [216]	Service quality [8, 191]
Customizability [45]	Privacy [191]	Site layout and organization [298]
Flow [151]	Quality of search and navigational aids [216, 220]	System quality [8]
Information quality [8]	Security [191]	Trustworthiness [216]
Interactivity [236]	Selection and availability [292]	

### ***3.6.1 Website Enjoyment***

The utilitarian aspects of music websites are relatively easy to identify. They provide music access and discovery. They can provide information about the artists and their influences. One can find news about touring schedules and upcoming projects. Music acquired from some sites can be used in multi-media projects. Users can create libraries and playlists. Many music sites provide tools for sharing and community building. Music and the associated websites can be used to reproduce and transmit culture.

But by and large, music websites are primarily hedonic information systems. The benefits derived from these sites are largely intrinsic. They allow the user to access and consume music for emotional or spiritual purposes, for relaxation, or for pure fun and entertainment. Music can modify mood. Music can be used to express feelings and sentiments. Music websites can enable the user to discover, recommend, rate, and share music strictly for personal enjoyment.

Perceived website enjoyment is the extent to which the activity of using a website is perceived to be enjoyable in its own right separate from any performance considerations [62, 103, 104].

Given the hedonic nature of music websites, one could reasonably expect that perceived website

enjoyment would be an important benefit that impacts perceived distributive justice and, ultimately, unauthorized downloading intention. The positive impact of enjoyment in general on attitudes and intention, especially involving hedonic information systems has been established in prior research [103, 104]. We therefore state the following hypothesis regarding the impact of enjoyment on perceived fairness, which is related to unauthorized file sharing intention.

**H5:** *Perceived website enjoyment of the exchange interface is positively related to perceived distributive fairness.*

### **3.6.2 Website Usability**

Usability is often defined in general terms as ease of use and usefulness [61, 216]. As noted earlier, perceived ease of use and perceived usefulness are fundamental technology attributes that largely explain technology adoption and both have been validated by numerous studies going back more than twenty years [61]. There are many contexts in which this finding could be applied, including online shopping.

We know, for example, that the usability of a website can influence attitudes towards a website and the vendor, the willingness to shop at the website, and the willingness return to the website [94]. These findings can be extended and applied to the context of unauthorized file sharing. A positive relationship potentially exists between the usability of a website and perceived fairness, which in turn may impact consumer attitudes towards P2P file sharing networks. If a user finds the usability of a legitimate website to be low, he or she could become more amenable to downloading unauthorized files over a P2P network instead.

The appeal of downloading unauthorized files over a P2P network could be higher because acquiring products in the desired format from legitimate sites is not necessarily frictionless. The degree of effort and commitment involved in registering with an online music site can be

substantial and could act as a barrier to switching websites. With subscription services consumers must sign up and often have to pay an ongoing monthly fee to access music. They may have to download and install software. Some services may require special hardware.

In the case of Zune, for example, consumers were required to use Zune players and purchase music from the Zune marketplace online. Zune was only available for certain Windows operating systems. Music acquired from Zune could only be played on a circumscribed set of compatible devices that did not include iPods. Qtrax, another music provider, required the installation of proprietary software and various other software components. And it was only available on certain Windows platforms.

There is also the fact that music catalogues vary by website. A particular vendor may not offer a specific song. The characteristics in terms of usage parameters may vary. Products acquired from various services are often not compatible with each other. Digital products from disparate sources often cannot be integrated into a seamless, easy to use master library from which a user can easily create playlists for personal enjoyment and sharing. In many cases, the easier alternative for the user, if they cannot find a certain piece of music, would simply be to locate it on a P2P file-sharing network.

Given the importance of usability for system adoption, which has been established in previous research, and given that it amounts to a benefit for which consumers exchange something of value, we can make the following hypothesis regarding its link to fairness.

**H6:** *The perceived usefulness of the website is positively related to perceived distributed fairness.*

**H7:** *The perceived ease of use of the website is positively related to perceived distributed fairness.*

**H8:** *The perceived ease of use of the website is positively related to perceived usefulness.*

**H9:** *The perceived ease of use of the website is positively related to perceived enjoyment.*

### ***3.6.3 Website Design Quality***

Website design quality is a major attribute that can be linked to various consumer attitudes and online behaviors. It can affect perceived website usability, enjoyment, and intention to return to a site [180]. Website design quality has been linked to perceptions of attractiveness, dependability, reliability, trustworthiness, the perceived ability to meet consumer demand, all of which can lead to overall website success [176, 177]. It has been linked more generally to user satisfaction [172]. If we view the website as an information system we could argue that website quality can lead to improved consumer decision quality and performance, perceived benefits, and increased system usage [176].

One of the challenges is how to best define and measure website design quality. It is a complex construct that should be considered in terms of the products, services, and technology associated with a website. In addition, special attention should be given to consumer characteristics. Consumer expectations are constantly evolving as they become accustomed to new technologies. They have come to expect a rich media experience that allows them to more easily sample products. They have come to expect that websites provide enhanced features to facilitate the entire shopping process from search to fulfillment.

One way to address the complexity of the quality construct is to categorize the salient attributes in terms of system, service, and information quality [172, 176]. System quality refers to the website's overall performance [172]. Some of the more important system related attributes could include site aesthetics, layout, and design [69, 186, 241, 297, 299]. It could include site availability and the number of access channels [8, 55, 214]. The latter is becoming more important as consumers increasingly use mobile devices to access, shop, and make purchases.

System quality can also be a function of the ease of navigating a site [8], the functionality of a site (i.e., usefulness) [8, 258], site interactivity [172, 177, 179, 266], and the sophistication of the multimedia experience [8]. A high quality web site is one that is well organized, consistent, and standardized [165]. System quality can also be a function of site reliability [60, 69, 72, 137, 162, 165, 186, 258, 266, 294, 295, 296, 297, 301, 302] the degree of the privacy protections [144, 177, 214, 302], the extent to which transactions and browsing is secure [8, 72, 165, 172, 186, 266, 295, 296, 297, 299], and site speed and responsiveness [8, 137, 145, 179, 186, 295, 296, 297, 302, 303]. Several papers have defined system quality more generally in terms of ease of use [60, 69, 137, 241, 296, 299]. This list of factors is by no means exhaustive.

Service quality pertains to consumer evaluations and judgments regarding the delivery of online services [241]. Services can refer to the facilitation of shopping, purchasing, and product delivery [303]. Certainly, system quality is a factor in overall service quality, but it is not the focus. Service quality is about the shopping experience itself. It requires that the vendor properly configure its resources, including technology and people, in order to provide an optimal shopping experience for the consumer.

There are several attributes that pertain to service quality. They include website accessibility [55, 137, 294, 295, 297], product and service assurance [8, 56, 177, 186], service and support throughout the entire shopping experience [56, 72, 241, 291], and fulfillment [60, 144, 165, 214, 266, 302, 303]. It entails communicating with the consumer through the various stages of the shopping process as needed [55, 294, 297].

Service quality involves striving to meet competency expectations [8, 294, 296, 297]. It involves demonstrating courtesy [137, 294, 297] and empathy [8, 165, 172, 186]. Service quality can be a function of the extent to which the vendor can provide the consumer with a personalized

shopping experience and the extent to which products and services can be customized to meet individual consumer needs [162, 165, 266, 295, 297]. It is also a function of trust [93, 145, 162, 179, 258] and credibility [8, 55, 294, 296].

In addition to system and service quality, researchers have indentified information quality as a third component of website design quality. The focus in this case is specifically on website content. Information quality is a function of the flexibility and customization of information presentation [8, 177]. It is defined by information that is accurate, complete, relevant, easy to understand, and timely [8, 165, 177]. It should enable the consumer to easily differentiate products and services. An online retailer should include contact information on their website. It should provide information about itself. It can be important to include a policy page, a page for frequently asked questions, and a search function to help the consumer easily find information.

Everard and Galleta [67] explored different categories of information quality. They were interested in how different types of presentation flaws influenced perceived quality in an online store, trust, and intention to purchase. They identified three types of flaws. The first was poor style, which interfered in the ambience of the site. The second was incomplete information. The third was errors in the information. They found that all three types of errors were negatively related to quality, trust, and intention to purchase [67].

There are several other factors that may determine the overall quality of a website. Liu and Arnett [176] discuss how overall design quality of websites may be determined by the playfulness of its consumers, the learning capability of a website, and overall system usability. Consumers that are playful, which depends on the context, are more inclined to explore a site and discover the many features that contribute towards a perception of quality. Websites that score high in learning capability are ones that easily reveal their functionality. Site consistency and

standardization, labels, well organized navigation tools, comprehensive help links, and the availability of pages with answers to frequently asked questions all contribute to a higher degree of learning capability.

Depending on whether the focus is on system, service, or information quality, the nature of the relationship to certain variables may vary. One could argue that website system quality defined in terms of reliability, security, performance, or privacy are all linked to general usability and distributive justice. Interactional justice, which is a function of the manner in which messages are communicated, could be positively linked to a site that is friendly, pleasant, and non-intrusive. These factors are generally associated with service quality and contribute towards a perception that the vendor is respectful of the consumer [100].

Factors that pertain to service quality such as responsiveness, communication, fulfillment, and empathy are more appropriate for a longitudinal study during which subjects are afforded a sufficient period of time during which they can form opinions. Service quality assessment requires familiarization with the entire shopping process ranging from search to fulfillment.

In this study, the focus was on a notion of website design quality that emphasized information and system quality. Key elements of the construct were appeal, organization, consistency, appearance, and speed of the site. This measure of quality is appropriate for the initial introduction to a website because it is a measure of quality that a consumer can assess during the early stages of website interaction and familiarization. Assessing the impact of this type of quality is feasible using a cross sectional research design.

In general, a high quality website that loads quickly, is consistent in its organization and appearance, and adheres to relative standards in terms of technology use, layout, and information presentation, is easier to use. All of these factors are related to system and information quality.

High quality sites enable consumers to learn how to use the site more quickly and with less effort.

*H10: Website system quality is positively related to perceived ease of use.*

*H11: Website information quality is positively related to perceived ease of use.*

### **3.6.4 Website Creativity Facilitation**

Perceived creativity facilitation is a belief that the ability to be original, progressive, innovative, imaginative, or expressive is supported. The desire to find creative avenues of self-expression can be strong. This is suggested by Maslow [193] and is evident in the numerous ways in which people choose to customize products such as automobiles and clothing. Individuals are often motivated to create that which is unforeseen, original, and interesting. Indeed, many of the marketing messages for products are often about how consumers can highlight their individuality in unique ways.

Evidence of this creative desire is reflected in the growing crafts and hobbies industry, which was estimated to be worth \$30.2 billion in 2006 [127]. The range of products that provide some form of creative outlet for the consumer is extensive and can include home improvement tools and kits, cookbooks, model building kits, musical instruments, and various other craft and fine art tools. All of these products afford the consumer the opportunity to experiment with and express their own ideas. Increasingly, consumers are exploring their creativity with digital products.

There are several, but one noteworthy example of this new digital creativity, is Gregg Michael Gillis who is also known by his stage name *Girl Talk* [283]. He trained and worked as a biomedical engineer, but decided to devote his himself to his music passions full time. He has sampled songs from different genres to create entirely new works. Drum beats, bass lines, vocals,

horns, guitar riffs have come from completely different works to create something unique. While his ability is exceptional, many others are successfully engaged in similar creative activities.

The importance of creativity to the consumer can be understood from two theoretical perspectives. The first is concerned with the importance of the general concept of *play*. Even for adults, the benefits of play, which can involve various forms of recreation, leisure, and creative activities, can elevate mood, improve learning ability, develop skills, and achieve a certain degree of self-actualization [82]. Play can also benefit relationships, sharpen thinking skills, help individuals maintain youthful attitudes, and maintain positive perceptions about one's environment [82]. Play can be reenergizing and its positive benefits encourage adults to continually engage in a process of discovery through experimentation.

The second perspective, which may be linked to play, is concerned with the fundamental self-actualization needs that many individuals will experience. It reflects the desire of the individual to achieve personal fulfillment. Achieving self-actualization is viewed not just as a positive benefit, but also as a fundamental human need to achieve one's full potential. According to Maslow, self-actualization is the last, and arguably the most complex in a series of important psychological needs [193].

Self-actualizing individuals are spontaneous, autonomous, self-motivated, and self-empowered. They resist constraints. They are interested in solving problems, in being innovative, unique, and original. Learning, experimenting, and discovery are important to them. There is a desire for freedom of action and the freedom to express opinions and ideas. There is often a desire to be creative, which can be defined as a belief in one's capacity to transcend traditional ideas, rules, patterns, and relationships in order to create meaningful new ideas, forms, methods,

or interpretations. It is a belief in one's ability to be original, progressive, imaginative, or expressive.

Working with digital products in creative ways can often satisfy the need for self-actualization. Digital products can be used to express ideas, experiment, innovate, and be spontaneous. Websites can support an individual's creative needs by offering modifiable products and creative tools. Websites can allow a user to create playlists. They can allow users to create remixes. Creativity can be supported by a website that helps the consumer generate ideas by offering suggestions and by making it easy to share creative efforts. The more tools that are available to facilitate creativity at the website, the more useful the site.

**H12:** *Perceived creativity facilitation is positively related to perceived website usefulness.*

### **3.6.5 Website Community Facilitation**

Perceived community facilitation is a belief that the formation, development, and maintenance of relationships that give rise to community and belonging is supported [197]. Communities are a collection of individuals who share common interests, values, beliefs, goals, or ideals.

Communities can be characterized in a variety of ways including the ways in which they emerge, the manner in which connections between individuals are established and maintained, and how individuals obtain and retain membership. Group members recognize certain mutual obligations towards each other. They agree to abide by certain group norms of conduct. These connections can be very explicit and well defined or they can be temporal, evolving, and unstructured.

Well-defined connections are evident among professional organizations such as the Association of Computing Machinery and the Institute of Electrical and Electronic Engineers. In these structured communities, the right to access resources, the contribution of resources that are expected by group members, the distribution of resources, and how communications among

members are handled is clearly defined and regulated. Users are required to register. They have to pay membership dues and meet certain criteria regarding employment, education, or professional status. If members choose to submit content, they have to adhere to certain guidelines and restrictions.

There are also many unstructured and decentralized communities such as online social networks, blogger communities, and informal professional affiliations. Common interests will vary and revolve around various forms of knowledge and information sharing. Membership rules may be relatively lax and amount to little more than self-identification. Oversight may be minimal and loosely governed by the community at large or informally by individuals or entities that have acquired a certain degree of status.

The importance of groups and why they form can be attributed to the need to access economic or social resources. Access can be facilitated by group membership because groups often collectively control resources, store knowledge that can enable individual actors to locate resources, transmit information regarding the process for retrieving resources, and signal the necessary individual requirements and contributions that facilitate access. In some cases, certain resources such as status and prestige only exist because of the existence of groups. Most intangible resources, both expressive and instrumental, are intimately associated with, related to, or generated by groups.

The benefits of group membership are fairly apparent with respect to economic resources. Individuals may rely on group contacts for locating employment, capital, expertise, or starting a career. Groups may help individuals locate goods and services such as music and software that can satisfy specific tastes or requirements. The ability to help individuals locate and access

digital products has become increasingly important as the universe of products and information expands, becomes more complex, and more fragmented.

Apart from access to material resources, group membership may provide additional benefits that include access to social and intangible resources such as affirmation, approval, and social connections. Benefits can be symbolic, intellectual, spiritual, or emotional. The desire for these resources is often based on needs that are fundamental to individual emotional well-being.

Given the full range of benefits, a sense of belonging to a relevant community is important for most individuals. “A sense of community is a feeling that members matter to one another and to the group, and a shared faith that member needs will be met through their commitment to be together” [197]. Lacking a sense of community can lead to detrimental feelings of isolation, deprivation, anxiety, and depression [193, 197]. A website could promote community by helping users to establish and maintain connections, exchange commentary and news, and transmit information about products and services.

In order to achieve acceptance and attain a sense of community and belonging, an individual must usually make some form of beneficial resource contribution. This could be an immediate benefit or a convincing promise of future benefits. The expressed willingness to share resources often leads to respect, approval, and acceptance.

Benefits can be contributed to the group as a whole reflecting a collectivist (i.e., generalized) relationship orientation or they can be extended to individual members of the group. The nature of these contributions can vary and include intangibles such as adulation, respect, knowledge and expertise, or social links to other groups and individuals. It can include an expression of affirmation of group norms and values. Contributing the right set of resources enables the individual to express common interests and solidarity. It elicits psychological and emotional

comfort and support. These resources can be expressed in many ways, including through the exchange of digital culture products.

The product rights owner can facilitate the sharing of resources in a variety of ways. It can be through the format of a digital product that makes sharing easy or it can be a function of the transaction process. MP3 formats are easy to share because they are universally accessible, easy to transmit, and unencumbered with digital rights management tools. Other file formats such as WAV files are not always as easy to share because of their file size. Many websites that host digital content such as YouTube facilitates sharing by providing links that users can e-mail to each other. Several music websites not only provide the means to share individual tracks, but also user generated playlists.

The benefit of sharing can be reduced if the product rights owner only permits the sharing of files that are modified in ways that diminishes their value. For example, some sites may only allow individuals to share truncated files, files with lower resolution, or files that lack features of the original. Files consumed within proprietary or closed environments can severely limit the consumer's ability to share files with others. Audio files that were acquired from the Zune marketplace or through the Rhapsody-to-Go service could not be played on many popular devices such as the iPod. Qtrax, a music subscription service, only facilitated sharing among Qtrax members.

Product rights owners that develop and support processes that enable and promote the widest form of sharing can engender positive feelings among consumers towards them. The extent to which a file can be shared could positively impact attitudes and possibly discourage opportunistic behaviors and various forms of unauthorized use. A consumer may reward a product rights owner that facilitates sharing by respecting usage terms and by choosing not to

engage in harmful, opportunistic behaviors. Product rights owners can benefit by eliminating the motivations that drive consumers to search for digital files that are unencumbered with digital rights management technology and that are easy to share.

**H13:** *Perceived community facilitation is positively related to perceived website usefulness.*

### **3.7 Product Attributes**

The previous sections introduced the idea that P2P downloading intention could be shaped by the perceived justice of an exchange and by the norm of reciprocity associated with a social exchange. These in turn could be influenced by the types of benefits perceived by the consumer resulting from an exchange. Justice and the norm of reciprocity could encourage consumers to refrain from opportunistic behaviors. The consumer may choose not to engage in various forms of unauthorized use such as copying in order to avoid paying for products. They may be less inclined to distribute copies on file sharing networks. Users may become more inclined to respect the terms of use stipulated in usage agreements and copyright laws. This section considers the impact of the perceived benefits of specific product attributes.

Product attributes may be characterized in terms of usability and informed by the TAM. Specifically, we could consider the many different ways in which a consumer can use a product and to what extent. Apart from basic, passive consumption, the user could choose to consume a product at a time or place of one's choosing. They could elect to share them with friends. They could repurpose or modify a product in order to create a customized consumption experience.

The ease in which a user can consume a product in a particular manner will vary. Generally, it will be a function of four factors—evolving technology, laws and the degree to which they are enforced, emerging usage norms, and economic feasibility. The cumulative effects of social norms, laws, economics, and technology determine the overall salience of a digital culture

product attribute. The product rights owner can often manipulate some of these factors in order to explicitly or implicitly define a set of usage rights, restrictions, and capabilities that can be complex and variable. Collectively, they can be viewed as the digital product attributes that characterize usability and ownership.

As an example of how these four factors define usability, consider the ease of product sharing. The duplication and distribution of digital products has been greatly facilitated from an economic standpoint by low fixed costs and negligible variable costs. Easy to use software tools have also facilitated sharing. With relatively little effort, the average consumer can cheaply duplicate and distribute large quantities of perfectly identical products.

The sharing of certain types of products is also facilitated by social norms. Norms reflect and influence what are perceived to be customary patterns of behavior. Notions of morality and ethics arise within this context. If certain behaviors associated with a product are deemed to be appropriate and proper they are encouraged and can become de facto attributes for all practical intents and purposes. Those uses that are not considered appropriate meet with disapproval and the threat of some form of social sanction.

The norm of sharing digital culture products is similar to the norm of sharing culture products in general. It is something that is traditionally supported and encouraged. Sharing is an important way in which culture is produced and reproduced. Friends get together to enjoy video and music. Through the sharing of culture products, relationships and communities can be strengthened and stabilized. Common identities can be developed and reinforced. In contrast, the norms associated with many other types of digital products discourage sharing. Medical and salary information in digital form are just as easy to exchange as digital culture products, but these are not deemed to be appropriate for sharing except under very specific circumstances.

Businesses that offer streaming content is another example of how technology and business models combine to imbue digital culture products with variable usability attributes. A product rights owner can elect to make streaming content very easy to share by providing links that can be emailed, by allowing content to be consumed via non-proprietary software tools integrated into the web browser, or by allowing open access to the site's content. In contrast, MP3 files can be more difficult to share for a variety of reasons including file size or the need for third party applications external to the web browser.

Digital culture product attributes could also be defined by copyright and contract law. Both stipulate the terms and conditions under which a product can be used. The extent to which laws can ascribe attributes to intellectual property in general, and digital culture products in particular, is largely a function of the extent to which they can be enforced. Enforcement measures, especially as it relates to product sharing, can be directed not only towards individual users, but also to intermediaries, such as Internet service providers that facilitate file exchanges [101]. Internet service providers have effective tools that can control the type of content that flows through their servers [83].

The specific attributes that characterize a digital culture product from a consumer's perspective are numerous, but can be grouped into three attribute categories: general product usability, product modification, and product sharing. Each of these attributes determines the overall usability of a product and the extent to which a consumer can enjoy a product. As noted before with respect to website usability and enjoyment, digital products themselves have both utilitarian and hedonic uses.

We can define perceived product enjoyment as the extent to which the act of using a product is perceived to be enjoyable in its own right separate from any performance considerations [62,

103, 104]. We can define perceived product usefulness as the degree to which a person believes that using a particular product would enhance his or her ability to consume music. Using the same rationale regarding website usability and enjoyment discussed in section 3.5 we can argue that perceived product usefulness and perceived product enjoyment will similarly contribute towards the perceived fairness of an exchange. This in turn will influence attitudes towards unauthorized downloading and downloading intention.

*H14: Perceived product usefulness is positively related to perceived distributive fairness.*

*H15: Perceived product enjoyment is positively related to perceived distributive fairness.*

### **3.7.1 General Product Usability Attributes**

General product usability attributes pertain to the many different ways in which a product can be used to satisfy individual consumption needs. This includes the ease in which the consumer can space, time, and platform shift product use. It can include the ability to make personal copies either for archiving or to facilitate the consumption experience. There are numerous usability attributes. The focus of this research was on space shifting, time shifting, platform shifting, and product trialability, which are all discussed below. The focus was also on sharing and modification, which are addressed separately in the two sections that follow.

Perceived ease of product trial (i.e., trialability) is the extent to which a product can be experimented with, free of effort, before making a commitment to purchase the product. [216]. It is the ease with which a user can sample, experience, and assess a product. The importance of this variable has been suggested by research related to diffusion theory and product adoption [240]. It has been found that in general, before a consumer adopts a product, they require a period of time during which they can assess whether a product will satisfy specific needs. These consumption needs can be either utilitarian or hedonic in nature.

A source of enjoyment for consumers of digital culture products, music in particular, is the process of discovering and trying out new songs. The extent to which the consumer is afforded the opportunity to sample a product by a vendor's website varies a great deal. Depending on the type of product, a vendor may allow little or no sampling. The site may, for example, only provide a link to a truncated, low-resolution version of a song. In contrast, some sites offer high quality streaming versions of songs that the user can enjoy before deciding whether to purchase and download. Regarding software, vendors may provide the user with a working version of a program, but with limited features. Or the vendor may allow access to a fully working version, but for only a limited period of time.

Perceived ease of space shifting is the degree to which a particular product can be consumed at a location of one's choosing, free of effort [216]. Before the widespread use of VCRs and highly portable music players, the ability to space shift the consumption of most culture products such as film and music, was relatively circumscribed. Consumers were largely confined to viewing recent film releases exclusively in movie theatres. The enjoyment of music tended to be restricted to a small set of locations because of the relative bulk of audio players. Today, with products such as video iPods, tablet computers, smartphones, and MP3 players, the potential to space shift content has been greatly expanded.

Perceived ease of time shifting is the degree to which a particular product can be consumed at a time of one's choosing, free of effort [216]. As is the case with space shifting, the ability to time shift consumption is much easier for digital culture products. Technologies such as digital video recorders, podcasting, and services from Tivo, ReplayTV, and the iTunes store have liberated the consumer from consumption by appointment. Many programs can be viewed online anytime. But as is the case with space shifting, product rights owners can vary the ease

with which the consumer can time shift consumption. This can be done in variety of ways including through the use of technology.

Perceived ease of platform shifting is the degree to which a particular product can be consumed on a system of one's choosing, free of effort [216]. Platform shifting refers to the interoperability of a digital culture product. It is the extent to which a user can choose the devices, encoding, operating system, and supporting software to consume a product. It is the extent to which a user can consume a digital culture product using the software/hardware combination of one's choice. This could mean having the freedom to select from among several off the shelf solutions ready made to handle the product or the ease in which a consumption solution could be developed. It could be a function of the extent to which the digital culture product is convertible to various suitable file formats. Ease of platform shifting could be a function of the availability and quality of software emulators.

Differences in usability are apparent among the many different online music services. Sites that stream content, such as Rhapsody, generally require a broadband connection or broadband wireless service such as 3G or 4G. They may require a web browser and flash player plug-in. Or they may require a specialized application in order to run. Some sites require proprietary software and may restrict the number and types of hardware that can be used with their service.

These attributes contribute towards the overall usefulness and enjoyment of a product. But the user should have sufficient opportunity to experience the product in order to make a full assessment of both dimensions. In this study, subjects were given a short, initial introduction to the product. They were not, however, afforded an opportunity to experience time, space, or platform shifting. Without the opportunity to fully experience a product along these dimensions, subjects cannot be expected to fully assess how these factors contribute to product enjoyment.

However, subjects did receive a reasonable amount of information that could allow them to form an opinion regarding how these dimensions contribute to the usability of the product. Therefore these related factors are tested.

Subjects were also afforded ample opportunity to sample the digital culture products during the course of the research session. They were encouraged to peruse the website and actually listen to music. Subjects were not only told about the various features of the website and the products available, they were encouraged to explore those features as well. The subjects were never rushed during the process. Given the time spent at the site and the lack of time pressures, one could reasonably expect the subject to develop an opinion regarding ease of product trial and its impact on product enjoyment.

*H16: Perceived ease of product time shifting is positively related to perceived usefulness.*

*H17: Perceived ease of product space shifting is positively related to perceived usefulness.*

*H18: Perceived ease of product platform shifting is positively related to perceived usefulness.*

*H19: Perceived ease of product trial is positively related to perceived enjoyment.*

### **3.7.2 Product Sharing Attributes**

The perceived ease of product sharing is the degree to which a particular product can be consumed, used, experienced, or enjoyed by someone other than the owner of a product, free of effort [216]. The process of sharing can be realized in several ways. It can be through a public performance. A user can exchange a downloadable file object or a link to streaming content. Sharing can be realized through private electronic communications such as e-mail or by posting to publicly accessible websites such as YouTube, Flickr, RapidShare or Sribd. Products can be shared within private, closed environments. And of course, sharing can also be realized through the use of P2P file sharing networks.

Depending on the particular product and exchange process, specific usage attributes and other related product characteristics, such as modification rights, are not always easy to transfer in totality to another user. In other words, it is not always possible to fully extend the experience of using a product to someone else. The ease with which the full range of attributes and usage benefits could be shared with another user depends on the nature of the object, on the options available for sharing, and on the limitations and characteristics of the consumption environment.

With respect to consumption environments, product use restricted to controlled environments, as is the case with cable programming, affords the product rights owner the ability to restrict how their products are shared. The product rights owner could also program rights and restrictions into the object itself or the hardware associated with its consumption. For example, it is possible to incorporate and share annotations in PDF files, but the user must have the right software that allows annotations to be made. DVDs are locked using the Content Scramble System, which makes them more difficult to copy and share. The digital rights management software on the Kindle, Amazon's e-reader, allows users to share books with other Kindle users, but only for a fourteen-day period.

It is possible to limit sharing by filtering out certain types of products over networks by examining file characteristics and by deep packet inspection. Some product rights owners design their products so that in order to share them, the receiving party must have a certain digital infrastructure in place. For example, Apple's previous use of the Fair Play digital rights management software effectively meant that files encoded using Apple's Advanced Audio Coding (AAC) format could only be played on Apple's iPod music players and certain other Apple products. The Qtrax music subscription service has allowed sharing, but only with those with Qtrax accounts.

The ease of product sharing can be a function of the business model. A subscription-based streaming service model generally does not rely on file objects that can be captured, stored, manipulated, and exchanged. Instead, it makes use of streaming objects that are primarily stored on third party servers. This layer of separation between the user and the product can limit user control over the object. It does not afford the consumer the easy ability to share the full range of consumption possibilities. There is no discrete object that can be readily imported into an editing program. Creating derivative works and mash-ups may require going through a multi-step process of capturing and converting the digital stream before sharing the object. The ability to extend to another user easy portability and the capacity to time shift is often more difficult.

The ease of sharing could also be a function of the range of potential exchange partners, i.e., club size. Many products are easy to share on a one to one basis or among an unlimited number of individuals. It can be as simple as sending e-mail with attachments or uploading a file to a P2P network. Some products, such as video, are more difficult to share because of file size. Third party hosts facilitate sharing among large numbers of individuals, but clip size is usually limited, copyrighted material is often filtered out, and only streams are shared rather than downloadable objects. Some subscription services allow the sharing of links to registered members only, which can effectively reduce the potential recipient pool.

The importance of being able to share a digital culture product is partially driven by an individual's need for belonging and sense of community. It is one of the fundamental needs requirement highlighted by Maslow [193], which was noted earlier. Sharing digital culture products is an important way in which individuals express ideas and emotions and, in the process, establish relational ties. Making resources available in general is a way to signal trust,

goodwill, and generosity. It can also be something that is just fun to do. It helps users discover new products and ideas. Sharing allows the discovery of other individuals with similar interests.

Sharing can evoke a universal norm of reciprocation, which when repeated over time, can strengthen bonds between exchange partners and lead to the formation of social capital. Support for reciprocity as a driver in MP3 file exchange has been empirically affirmed [75]. P2P file sharing networks generally do not suffer from free-riding because enough super users who provide a disproportionate amount of resources usually emerge [23]. Rather than experiencing a tragedy of the commons, a feeling of prestige, altruism, and satisfaction motivates enough users to contribute files and bandwidth to the P2P file sharing community.

Sharing could also be motivated by utilitarian, economic considerations. A consumer may decide to share a product in the anticipation of some tangible benefit in return. Consumers may be driven to share products in file-sharing networks in order to reduce their own file acquisition costs. By sharing consumers can reduce congestion and facilitate search, which reduces costs [58]. These facts are communicated to users in various ways. P2P file-sharing software may explicitly remind users to provide resources or the file-sharing community may issue reminders to users.

Whether sharing a product has a greater impact on perceived enjoyment or the perceived utility of a product depends on the context of use and whether the consumer has been afforded opportunities to share the product in various ways. Generally, the sharing of digital culture products, such as music, is something that most users have experienced and it is often driven by hedonic considerations. Consumers generally share music in large part because it is fun to do so. The benefits that accrue to the consumer by sharing music tend to be expressive rather than instrumental. This leads to the following hypothesis.

***H20:** Perceived ease of sharing a digital product is positively related to perceived enjoyment.*

### ***3.7.3 Product Modification Attributes***

Perceived ease of modification is the degree to which the content or purpose of a particular product can be customized, personalized, or adapted, free of effort [216]. Generally, tangible goods only offer the consumer what could be characterized as a constrained creative experience. The freedoms to modify, recombine, or create something new out of tangible goods is often circumscribed because of their physical nature.

The modification of physical analog goods is often difficult because of the expense involved or the amount of skill required. In the past, exercising creativity with analog culture products such as film and music required extensive training, skill, and a certain degree of talent. It required access to expensive tools, staff, and equipment that was typically beyond the reach of the average user. This is not necessarily the case for digital goods.

The quality and ease of using editing software and the availability of inexpensive hardware allows consumers to more easily experiment and express themselves. They can modify products to facilitate specific consumption needs. Consumers are increasingly becoming creators rather than passive consumers [122, 131, 226, 227, 228]. Web 2.0 technologies have become more widely available and increasingly accessible to the average user. They have enabled content producers and aggregators such as EBay, Flickr, YouTube, Google, and Yahoo to introduce application programming interfaces that permit consumers to easily integrate various information products into new works.

Product rights owners can take steps to limit the ease of product modification. One way is by providing streaming content exclusively so that there is no easily accessible or downloadable file object that could be imported into editing programs. Or the product rights owner could offer their products protected by some form of digital rights management tool or system. They could restrict

the consumption of their products to proprietary environments. They could use deterrence-based strategies to discourage various activities.

There are degrees of complexity regarding modifications. Some modifications, such as transcoding and resampling, can be simple and straightforward. Digital bits are altered, but may not be noticeable to the consumer. This type of modification is common. Consumers often rip CD PCM audio files and convert them to MP3 or FLAC (free lossless audio codec) files in order to play them on different types of equipment. Consumers may decide to resample a digital culture product at a lower bit rate in order to create smaller file sizes that can better accommodate the memory restrictions of a particular platform. Consumers may wish to modify digital products to create smaller file sizes in order to increase the portability and the ease with which a product can be shared.

Other types of potential modifications by the consumer are more extensive. In remixes, mashups, and cutups, changes to the digital culture product results in an appreciably altered media experience. Musical and visual elements are rearranged, modified, or eliminated. New elements can be incorporated. Instrumentation can be added. The dynamics, pitch or tempo can be adjusted. The expertise required to create remixes varies, but software tools such as GarageBand, iMovie, and Premier are making it much easier for the average consumer. The results of a modified work can be transformative and highly creative.

An example of a creative remix/mashup is Nat King Cole's version of *Unforgettable*, which was written by Irving Gordon and arranged by Nelsen Riddle. Initially recorded in 1951, a stereo version was made in 1961. Twenty-seven years after the death of Nat King Cole, the 1961 version of the track was remixed and turned into a duet with Natalie Cole as a tribute to her

father. The fact that the vocals on the song were created almost thirty years apart is largely imperceptible. It is as if both singers were in the studio together at the same time.

Remixes are considered derivative works, which from a legal perspective and under certain circumstances, can be subject to strict end-user legal restrictions. However, this often conflicts with consumer needs and expectations. For example, modification with the intent to distribute is clearly unauthorized and not controversial. However, many consumers view modification for personal use or for educational purposes as a fundamental right. Both are viewed as legitimate forms of fair use.

Similar in many ways to the remix is the compilation. The unit of modification is not the individual track, but rather the album. Individual tracks can be recombined to create a suitable play list for specific situations such as exercising, relaxation, or festive occasion. Consumers can create playlists of downloaded music objects or playlists can instead be created online out of streaming content. This type of “remixing” is very popular and can be easily facilitated or impeded by the product rights owner.

Some forms of modification do not alter the actual digital culture product. Instead, elements external, but associated with the file, such as the digital wrapper and file headers, are modified. Tags could be added. One example is the practice of creating annotations by attaching text, audio, or video markers to a product. Google allows users to customize their maps with detailed points of interest. Acrobat and Skim allow the user to create editorial notes in a PDF file. The online site Omnisio.com (recently acquired by Google) allowed a user to annotate and share video files.

The subtitling of movies is, in a sense, a form of annotation. The core product remains unedited, but the overlay of subtitles significantly alters the viewing experience. Tagging also

leaves the core digital culture product unaltered, but the metadata modified by community participants creates a better-described and searchable product. Tagging is an important part of what makes Last.fm, a self-described “social music platform,” an appealing site.

It is difficult to anticipate the many different ways in which the consumer will modify a digital culture product. Their digital nature all but ensures that they can be modified and repurposed in ways that are often unanticipated. Restrictions on product modification can reduce the utility and enjoyment of a product. It can reduce product interoperability. It can prevent the consumer from tailoring the product for specific consumption needs, such as time and space shifting. It could prevent the user from removing unwanted elements such as embedded advertising. It could impede the creativity of the user by preventing consumers from reworking digital products to create remixes, mashups, and cutups. These limitations could motivate the consumer to find products that better suit their needs. They could become motivated to endorse, tacitly accept, or actively engage in the unauthorized downloading of digital content and other forms of unauthorized use.

The perceived ease of modification could influence perceived usefulness and product enjoyment. The stronger link could depend on what opportunities the subject has for interacting with the product. In this study, the user was told about the product modification attributes, but was not given the opportunity to verify and experiment with them. As a result, we can reasonably expect the subject to make an assessment about the utility of a product, but not about enjoyment necessarily. As a result, it was possible to test the relationship between ease of product modification on perceived usefulness.

***H21: Perceived ease of product modification is positively related to perceived usefulness.***

### ***3.7.4 Perceived Costs of the Product***

As noted in the literature review, numerous studies in the past have found that perceived costs is an important factor influencing unauthorized downloading intention. As the price of a digital product goes up, the willingness to acquire digital products without paying for them goes up as well. This is further positively influenced by the extent to which the consumer feels they need the product. The impact of costs has been so consistent across several studies that it was deemed important to include it in the model for completeness. The theoretical justification is not repeated here as it has been thoroughly examined in other studies [31, 46, 89, 159, 160, 161, 203, 207, 219].

*H22: Perceived cost is positively related to unauthorized downloading intention.*

### ***3.7.5 Unmediated Impact of Product and Exchange Interface Attributes***

The impact of product and exchange interface attributes is hypothesized to influence unauthorized file sharing through the mediating variable of perceived distributed fairness. This variable is considered a benefit of the exchange process that elicits a certain degree of reciprocity. One of the difficulties in assessing perceived distributed fairness is determining the nature of the salient referent other, which could be the vendor, record label, or the artist. The referent other could also be other consumers. If the salient referent other is not properly identified perceived distributed fairness may not reveal itself to be a significant variable.

There could be factors that influence the development of justice perceptions such as time, the nature of the interactions, types of products, valence, or whether a relationship between the salient referent other already exists and to what extent it has developed. If perceived distributed fairness turns out not to be a significant exchange benefit that would not necessarily mean that the product and exchange interface attributes does not influence unauthorized file sharing.

In order to more fully understand the impact of product and exchange interface attributes, an additional step in the analysis examined whether the product and interface attributes directly influence unauthorized downloading intention. The impact of product and interface exchange benefits, as before, can be understood through the lens of SET. Certain benefits, or the lack thereof, can motivate consumer reciprocity that is either beneficial or detrimental to the website vendor, record label, or artist.

As before, perceived ease of product time shifting, perceived ease of product space shifting, perceived ease of product platform shifting, and perceived ease of product modification are all hypothesized to be positively related to perceived product usefulness. Perceived product usefulness is an exchange benefit and a characteristic of a digital product.

As before, perceived ease of product trial and perceived ease of product sharing are hypothesized to impact perceived product enjoyment, which is also an exchange benefit. Consumers that perceive a product to be sufficiently useful and enjoyable will reciprocate by not engaging in opportunistic behaviors.

With respect to exchange interface characteristics, the key attributes are perceived website usefulness, perceived website ease of use, and perceived website enjoyment. We can expect that the usability of the exchange interface and the degree to which the consumer enjoys interacting with the exchange interface will motivate positive reciprocity.

As before, perceived website ease of use is hypothesized to be positively related to both perceived website usefulness and perceived website enjoyment. Perceived website usefulness, perceived website ease of use, and perceived website enjoyment are hypothesized to be negatively related to unauthorized downloading intention.

As before, the key determinants of perceived website usefulness are perceived creativity facilitation and perceived community facilitation. The key determinants of perceived ease of use are perceived information quality and perceived system quality.

***H23:** Perceived product usefulness is negatively related to unauthorized downloading intention.*

***H24:** Perceived product enjoyment is negatively related to unauthorized downloading intention.*

***H25:** Perceived website usefulness is negatively related to unauthorized downloading intention.*

***H26:** Perceived website ease of use is negatively related to unauthorized downloading intention.*

***H27:** Perceived website enjoyment is negatively related to unauthorized downloading intention.*

### 3.8 Summary of Construct Definitions

This section summarizes all of the constructs that have been introduced. The table below provides the construct name, definition, key reference(s), and whether the definition represents language that is new, modified, or unmodified.

<b>TABLE 3.1 CONSTRUCTS</b>	<b>DEFINITIONS</b>	<b>KEY REFERENCES</b>	<b>LANGUAGE</b>
<b>Justice Variables</b>			
<b>PDF</b> Perceived Distributive Fairness	A belief regarding the equality of exchange ratios between the salient referent other associated with a transaction.	[33, 81]	Modified
<b>PIF</b> Perceived Interactional Fairness	A belief that interactions are dignified, polite, pleasant, and respectful.	[87, 229]	Modified
<b>PPF</b> Perceived Procedural Fairness	A belief that a process is transparent, consistent, unbiased, participatory, ethical, and that participants have recourse for unsatisfactory outcomes.	[87, 229]	Modified
<b>Theory of Planned Behavior Variables</b>			
<b>ATUD</b> Attitude Toward Unauthorized Downloading	An individual's positive or negative evaluation of the unauthorized downloading of digital products over P2P networks.	[10]	Modified
<b>UDI</b> Unauthorized Downloading Intention	An individual's readiness to engage in unauthorized downloading of digital products over P2P networks.	[10]	Modified

<b>TABLE 3.2 CONSTRUCTS</b>	<b>DEFINITIONS</b>	<b>KEY REFERENCES</b>	<b>DEFINITION</b>
<b>Product Attributes</b>			
<b>PPU</b> Perceived Product Usefulness	The degree to which a person believes that using a particular product would enhance his or her ability to consume music.	[61] [216]	Modified
<b>PPE</b> Perceived Product Enjoyment	The extent to which the activity of using a product is perceived to be enjoyable in its own right separate from any performance considerations.	[62, 103, 104]	Modified
<b>PEPTS</b> Perceived Ease of Product Time Shifting	The degree to which a particular product can be consumed at a time of one's choosing, free of effort.	[216]	Modified
<b>PEPSS</b> Perceived Ease of Product Space Shifting	The degree to which a particular product can be consumed at a location of one's choosing, free of effort.	[216]	Modified
<b>PEPPS</b> Perceived Ease of Product Platform Shifting	The degree to which a particular product can be consumed on a system of one's choosing, free of effort.	[216]	Modified
<b>PEPS</b> Perceived Ease of Product Sharing	The degree to which a particular product can be consumed by someone other than the owner of a product, free of effort.	[216]	Modified
<b>PEPM</b> Perceived Ease of Product Modification	The degree to which the content or purpose of a particular product can be customized, personalized, or adapted, free of effort.	[216]	Modified
<b>PEPT</b> Perceived Ease of Product Trial	The extent to which a product can be experimented with before making a commitment to purchase the product, free of effort.	[240]	Modified

<b>TABLE 3.3 CONSTRUCTS</b>	<b>DEFINITIONS</b>	<b>KEY REFERENCES</b>	<b>DEFINITION</b>
<b>Website Attributes</b>			
<b>PCMF</b> Perceived Community Facilitation	A belief that the formation, development, and maintenance of relationships that give rise to community and belonging is supported.	[197]	New
<b>PCRf</b> Perceived Creativity Facilitation	A belief that the ability to be original, progressive, innovative, imaginative, or expressive is supported.	—	New
<b>PWE</b> Perceived Website Enjoyment	The extent to which the activity of using a website is perceived to be enjoyable in its own right separate from any performance considerations.	[62, 103, 104]	Modified
<b>PWlQ</b> Perceived Website Information Quality	Information quality is defined by information that is accurate, complete, relevant, easy to understand, and timely.	[8, 67, 165, 177]	Not Modified
<b>PWSQ</b> Perceived Website System Quality	System quality refers to the website system's overall performance.	[172]	Not Modified
<b>PWEOU</b> Perceived Website Ease of Use	The degree to which a person believes that using a particular website would be free of effort.	[61]	Modified
<b>PWU</b> Perceived Website Usefulness	The degree to which a person believes that using a particular website would enhance his or her ability to consume music products.	[61]	Modified

## 4 METHODOLOGY

### 4.1 Overview

The research methodology adopted was a cross sectional field study that employed an anonymous, self-reported online survey. PLS Path Modeling was performed on the data. The research design and analytical approach was modeled after studies that have addressed the impact of website characteristics on behavior through field studies [104, 143, 151, 216, 217]. The development of the survey instrument followed the suggested guidelines of Moore and Benbasat [202], Pinsonneault and Kraemer [222], and Straub and Carlson [265].

A cross sectional field study is appropriate when the goal is to ascertain subject attitudes at a specific point in time that is current or in the recent past [222]. It is suitable as a way of assessing the initial attitudes that form during the early stages of technology adoption. It can serve as a first step towards assessing whether longitudinal studies are warranted.

Some researchers have stressed the importance of longitudinal studies when examining unauthorized file sharing [170]. One of the reasons given is that some behaviors are difficult to predict and should be assessed as they become manifest over time. With this in mind, care was taken not to test relationships in which the subject clearly may not have had sufficient prior experience or a sufficient period of time over the course of the research session to form an opinion. For example, the impact of perceived ease of product modification was not assessed with respect to its impact on product enjoyment. Several subjects indicated that their experience modifying digital products was limited and they were not afforded an opportunity to gain additional experience during their participation in this research.

During the study, subjects were asked about their file-sharing behavior and general music consumption habits in the recent past. They were asked about their experience with unauthorized

file sharing. Subjects were then introduced to an unfamiliar music subscription service and given an opportunity to familiarize themselves with it. They were aided by a list that summarized key features of the products and website. Subjects were then asked to perform belief elicitation tasks, simulate a realistic shopping task, and answer a survey regarding their experience at the website. They were asked about their perceptions of the available products. Finally they were asked about their intention to use P2P file-sharing services to download a similar product in the future without paying and about their anticipated music consumption in the next 30 days. They were asked about their intention to use the site in the future.

One of the challenges of research of this type is motivating subjects to make a serious effort to respond thoughtfully to the survey questions. In this regard, there were two primary factors that needed to be considered. The first factor was the length of the study. It would be easier for subjects to remain engaged, focused, and attentive if the study session were not too long. A shorter session could help prevent frivolous answers due to fatigue. With this in mind, the study was designed so that it could be completed in under an hour.

The second factor was to ensure proper compensation for the subjects. It was important that individuals felt fairly compensated for their efforts. This was to help motivate subjects to take their tasks more seriously. It was also to motivate subjects to be more focused and engaged. To this end, subjects were compensated in the amount of \$20. To further encourage focused attention during the study, subjects were asked to browse only the field study website and were discouraged from visiting other sites.

#### **4.2 Field Study Sites**

There are several important considerations in conducting field study research. Special care is required with respect to site selection, sampling, procedures, subject tasks, motivations and

incentives. First, the site should be consistent with the goals of the study and allow for a proper and feasible evaluation of the theoretical model for the context in which it has been specified. Second, the site should support the generalization of findings to other similar contexts. In other words, the findings should not be idiosyncratic. Third, subjects should be somewhat familiar with the type of site in general terms though not with the specific site itself.

Given that the goals of the study was to examine the impact of various product and website attributes, it was important to select sites that provided some variance regarding these attributes. This was one of the important considerations in selecting Rhapsody and Grooveshark. These sites varied in terms of format, layout, functionality, and product offerings. They varied in terms of how and to what extent products could be shared. They varied in terms of the extent to which products could be modified. They varied in terms of the ease in which products could be time, space, and platform shifted.

Notwithstanding all the differences between the two sites, they were found to share important similarities to other common music consumption environments such as iTunes. One of the sites offered the means through which users could acquire downloadable file objects, which many of the subjects were accustomed to doing either legally or illegally. They both offered the user a streaming experience that would have been familiar to anyone who has used Internet radio or YouTube. And while these sites offered a familiar experience in general terms, they were less well known, which made it easier to assign subjects to unfamiliar sites. The specific details of the research sites are discussed below.

#### **4.2.1 Grooveshark**

At the time of this research Grooveshark (see Figure 13) was a music website, which had launched in 2007. It offered music in the form of streaming content. Its library of music

contained approximately 3 million tracks. The streamlined jukebox interface was browser based and incorporated many features similar in many respects to iTunes. It included easy to access navigation bars. There were links to the user's personal music library and a built in flash player. There were convenience buttons to quickly access favorite tracks and reveal those recently played. There were links to information regarding popular music and trends among other Grooveshark users.

Grooveshark included recommendation features. Similar to Pandora, it allowed the user to create a personalized radio listening experience based on the user's music preferences. Users could search for music, add tracks to their library, build playlists, and manage their collection. Users could share individual tracks and playlists with other Grooveshark users. This could be done by posting to Twitter or Facebook, by sending links via email or instant messaging, or by sharing HTML code for the player widget.

Grooveshark generated its revenue primarily through advertising. As consumers navigated the site they would be continually presented with new ads. Unlike several other similar services, Grooveshark did not directly sell music. Users had the option of paying \$3 per month to have all advertising removed.

At the time the study was conducted, Grooveshark was available on any platform that could run Firefox, Explorer, Safari, and Chrome web browsers. Grooveshark could be enjoyed on Windows, Linux, and Mac systems. Grooveshark was also available on certain mobile platforms including Android, Palm OS, and BlackBerry. It was not available for the BlackBerry Storm nor was it available for the iPhone as of March 2010. In order to access Grooveshark via a mobile phone, the user had to establish a connection via the Internet or a 3G or 4G wireless network.

Since there were no downloadable tracks, Grooveshark could not be consumed on MP3 players, iPods, or Zune players. There were no tracks that could be downloaded to disk. Tracks could not be used in audio or visual editing software without first capturing the stream. Unless a presentation program supported embedded HTML and there was an Internet connection, streaming content could not be integrated into a presentation program such as PowerPoint. Users had no easy way to modify the tracks directly.

### Grooveshark Screen Shot www.grooveshark.com

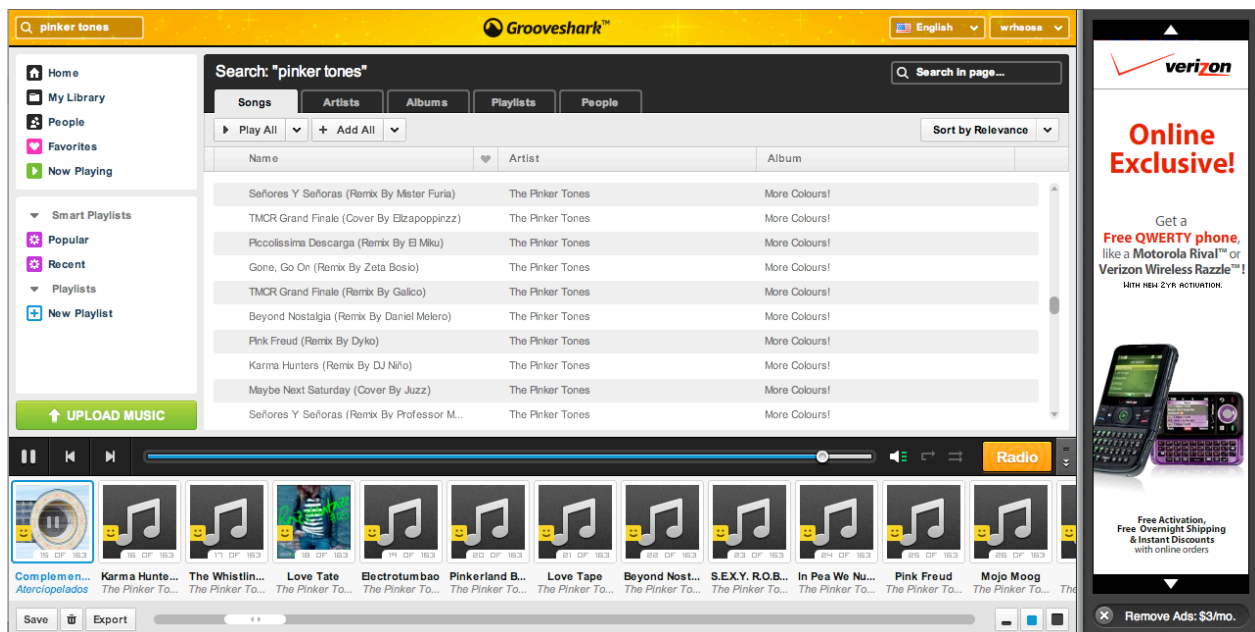


Figure 13

#### 4.2.2 Rhapsody

At the time of this study, Rhapsody (see Figure 14) was a music service, which had launched on December 3, 2001. Similar to Grooveshark, it also offered streaming content. Unlike Grooveshark, it had a sister site that allowed the user to purchase MP3 downloads. At the time, the Rhapsody library contained approximately 8 million tracks. A user could tune in to

continuous music via a web-based jukebox, through proprietary downloadable jukebox software, or through TiVo. Subscribers could also access music through their Nokia N800 Internet Tablet and other tablet systems. The main interface was more complex compared to Grooveshark. There was more content available such as music blogs, band history, news, special artist features, and charting information.

Like Grooveshark, there were navigation bars with links to special areas such as the user's personal music library and listening history. Rhapsody offered several tools to find music. It categorized music for the listener, listed popular tracks, and provided a search function. In addition, a user could listen to personalized suggestions tailored to individual musical tastes.

Users could create playlists and share music with others primarily by email and instant messaging, through Twitter, and through Facebook. Users could also embed HTML code into websites that linked back to Rhapsody music content. Unlike Grooveshark, members could share their tracks with non-members. In addition, consumers could purchase MP3s for use on iPods and other portable players from the Rhapsody MP3 sister site.

Rhapsody generated revenue through a combination of advertising, subscription fees, and by selling MP3 tracks. The main subscription options were Rhapsody 25, Rhapsody Unlimited, and Rhapsody to Go. At the time of this study, Rhapsody 25 was free and strictly ad-supported. Consumers could stream 25 songs per month on demand and could access 25 Internet radio stations. Frequent pop-up notices reminded the user to sign up for the fee-based services.

Rhapsody Unlimited was a paid subscription plan costing \$12.99 per month. This gave users unlimited access to the entire library of songs. Users could stream these songs provided that they had a live Internet connection. Rhapsody To Go was also a paid subscription service priced at \$14.99 per month. It was similar to Rhapsody Unlimited except that it also allowed users to

download music onto a maximum of 2 portable players that supported Microsoft's PlaysForSure digital rights management certification system. By downloading to a portable player, the user could then listen to music without being tethered to a computer with an Internet connection.

Rhapsody could be accessed via most standard web browsers that supported Flash technology. Acceptable browsers included FireFox, Explorer, Safari, and Chrome. The consumer was not required to install any special software. Searching, organizing, and listening to music could be done via the website. In this regard, Rhapsody was platform independent. Subscribers could access the service on Windows, Mac OS, and Linux platforms. Subscribers could access the service on mobile platforms such as Android, which supported Flash applications. On the iPhone, subscribers could download an application for access to the service.

Rhapsody also offered proprietary jukebox software, which was compatible with certain operating systems. The proprietary jukebox software provided additional features. There were tools to assist the user to more easily download music, edit playlists, burn MP3s to CDs, loop tracks, and shuffle the play order of songs. The player could manage all the music stored on a user's system, including MP3s acquired from other sources. The player also provided a 10-band equalizer. A comparison of features for Rhapsody and Grooveshark is summarized in section 4.3.3.

Rhapsody Screen Shot  
www.rhapsody.com

The screenshot displays the Rhapsody website interface. At the top, there is a banner for 'THE mino CAMCORDER' with the tagline 'Incredibly sleek. Unbelievably simple.' and a 'now available in HD' badge. Below this is the Rhapsody logo and a search bar with the text 'Search for music'. A navigation menu includes links for Home, MP3, Playlists, Radio, Blog, Videos, Photos, How It Works, and My Music. The main content area features a music player for 'I Gotta Feeling' by Black Eyed Peas, with a 'Buy MP3' button and a 'Pop-out Player' icon. Below the player are three promotional banners: one for Mary J. Blige's album 'The One', one for Jordan Peele's 'The First Wives Club', and one for film.com's 'Movie of the Week' featuring a cartoon character and the text 'Relax and Unwind with the free Movie of the Week'. At the bottom, there is a 'Featured Playlist' section with a 'Featured Playlist' title and a 'Featured Playlist' image of a woman's face. The 'Featured Playlist' section also includes a 'Free MP3' button and the text 'Relax and Unwind with a set of mellow tunes'. The 'In The Spotlight' section features a 'Claws Come Out' banner with a 'Free MP3' button and a 'Rhapsody's Free Music Download of the Day' section for Kid Rock's 'All Summer Long' with a 'Free MP3' button.

Figure 14

### 4.2.3 Summary of Features of the Field Study Websites

These were the summary of features of the two field study websites at the time the research was conducted.

<b>TABLE 4.1 ATTRIBUTES</b>	<b>RHAPSODY TO GO</b>	<b>GROOVESHARK</b>
<b>Cost</b>	14.99 per month	1. Free, ad supported or 2. \$3 per month no ads
<b>Selection</b>	8,000,000 songs	3,000,000 songs
<b>Listen whenever you like</b>	Yes, if connected to the Internet, 3G network, or if your music has been downloaded to your approved portable player	Yes, if music has been downloaded to your computer and you are connected to the Internet
<b>Listen from any location</b>	1. Yes, if connected to the Internet from any computer 2. Yes, via certain mobile phones with WIFI or 3G connection (See mobile platform compatibility below.) 3. Yes, if your music has been downloaded to certain approved portable players	1. Yes, if connected to the Internet from any computer 2. Yes, via certain mobile phones with WIFI or 3G connection (See mobile platform compatibility below.)
<b>Mobile platform compatibility</b>	iPhone	Android, Palm OS, BlackBerry (except BlackBerry Storm)
<b>Computer platform compatibility</b>	Windows 98 or later, Mac OSX, Linux	Windows XP, Vista
<b>Web browser compatibility</b>	Explorer, FireFox, Safari, Chrome	Explorer, FireFox, Chrome
<b>iPod compatibility</b>	No	No

<b>TABLE 4.2 ATTRIBUTES</b>	<b>RHAPSODY TO GO</b>	<b>GROOVESHARK</b>
<b>Zune compatibility</b>	No	No
<b>MP3 player compatibility</b>	Can transfer to a maximum of 2 portable devices that support PlayForSure DRM	No
<b>Access</b>	Unlimited	Unlimited
<b>Right to make offline backup copies</b>	No	No
<b>User can share individual tracks with friends</b>	Post to Twitter Post to Facebook Share link via email or IM Share HTML for website or blog	Post to Twitter Post to Facebook Share link via email or IM Share HTML for website or blog
<b>User can create playlists of songs</b>	Yes	Yes
<b>User can share playlists with friends</b>	Post to Twitter Post to Facebook Share link via email or IM Share HTML for website or blog	Post to Twitter Post to Facebook Post to StumbleUpon Share link via email or IM Share HTML for website or blog
<b>User can transfer to disk to share with others</b>	No	No
<b>User can import directly into audio/visual editing software</b>	No	No
<b>User can import into presentation software</b>	No	No
<b>User can modify file or file format</b>	No	No

### 4.3 Participants

The subject pool was a convenience sample of undergraduate and graduate students at a major northeastern commuter college. Convenience samples from a population of college students are common, but they have been legitimately criticized in the past. The issue has been that convenience samples were often not representative of the population that a study's results were supposed to apply. This was not an issue in this study for several reasons.

First, sampling was from a heterogeneous population of a large, urban, commuter college. Students from such pools tend to reflect the general adult population since they are often older, working adults with a degree of life experience. Furthermore, this population tends to have experience in acquiring music online. In addition, it is a population that tends to exhibit the ability if not always the willingness to engage in various forms of unauthorized use [12, 250]. Finally, it is a population that tends to be comfortable with the Internet and the downloading of digital products.

It is worth noting that this subject pool was ideal in other respects. Not only was the technical facility to actively engage in the consumption of digital culture products prevalent, potential subjects in this pool also tended to have the discretionary income to purchase authorized music from legitimate sources. As a result, the decision to acquire unauthorized music is more likely to be a voluntary act to an extent that is not the case for younger individuals. Consumers younger than the sample population are more likely to be financially constrained. Consumers older than sample population are often less familiar with the digital technologies that can be used to acquire and modify digital culture products. As a result, they tend to be more passive in their consumption of digital products. Older consumers also tend to have more discretionary income that can be used to acquire authorized music.

The number of subjects required for a field study is dependent on several factors. It can be dependent on the variability of the data set. It can be a function of the number of measurement items. It can be a function of the type of statistical analysis. The data was assessed with PLS Path Modeling. One advantage of the procedure is that it does not require large data sets. Based on the largest indicator block, ten data points are required for each indicator, as a rule of thumb [48]. The largest data block had nine indicators and therefore the minimum sample size for this study was ninety.

While the subject pool for this study was appropriate for the reasons stated in section 4.1, there were other important considerations that had to be screened for. First, it was important to include only those subjects that had some experience with acquiring digital culture products online in some form. It was important that they had access to a computer that they controlled. In order for the results of this study to have some meaning, such that we could make assertions regarding unauthorized file sharing, digital culture product consumption online could not be an abstract notion for the subjects. Ideally, subjects would have to have had the ability and opportunity to freely choose between different methods of acquiring music online.

Second, it was important to minimize the effects of prior experience as much as possible. The model, as theorized, was focused on the attitudes that emerged upon early stage use and how this affected attitudes and behavior regarding the unauthorized downloading of music files in the near term. Therefore, subjects were assigned to an unfamiliar website that they had never visited.

Third, subjects were encouraged to actively shop for products about which they had not yet formed opinions. During the screening process, none of the subjects indicated familiarity with all of the music products that they were asked to sample and acquire. It was important that they shopped for products they did not already own, or did not have any immediate plans to acquire.

The goal was to encourage the use of all the website's search functions, and to encourage subjects to more fully explore and experience the website, as much as possible.

Fourth, the population was represented by subjects with a wide range of knowledge and experience in the unauthorized acquisition of music both online and offline. The importance of this was that the study attempted to measure changes in unauthorized file-sharing intent that occurs after the exposure to one of the field study sites. It is useful to understand how the model performs for a range of user types. Therefore, subjects were required to have engaged in some form of unauthorized file sharing in the past. This could include a wide range of unauthorized activities such as P2P file sharing or making physical copies of CDs.

Finally, the subject pool included those that have had some experience with adapting, modifying, or repurposing a digital culture product for use in some project such as a home movie, a slide show, or website. If they had never done so, it is likely that product modification would have seemed an abstract issue that was not compelling. This was an important consideration given that one of the goals of the study was to assess how the modification attributes of a product, which is increasingly becoming more relevant to consumers, influences attitudes towards unauthorized file sharing.

#### **4.4 Procedures**

This section describes the data collection procedure in detail. The entire process is divided into three stages. The specific elements associated with each stage are outlined below.

##### ***4.4.1 Recruitment***

The first step was recruitment. Notices briefly describing the field study and the need for paid volunteers were circulated around campus. The purpose of the study, basic eligibility requirements, required tasks, compensation, and risks were described. In addition, information

regarding the times, dates, duration, and location of the study were provided. Contact information was provided. Subjects were invited to show up if they met the eligibility criteria. Any questions about the study were addressed via email.

#### ***4.4.2 Data Collection***

Subjects were seated at individual workstations loaded with Microsoft's Explorer web browser, instructional videos, and the survey form.

1. Subjects were asked to review the consent form. The form contained a description of the study outlining the purpose, goals, benefits, risks, privacy protections, rights, and the general procedure.
2. Subjects were told that participation would be voluntary, their responses would be anonymous, they would be able to exit the study at any time, and that the results would be kept confidential. They were told that they could ask questions at any time during the session.
3. Subjects were informed that in order to receive compensation, they would have to make an effort to complete all stages of the study. They were told that only aggregate data would be published.
4. Subjects were asked about their familiarity with Grooveshark and Rhapsody in order to assign them to an unfamiliar site.
5. Subjects were introduced to the assigned website through a video presentation. They were also provided with a handout summarizing key product features. They were afforded an opportunity to familiarize themselves with the website.

6. Subjects were provided with a questionnaire regarding demographic information and their music consumption habits. They were given belief elicitation exercises and presented with a hypothetical, but realistic shopping scenario. They were also given a series of tasks designed to develop additional familiarity with the website and its products. (Subjects were given a worksheet to facilitate their responses as they perused the website.)
7. After subjects had interacted with the site and completed the belief elicitation tasks, they were asked to respond to a series of questions regarding perceived website and product characteristics. They were asked to respond to questions designed to measure the research model.
8. At the end of the survey, subjects were asked to provide the last four digits of their phone number and asked to answer a security question. They were told that the information could be used to match current responses to the responses in any potential follow-up studies that they may be invited to participate in. They were told that this question was optional.

#### ***4.4.3 Belief Elicitation Tasks***

The scenario, tasks, and several of the questions were designed to elicit beliefs about the website, product attributes, and about subject attitudes and intentions regarding the use of a digital culture product. The first task required them to think about the many ways in which products could be shared and modified. They were given some suggestions to help motivate the thought process and were then asked to list in detail as many additional possibilities as they could.

Next the subjects were presented with a video introduction of the field study website. The video introduction demonstrated many key features. It demonstrated how music could be consumed and shared. Subjects were given a summary of website and product features. This

summary provided additional detail regarding how the products could be shared and whether they could be modified. Subjects were asked to spend some time familiarizing themselves with the website and reviewing the summary.

Next subjects were presented with a realistic shopping scenario. They are asked to shop for music that would be used in an audio-visual montage, i.e., slideshow. This music would also be used to develop a playlist. Both the playlist and audio-visual montage would be shared among a group of friends at a birthday party. This is a realistic shopping task that in the process also allowed the user to become familiar with the website and its products. Subjects were told that the music they were searching for was only available for purchase at their assigned website. The music was also available as a download on a P2P file-sharing network.

The fact that subjects were told that the product would be shared among a close circle of friends further stimulated subjects to think about the many ways in which products could be shared in general. It was communicated to the subjects that the acquired music may require some modification in order to complete the projects. By suggesting to the subjects that the product would be used in the creation of slide show stimulated the subject to think about the ease and the extent to which a product could be adapted for practical and creative purposes. Once these tasks were completed, they were asked to complete the rest of the questionnaire.

#### ***4.4.4 Instrument Development, Pretest, and Pilot Study***

Suggestions for the development of the survey instrument and many aspects of the research design were drawn from the recommendations suggested by Moore and Benbasat [202], Pinsonneault and Kraemer [222], and Straub and Carlson [265]. Where possible, validated measures were adapted from previous studies. When new measures were needed or the

adaptation was extensive, the development of a measure underwent a multi-step process that included item generation based on literature and expert recommendations.

Measures underwent a process of validation that involved review by jury, testing, and refinement. The process of validation entailed examining content, convergent, and divergent validity. The instrument was also assessed for reliability. Content validity was assessed by panel review. Convergent and divergent validity, and reliability was assessed statistically at the pilot study stage and verified again during the main study.

The instrument, as well as the procedure, was assessed for ease of use and understanding. No major issues emerged. The language, terminology, and phrases associated with the questionnaires, scenarios, and vignettes were assessed for potential bias by a panel of experts. Negative terms such as piracy, unauthorized, illegal, etc., were avoided as much as possible. In the survey for this study, which is listed in Appendix C, it is noted whether the instrument was adapted or newly created. For the most part, the instrument was adapted from previous studies.

#### ***4.4.5 Statistical Analysis***

There were a few options for analyzing the data collected in this study. One option was to use structural equation modeling with software tools such as AMOS or Lire. This option has certain advantages. For one, it allows the researcher to model complex relationships. Specifically, one can model constructs that act both as dependent and independent variables. In addition, structural equation modeling allows the researcher to assess both the structural and measurement model simultaneously. Structural equation modeling tools also offer a large number of fit indices to assess the quality of the theoretical model.

The disadvantages of using structural equation modeling include the requirement of large datasets in order to generate solutions and as a requirement for some of the fit indices. Typically,

ten cases are required for each observed variable [97, 149]. This represents added time and expense for the investigator. Furthermore, structural equation modeling, which works with the covariance matrix, does not permit the researcher to model formative indicators. In the model assessed in this study, one of the variables of interest—distributive fairness—was modeled with formative indicators.

An alternative to Structural Equation Modeling is Partial Least Squares (PLS) Path Modeling, which has become very popular in information systems research. The procedure has several advantages. First, the method does not have strict normality requirements. Regardless of the distribution pattern of the dataset, PLS Path Modeling can usually generate meaningful solutions, which gives the researcher a measure of flexibility [281].

Second, PLS Path Modeling is a component-based approach for estimation as opposed to the covariance-based approach of structural equation modeling. As a result, PLS Path Modeling allows latent constructs to be modeled either as formative or reflective indicators [34].

Third, PLS Path Modeling is well suited for testing complex relationships by avoiding inadmissible solutions and factor indeterminacy [217]. As a result, the model can be used to assess complex models with large numbers of variables, relationships, and moderating effects [217]. Multicollinearity, which can lead to non-positive definite matrices, does not automatically impede the generation and interpretation of results because of inadmissible solutions [40]. The procedure does not have strict normality requirements [20, 48].

Finally, one of the major advantages of PLS Path Modeling from the standpoint of the researcher is that the sample size requirements are relatively small allowing the investigator to economize on time and expense. A rule of thumb is to consider the number of causal relationships associated with a latent construct with the most causal relationships and the

indicator block of the construct with the largest number of indicators. Whichever is the higher number, multiplied by ten, determines the minimum sample size [48].

In this study both perceived distributive fairness and unauthorized downloading intention each have three causal relationships. However, the block with the most indicators was perceived system quality, which had nine. On this basis, the minimum sample size requirement would be ninety. The number of cases in this study was 139.

## **5 DATA ANALYSIS AND RESULTS**

### **5.1 Summary of Findings**

The results of this study were mixed. It appeared that the relationship between perceptions of justice and unauthorized downloading was complex and not entirely consistent with theoretical expectations. With respect to perceived distributive justice, which in this study was defined in a manner consistent with a traditional equity perspective, there was no evidence to support a link between it and unauthorized downloading intention. This was the case for both models, the first which addressed website attributes, and the second which considered product attributes. To recall, the traditional equity perspective delineated earlier was one that compared the input and output ratios between transaction partners.

With respect to perceived interactional fairness, a relationship between it and unauthorized downloading was detected, however, it was in a direction opposite to the one theorized. Perceived interactional fairness, paradoxically, was found to be positively related to unauthorized downloading intention. In other words, a website that was found to be pleasant and that treated the subject with courtesy and respect seemed to actually encourage unauthorized downloading. Possible explanations for this paradox are considered in the discussion section.

The third justice variable, perceived procedural fairness, was the only one of the three justice variables found to have the hypothesized negative relationship to unauthorized downloading intention. A website perceived to not properly handle consumer issues and complaints and that did not properly handle or address inquiries tended to make consumers more amenable to unauthorized downloading.

The rest of the model was largely supported by the data. The hypothesized relationships between specific website attributes and the TAM variables were supported. In addition, the relationships between most of the product attributes and the TAM variables were supported as well. On the essential question regarding whether website and product attributes influenced unauthorized downloading intention, the answer was yes; however, distributive justice did not appear to have been a mediating factor.

In the revised model, which did not incorporate perceived distributive fairness, both perceived website usefulness and perceived product usefulness was found to have a strong relationship to unauthorized downloading intention. These factors were in turn influenced by specific exchange interface and product attributes. In contrast, perceived website enjoyment and perceived product enjoyment did not have a significant impact on unauthorized downloading intention. Perceived ease of use did not have a direct impact on unauthorized downloading intention, but did strongly impact website usefulness. Overall, both of these models, which did not include perceived distributive fairness as a mediating variable, explained more than 50% of the variation.

## **5.2 Subject Pool Characteristics**

The participants in this study, which were drawn from a subject pool of university students at a large Northeastern commuter college, exhibited various desirable characteristics. As indicated in Table 5, at the bottom of this section, there was good gender balance. While the average age was slightly young – approximately 22.1 years—it was appropriate for this type of study. Online digital music consumption, both authorized and unauthorized, tends to be common among this particular age group.

Among the participants in this study, 62% have acquired authorized music online from sources such as Amazon and iTunes. P2P file-sharing experience was highly prevalent among the subjects with 89% reporting having engaged in some form of P2P file sharing. Several reported having substantial libraries of unauthorized music on their computers with a median of 225 music tracks. Surprisingly, slightly more women reported having engaged in P2P file sharing by a 7% margin. Engaging in unauthorized behavior online such as piracy, the dissemination of viruses, and unauthorized entry into computer networks has tended to be more prevalent among males.

The subjects exhibited additional characteristics that were relevant for this type of study. One was that they revealed themselves to be active consumers of digital culture products. They have been very engaged in using such products to create new products. As noted in Table 6 at the bottom of this section, 65% reported having used video and audio files in the creation of slideshows, presentations, and videos. 40% reported having remixed audio or video tracks. 68% reported having incorporated music and video files into web pages.

**Table 5. Demographic Information and Music Acquisition Habits**

	Subjects Frequency (%)	Age Mean / Mdn / SD	Online Music Purchasing Experience Frequency (%)	P2P File Sharing Experience Frequency (%)	Number of Authorized Music Files Owned Mean / Mdn / SD	Number of Unauthorized Music Files Mean / Mdn / SD
Female	71 (51%)	21.7 / 21 / 2.78	34 (48%)	66 (93%)	290 / 50 / 772	564 / 250 / 843
Male	68 (49%)	22.6 / 21 / 3.79	28 (41%)	58 (85%)	348 / 5 / 1354	2423 / 200 / 6937
Overall	139 (100%)	22.1 / 21 / 3.34	62 (45%)	124 (89%)	318 / 20 / 1096	453 / 225 / 4959

**Table 6. Creative Use of Digital Culture Products**

	Used video or audio files to create slideshows, presentations, or new videos Frequency (Percentage)	Remixed audio or video tracks Frequency (Percentage)	Incorporated music or video files into a web page Frequency (Percentage)
Female	44 (62%)	23 (32%)	46 (65%)
Male	46 (68%)	32 (47%)	48 (71%)
Overall	90 (65%)	55 (40%)	94 (68%)

### 5.3 Quality of the Data

One of the important steps in a quantitative analysis is to assess the nature and quality of the data. In this regard, there are several important issues to consider. They include addressing any missing values and potential outliers in the data set. It includes addressing any common methods bias issues. It could also be important to assess whether the data violates any assumptions regarding the expected distribution pattern, or more generally, whether there are any violations of the multivariate assumptions associated with the particular mode of analysis.

Given the methodology employed in this research, issues regarding multivariate assumptions were not consequential and the 139 cases collected were substantially more than the required minimum of ninety noted earlier. An analysis of skewness and kurtosis was conducted for the indicators and is noted in Table 7 below. The results of this analysis indicated that the data was, in general, normally distributed. There was some skewness in the dataset and a degree of kurtosis that was not ideal in some cases, specifically regarding the equity variables, but by and large, given the tolerance of PLS Path Modeling for departures from ideal distributions, one can expect that this would not materially affect the analysis [281].

The presence of outliers in a dataset could adversely impact the predictive and explanatory power of a model by skewing the results of the analysis. The researcher has to carefully address this issue and use professional judgment to determine whether an outlier should be removed. It should not be an automatic decision. One approach for screening a large dataset is to conduct a principal components analysis [133].

Principal components analysis is a procedure that transforms a set of correlated variables into a smaller set of uncorrelated variables called principal components [133]. The first principal component accounts for as much of the variance as possible and subsequent components do

likewise until a specified stopping condition is met [133]. The analysis generally attempts to apportion all of the variance in a dataset. A principal components analysis is not the same as a factor analysis and the results of the former do not always lend themselves to meaningful interpretation; however, the researcher can use the results of the procedure to assess the distribution of the overall dataset and to detect outliers [133].

If the original dataset is normally distributed, we can expect that the principal component scores will be normally distributed as well [133]. We can graphically examine the distribution of the component scores and/or we can calculate the skewness and kurtosis of those distributions. We can look for scores that are much greater than +3 or -3.

The results of the principal components analysis conducted on the dataset demonstrated reasonable skewness and kurtosis. The complete results of the principal components analysis have been summarized in Appendix A. Except for two possible cases, none of the standardized scores for the first nine dimensions, which accounted for approximately 52% of the variation, indicated the presence of any outliers. In the judgment of this researcher, the presence of these potential outliers was not deemed to be substantial enough to warrant its removal from the dataset. An analysis with and without these particular cases did not appreciably affect results.

Regarding the issue of missing data, information was collected via an online survey that was programmed to prevent the subject from submitting the survey without first answering each and every question. In addition, every participant was required to make a good faith effort to complete the survey in order to receive compensation. During the course of data collection, there were no situations in which a participant had to abandon the data collection process. 139 participants sat for the study and 139 completed questionnaires were submitted.

The possibility of common methods bias was addressed in this study. This bias occurs when data is collected using the same process. The concern is that common variance is inflated upward. In this study, data was collected via a self-reported survey, conducted as part of a cross-sectional study. Therefore the potential presence of common methods bias cannot be dismissed and should be examined. However, it is worth noting that there is no universal agreement on the prevalence and impact of common methods bias [245, 261].

One method to assess this bias is Harman's one factor test [224]. In this approach, an exploratory factor analysis is conducted including all of the factors. Common methods bias is assumed to exist if a single dominant factor emerges from the unrotated factor solutions or if the first factor in a principal components analysis explains the majority of the variance in the variables [224]. An examination of the principal components analysis in Appendix A and the factor analysis in Appendix B indicated that the evidence did not support common methods bias. No single dominant factor emerged. No single factor accounted for a majority of the variation in the dataset. Therefore, we could exclude the possibility of common methods bias. Finally, note that the correlation matrix did not exhibit high correlations between constructs ( $r$  value  $> 0.90$ ), which would have supported the existence of common methods bias [217].

**Table 7. Indicator Statistics**

<b>Constructs with Reflective Indicators</b>				
<b>Item</b>	<b>Mean</b>	<b>STD</b>	<b>Skewness</b>	<b>Kurtosis</b>
ATUD	4.528	1.752	-0.227	-0.792
COST	3.791	1.757	0.054	-0.810
PCMF	4.173	1.794	-0.155	-0.865
PCRF	4.247	1.613	-0.175	-0.625
PEOU	5.630	1.369	-1.118	0.973
PWE	5.168	1.563	-0.701	0.973
PWU	4.784	1.617	-0.517	-0.395
PPE	4.825	1.598	-0.516	-0.421
PPU	4.597	1.665	-0.382	-0.678
PEPTS	5.139	1.567	-0.780	0.011
PEPSS	4.919	1.647	-0.631	-0.353
PEPM	3.897	1.836	0.080	-1.000
PEPT	5.633	1.386	-0.919	0.226
PEPS	5.098	1.528	-0.701	-0.164
PWIQ	5.187	1.353	-0.679	0.240
PWSQ	5.502	1.327	-0.911	0.803
PIF	5.700	1.429	-1.071	0.728
PPF	4.270	1.445	-0.034	-0.199
UDI	4.568	2.016	-0.398	-1.052
<b>Formative Indicators for PDF</b>				
<b>Item</b>	<b>Mean</b>	<b>STD</b>	<b>Skewness</b>	<b>Kurtosis</b>
EqBenVsVndr	-0.071	1.658	-0.391	3.320
EqBenVsArt	-0.164	1.856	-1.153	3.710
EqBenVsLbl	-0.058	1.864	-0.857	3.126

#### 5.4 Website Attributes, Justice, and Unauthorized Downloading Intention

SmartPLS was used to analyze 139 cases [233]. All data was standardized prior to its analysis.

PLS Path Modeling generates numerous statistics that can be used to assess item reliability, the adequacy of the measurement model, and the quality of the structural model. T-values are generated using a bootstrap procedure, which involves sampling from the original dataset with replacement.

Item reliability and internal consistency reflects how well the indicators reflect the true score of a latent construct. One way to assess is by using Chronbach's alpha. A value that exceeds 0.70 is deemed to be satisfactory [20]. Chronbach's alpha has been widely used in numerous studies; however, it has been noted that the statistic can be biased with short scales of two or three items [230, 231]. An alternative is the more robust composite reliability statistic. An acceptable value should exceed 0.80 [74]. Others consider a value of .70 to be sufficient [20].

Convergent validity refers to how well items that are supposed to measure a latent construct do not instead measure some other construct. There are several ways to assess convergent validity. First, each item should load with a significant t-value on its latent construct, and second, all item factor loadings should exceed 0.70 [74]. Third, the average variance extracted (AVE) should exceed a value of 0.50 in order to justify using the construct [20, 48, 74].

The AVE measures the average communality for each latent factor. In other words, it is a measure of the shared or common variance in a latent variable. It is the amount of variance that is captured by the latent variable in relation to the amount of variance due to its measurement error [65]. When the AVE is well above 0.50 that suggests that the principal constructs capture higher construct related variance than error variance.

Assessing convergent validity is appropriate for latent constructs that are measured with reflective indicators. Perceived distributive fairness in this study was measured with formative indicators. Formative indicators are not expected to correlate with each other. As a result, a more appropriate way to assess formative indicators is to interpret indicator weights as beta coefficients in a linear regression model and whether they are in the appropriate direction. A rule of thumb is that weights should be above 0.20 [48]. T-values should be significant, but some

have suggested that significance testing is not important with respect to formative indicators [194].

Discriminant validity can be assessed in numerous ways. First, the square root of each construct's AVE should be greater than the correlations between the construct and others. This would indicate that the construct shares more variance with its own measures than it shares with other constructs [20, 74]. Second, no item should load higher on another latent construct than it does on the construct it is designed to measure [20]. Third, the correlations among all constructs should be well below 0.90. This threshold would suggest that all constructs are distinct from each other.

In order to assess the structural model, the key measures are the path coefficients, the significance of the path coefficients, and the explained variance indicated by the r-square statistic. The greater the path coefficient, the greater is the effect. A rule of thumb is that it should be greater than 0.10 [68]. The explained variance, which measures the predictive power of the model, should have a value greater than 0.10 as well [68].

#### ***5.4.1 Reliability***

In the first model, which addressed the impact of website attributes on unauthorized downloading intention from a justice theory perspective, item reliability and internal consistency was reasonably good. Table 8 below summarizes some of the results. Note that Cronbach's alpha was above the recommended value of 0.70 for most constructs. The exceptions were perceived cost, perceived website information quality, and perceived procedural fairness, which only exceeded a value of 0.60. This would normally be considered suitable for an exploratory study only [48]. Cronbach's alpha for perceived interactional fairness at 0.49 indicated that the scale was not sufficiently reliable. However, as noted earlier, Cronbach's alpha can be biased,

especially when the number of indicators is small. Perceived interactional fairness was assessed with only three indicators in this study.

Upon examining the more robust composite reliability statistic, it could be observed that every value surpassed the recommended value of 0.70. The only exception was perceived interactional fairness, which came in just shy with a score of 0.694. In order to make a final assessment regarding the reliability of the scale items, the AVE was examined. The score for nearly every construct was above the minimum threshold of 0.50. Again, the only exception was perceived interactional fairness. Except for this one exception, one could conclude from these statistics that the reliability of the measurement instrument was reasonably adequate. Given that perceived distributive fairness was not measured with reflective indicators, but rather formative indicators, item reliability scores were not appropriate for this construct.

**Table 8. Website Attributes Initial Model Results Overview**

	AVE	Composite Reliability	R Square	Cronbach's Alpha	Communality	Redundancy
ATUD	0.789	0.949		0.933	0.789	
PC	0.543	0.775		0.624	0.543	
PCMF	0.584	0.892		0.856	0.584	
PCRF	0.578	0.889		0.850	0.578	
*PDF	—	—	0.113	—	0.222	0.003
PEOU	0.563	0.864	0.584	0.806	0.563	0.170
PIF	0.437	0.694		0.490	0.437	
PWIQ	0.519	0.809		0.691	0.519	
PPF	0.713	0.830		0.628	0.713	
PWSQ	0.549	0.857		0.791	0.549	
PWE	0.660	0.921	0.269	0.897	0.660	0.165
PWU	0.561	0.864	0.510	0.803	0.561	0.105
UDI	0.689	0.869	0.535	0.774	0.689	0.304

\*As a formative indicator certain statistics were not appropriate.

#### ***5.4.2 Measurement Model Assessment***

The convergent validity of the constructs measured with reflective indicators was good. Note in Table 11.1 and 11.2 that each item loaded highly on its latent construct with a significant t-value. The only exception was the item PIF1, which was one of the indicators associated with perceived interactional fairness. Note in Table 8 above that AVE exceeded 0.50 for all constructs, which further supported convergent validity. The only exception was perceived interactional fairness. Perceived distributive fairness, which was assessed through formative indicators, was associated with substantial indicator weights. Even though the t-values were not significant, some authors, as noted before, do not believe this should substantially impact the predictive quality of the indicators [194].

Discriminant validity of the construct measures was satisfactory. Note in Table 9 that the square root of the AVE associated with each construct is greater than the correlations between that construct and others indicating that the construct shared more variance with its own measures. Note in Table 10 that no item loaded higher on other latent constructs than the construct it was designed to measure with one exception—PWUA1.

PWUA1 loaded slightly higher on perceived website enjoyment than on perceived website usefulness. This may be attributed to links between website usefulness, product usefulness, and enjoyment that have been revealed in other studies. It could be influenced by the context of this study, which involved a hedonic system. The usefulness of a product could contribute to the enjoyment of a product and we should not necessarily expect that these two constructs would be completely orthogonal. Consistent with this observation was that several indicators associated perceived website enjoyment and perceived website usefulness did tend to load highly on each

other's constructs. Given that these items have all been used and validated in previous studies, it was decided to retain the item PWUA1.

Finally, discriminant validity can be assessed by examining whether correlations among all constructs are below the 0.90 threshold. As noted in Table 9 that was indeed the case. One could conclude therefore that the measurement model was reasonably satisfactory. The only construct with issues regarding item reliability, discriminant validity, and convergent validity was perceived interactional fairness. This weakened the extent to which any conclusions could be drawn regarding this particular construct.

**Table 9. Website Attributes Initial Model Correlations (Square Root AVE in Bold)**

	ATUD	COST	PCMF	PCRF	PDF	PEOU	PIF	PWIQ	PPF	PWSQ	PWE	PWU	UDI
ATUD	<b>0.888</b>												
COST	0.173	<b>0.737</b>											
PCMF	-0.114	-0.058	<b>0.764</b>										
PCRF	-0.244	-0.068	0.609	<b>0.760</b>									
PDF	0.138	0.043	0.124	0.080	<b>NA</b>								
PEOU	0.047	-0.178	0.164	0.322	-0.046	<b>0.751</b>							
PIF	0.136	-0.241	-0.007	-0.002	-0.117	0.389	<b>0.661</b>						
PWIQ	-0.016	-0.222	0.323	0.509	0.110	0.657	0.242	<b>0.720</b>					
PPF	-0.110	0.051	0.447	0.541	0.169	0.306	0.031	0.380	<b>0.844</b>				
PWSQ	0.016	-0.206	0.206	0.389	0.120	0.727	0.387	0.661	0.376	<b>0.741</b>			
PWE	-0.265	-0.347	0.406	0.524	-0.068	0.518	0.316	0.621	0.431	0.686	<b>0.812</b>		
PWU	-0.146	-0.169	0.524	0.641	0.186	0.451	0.176	0.628	0.543	0.626	0.692	<b>0.749</b>	
UDI	0.671	0.294	-0.283	-0.309	0.071	0.001	0.211	-0.107	-0.190	0.018	-0.242	-0.247	<b>0.830</b>

**Table 10. Website Attributes Initial Model Cross Loadings**

	ATUD	PDF	PC	PCMF	PCRF	PEOU	PIF	PWIQ	PPF	PWSQ	PWE	PWU	UDI
ATUD1	<b>0.926</b>	0.106	0.180	-0.054	-0.183	0.091	0.134	0.009	-0.118	0.021	-0.242	-0.107	0.641
ATUD2	<b>0.906</b>	0.155	0.194	-0.118	-0.204	0.071	0.134	-0.003	-0.091	0.031	-0.226	-0.126	0.623
ATUD3	<b>0.848</b>	0.134	0.141	-0.151	-0.233	0.028	0.102	0.001	-0.073	0.031	-0.239	-0.096	0.548
ATUD4	<b>0.849</b>	0.142	0.132	-0.114	-0.244	-0.053	0.065	-0.077	-0.128	-0.019	-0.234	-0.162	0.505
ATUD5	<b>0.909</b>	0.083	0.117	-0.079	-0.231	0.050	0.154	-0.012	-0.083	0.004	-0.239	-0.161	0.642
EqCalcArt	0.027	<b>0.614</b>	-0.150	0.222	0.079	-0.090	-0.093	0.067	0.146	-0.069	0.008	0.151	-0.018
EqCalcLbl	-0.196	<b>-0.071</b>	-0.175	0.091	0.026	-0.077	-0.002	-0.039	0.011	-0.075	0.066	0.043	-0.153
EqCalcVndr	-0.108	<b>0.532</b>	-0.025	0.051	0.053	-0.066	-0.056	0.020	0.078	-0.005	-0.006	0.135	-0.089
PC1	0.094	-0.022	<b>0.648</b>	-0.062	-0.078	-0.253	-0.164	-0.190	-0.021	-0.229	-0.199	-0.154	0.130
PC2	0.026	-0.111	<b>0.604</b>	0.105	0.054	-0.035	-0.126	-0.088	0.047	-0.124	-0.147	-0.029	0.110
PC3	0.194	0.108	<b>0.919</b>	-0.092	-0.081	-0.132	-0.225	-0.201	0.064	-0.150	-0.351	-0.162	0.318
PCMF1	-0.042	0.110	-0.067	<b>0.852</b>	0.462	0.118	-0.055	0.202	0.410	0.145	0.339	0.440	-0.178
PCMF2	-0.172	0.133	-0.060	<b>0.869</b>	0.566	0.164	-0.064	0.292	0.417	0.156	0.302	0.460	-0.307
PCMF3	-0.015	-0.075	-0.139	<b>0.648</b>	0.365	0.146	0.185	0.285	0.267	0.166	0.325	0.251	-0.138
PCMF4	-0.096	0.139	-0.030	<b>0.824</b>	0.530	0.132	-0.046	0.278	0.397	0.229	0.338	0.481	-0.239
PCMF5	-0.121	0.217	0.030	<b>0.786</b>	0.481	0.073	-0.009	0.252	0.343	0.130	0.289	0.443	-0.302
PCMF6	-0.023	-0.129	-0.055	<b>0.554</b>	0.342	0.157	0.092	0.191	0.116	0.121	0.322	0.229	-0.040
PCRF1	-0.201	0.119	-0.051	0.557	<b>0.872</b>	0.307	-0.011	0.475	0.416	0.375	0.474	0.581	-0.273
PCRF2	-0.173	0.103	-0.064	0.443	<b>0.793</b>	0.350	0.015	0.507	0.449	0.437	0.417	0.555	-0.195
PCRF3	-0.161	-0.149	-0.293	0.389	<b>0.546</b>	0.192	0.108	0.308	0.209	0.190	0.412	0.304	-0.262
PCRF4	-0.236	0.127	-0.032	0.551	<b>0.890</b>	0.296	-0.012	0.432	0.535	0.361	0.480	0.610	-0.290
PCRF5	-0.181	0.120	0.163	0.463	<b>0.760</b>	0.068	-0.129	0.229	0.475	0.187	0.247	0.445	-0.194
PCRF6	-0.158	-0.115	-0.152	0.340	<b>0.640</b>	0.209	0.082	0.321	0.300	0.100	0.365	0.313	-0.215
PEOU1	0.062	0.002	-0.155	0.064	0.161	<b>0.765</b>	0.318	0.490	0.172	0.534	0.408	0.354	0.054
PEOU2	0.048	0.030	-0.213	0.004	0.115	<b>0.746</b>	0.314	0.416	0.150	0.487	0.298	0.256	0.037
PEOU3	-0.085	-0.218	-0.109	-0.081	0.098	<b>0.569</b>	0.399	0.230	0.025	0.385	0.291	0.081	0.016
PEOU4	0.055	-0.012	-0.122	0.314	0.412	<b>0.807</b>	0.211	0.667	0.379	0.634	0.510	0.517	-0.076
PEOU5	0.045	-0.046	-0.091	0.160	0.308	<b>0.837</b>	0.316	0.530	0.296	0.631	0.382	0.341	0.008
PIF1	0.035	0.063	-0.150	0.170	0.098	0.378	<b>0.513</b>	0.318	0.216	0.426	0.335	0.340	0.021
PIF2	0.143	0.022	-0.152	0.096	0.118	0.409	<b>0.702</b>	0.317	0.289	0.430	0.327	0.291	0.147
PIF6	0.063	-0.194	-0.191	-0.114	-0.119	0.149	<b>0.745</b>	0.028	-0.236	0.121	0.122	-0.046	0.168
PWIQ1	0.030	0.097	-0.134	0.226	0.347	0.607	0.147	<b>0.810</b>	0.307	0.619	0.546	0.478	-0.003
PWIQ2	-0.083	0.128	-0.169	0.227	0.401	0.321	0.127	<b>0.626</b>	0.293	0.271	0.374	0.417	-0.177
PWIQ5	0.046	0.165	-0.124	0.317	0.483	0.522	0.152	<b>0.818</b>	0.381	0.585	0.488	0.578	-0.047
PWIQ6	-0.101	-0.104	-0.265	0.157	0.247	0.370	0.312	<b>0.598</b>	0.081	0.321	0.342	0.313	-0.162
PPF1	-0.060	0.202	0.040	0.287	0.411	0.329	0.001	0.355	<b>0.741</b>	0.325	0.314	0.377	-0.103
PPF2	-0.114	0.118	0.047	0.442	0.501	0.233	0.040	0.318	<b>0.936</b>	0.328	0.407	0.521	-0.197
PWSQ1	0.060	-0.009	-0.118	0.213	0.311	0.625	0.305	0.593	0.297	<b>0.786</b>	0.532	0.557	0.015
PWSQ2	-0.038	0.061	-0.102	0.134	0.361	0.488	0.339	0.473	0.308	<b>0.733</b>	0.591	0.467	0.005
PWSQ3	0.055	-0.047	-0.170	0.113	0.206	0.536	0.225	0.416	0.248	<b>0.746</b>	0.424	0.404	0.048
PWSQ4	0.021	0.010	-0.158	0.125	0.192	0.434	0.261	0.406	0.215	<b>0.587</b>	0.382	0.333	-0.018
PWSQ7	-0.044	0.059	-0.217	0.166	0.357	0.586	0.306	0.540	0.317	<b>0.831</b>	0.600	0.526	0.013
PWE1	-0.210	-0.021	-0.298	0.367	0.501	0.535	0.207	0.585	0.449	0.689	<b>0.860</b>	0.637	-0.230
PWE2	-0.247	0.069	-0.209	0.433	0.450	0.313	0.142	0.471	0.454	0.433	<b>0.793</b>	0.592	-0.319
PWE3	-0.193	-0.181	-0.369	0.259	0.270	0.390	0.432	0.429	0.175	0.488	<b>0.744</b>	0.434	-0.110
PWE4	-0.292	-0.128	-0.300	0.243	0.412	0.447	0.271	0.510	0.283	0.564	<b>0.866</b>	0.519	-0.240
PWE5	-0.118	0.019	-0.220	0.424	0.501	0.471	0.234	0.552	0.463	0.642	<b>0.833</b>	0.689	-0.108
PWE6	-0.277	-0.076	-0.291	0.255	0.408	0.264	0.252	0.438	0.251	0.420	<b>0.770</b>	0.465	-0.216
PWUA1	-0.189	-0.051	-0.297	0.305	0.431	0.559	0.251	0.588	0.299	0.703	0.773	<b>0.720</b>	-0.191
PWUA2	-0.178	0.166	-0.158	0.396	0.412	0.218	0.161	0.346	0.414	0.340	0.441	<b>0.674</b>	-0.279
PWUA3	-0.077	0.220	-0.044	0.454	0.540	0.158	0.078	0.388	0.424	0.400	0.472	<b>0.807</b>	-0.163
PWUA4	-0.005	0.148	-0.136	0.321	0.419	0.516	0.163	0.570	0.405	0.578	0.493	<b>0.766</b>	-0.130
PWUA5	-0.114	0.205	-0.019	0.480	0.581	0.240	0.029	0.451	0.483	0.331	0.426	<b>0.772</b>	-0.181
UDI1	0.593	0.132	0.222	-0.168	-0.270	-0.010	0.077	-0.014	-0.060	0.029	-0.172	-0.151	<b>0.793</b>
UDI2	0.539	0.068	0.282	-0.254	-0.203	0.039	0.222	-0.105	-0.121	0.085	-0.171	-0.186	<b>0.854</b>
UDI3	0.540	-0.017	0.228	-0.279	-0.295	-0.027	0.221	-0.142	-0.285	-0.066	-0.257	-0.275	<b>0.841</b>

**Table 11.1 Website Attributes Initial Model Loadings/Weights**

<b>REFLECTIVE INDICATORS</b>				
<b>Attitude Towards Unauthorized Downloading</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>ATUD1</b>	0.926	—	67.629	0.000
<b>ATUD2</b>	0.906	—	50.877	0.000
<b>ATUD3</b>	0.848	—	20.729	0.000
<b>ATUD4</b>	0.849	—	25.060	0.000
<b>ATUD5</b>	0.909	—	25.792	0.000
<b>Perceived Cost</b>				
<b>PC1</b>	0.648	—	4.163	0.000
<b>PC2</b>	0.604	—	3.130	0.001
<b>PC3</b>	0.919	—	16.122	0.000
<b>Perceived Community Facilitation</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>PCMF1</b>	0.852	—	26.868	0.000
<b>PCMF2</b>	0.869	—	24.471	0.000
<b>PCMF3</b>	0.648	—	6.556	0.000
<b>PCMF4</b>	0.824	—	24.939	0.000
<b>PCMF5</b>	0.786	—	18.305	0.000
<b>PCMF6</b>	0.554	—	5.021	0.000
<b>Perceived Creativity Facilitation</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>PCRF1</b>	0.872	—	47.872	0.000
<b>PCRF2</b>	0.793	—	23.448	0.000
<b>PCRF3</b>	0.546	—	5.011	0.000
<b>PCRF4</b>	0.890	—	53.892	0.000
<b>PCRF5</b>	0.760	—	13.228	0.000
<b>PCRF6</b>	0.640	—	7.845	0.000
<b>Perceived Ease of Use</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>PEOU1</b>	0.765	—	11.819	0.000
<b>PEOU2</b>	0.746	—	12.402	0.000
<b>PEOU3</b>	0.569	—	6.043	0.000
<b>PEOU4</b>	0.807	—	19.725	0.000
<b>PEOU5</b>	0.837	—	25.601	0.000
<b>Perceived Procedural Fairness</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>PPF1</b>	0.741	—	2.694	0.008
<b>PPF2</b>	0.936	—	7.154	0.000

**Table 11.2 Website Attributes Initial Model Loadings/Weights**

REFLECTIVE INDICATORS				
<b>Perceived Interactional Fairness</b>				
Item	Loading	Weight	T Statistics	P Value
PIF1	0.513	—	1.355	0.178
PIF2	0.702	—	2.034	0.044
PIF6	0.745	—	2.564	0.011
<b>Perceived Information Quality</b>				
Item	Loading	Weight	T Statistics	P Value
PWIQ1	0.810	—	24.064	0.000
PWIQ2	0.626	—	6.012	0.000
PWIQ5	0.818	—	24.574	0.000
PWIQ6	0.598	—	5.153	0.000
<b>Attitude Towards Unauthorized Downloading</b>				
Item	Loading	Weight	T Statistics	P Value
PWSQ1	0.786	—	21.344	0.000
PWSQ2	0.733	—	11.585	0.000
PWSQ3	0.746	—	10.065	0.000
PWSQ4	0.587	—	8.607	0.000
PWSQ7	0.831	—	22.417	0.000
<b>Perceived Website Enjoyment</b>				
Item	Loading	Weight	T Statistics	P Value
PWE1	0.860	—	32.860	0.000
PWE2	0.793	—	19.398	0.000
PWE3	0.744	—	15.660	0.000
PWE4	0.866	—	34.928	0.000
PWE5	0.833	—	27.240	0.000
PWE6	0.770	—	15.693	0.000
<b>Perceived Website Usefulness</b>				
Item	Loading	Weight	T Statistics	P Value
PWUA1	0.720	—	15.652	0.000
PWUA2	0.674	—	9.784	0.000
PWUA3	0.807	—	21.554	0.000
PWUA4	0.766	—	16.578	0.000
PWUA5	0.772	—	21.619	0.000

<b>Table 11.3 Website Attributes Initial Model Loadings/Weights</b>				
<b>REFLECTIVE INDICATORS</b>				
<b>Attitude Towards Unauthorized Downloading</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>UDI1</b>	0.793	—	16.619	0.000
<b>UDI2</b>	0.854	—	24.312	0.000
<b>UDI3</b>	0.841	—	19.489	0.000
<b>FORMATIVE INDICATORS</b>				
<b>Perceived Distributed Fairness</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>EqArt</b>	—	0.794	1.308	0.193
<b>EqLbl</b>	—	-1.045	1.109	0.277
<b>EqVndr</b>	—	0.825	1.378	0.170

### 5.4.3 Structural Model Assessment

The overall fit of the model appeared to be reasonably good. The standardized path coefficients and their significance are noted in Figure 15 below. The explained variance associated with unauthorized downloading intention was relatively high with an r-square value of 0.535. The impact of perceived cost and attitude toward unauthorized downloading was large and significant with p-values < 0.01. These results were consistent with other studies. Attitude toward unauthorized downloading intention was the most important factor with a coefficient of 0.580. Perceived cost had a smaller, but substantial influence on unauthorized downloading intention with a coefficient of 0.248.

On the core question of whether justice influenced unauthorized downloading intention, the results were decidedly mixed. Only perceived procedural fairness showed a significant relationship with unauthorized downloading intention with a coefficient of -0.15. There was essentially no relationship between perceived distributive fairness and unauthorized downloading intention as evidenced by a very small coefficient (-0.03) that was not significant. A significant

relationship between perceived interactional fairness and unauthorized downloading intention was indicated, but in the opposite direction hypothesized. Instead of a negative relationship, the relationship between perceived interactional fairness and unauthorized downloading intention was positive.

None of the TAM variables was found to have influenced perceived distributive fairness. The coefficients of perceived website usefulness and perceived website enjoyment were relatively high with values of 0.460 and  $-0.348$ , respectively, but they were not significant. Furthermore, the value of the coefficient associated with perceived website enjoyment was in the opposite direction hypothesized.

All four website attributes were found to have a significant relationship with their associated TAM constructs. Perceived community facilitation and perceived creativity facilitation were strongly linked to perceived website usefulness with significant path coefficients of 0.227 and 0.412, respectively. The explained variance associated with perceived website usefulness was relatively high with an r-square value of 0.510. In addition, perceived website information quality and perceived website system quality were strongly linked to perceived website ease of use with significant path coefficients of 0.330 and 0.504, respectively. The explained variance of perceived website ease of use was also relatively high with an r-square value of 0.579. The relationships among the TAM variables were reaffirmed; however, there was no causal support of any relationship between those variables and perceived distributed fairness.

## Results from the PLS Analysis – Website Attributes Initial Model

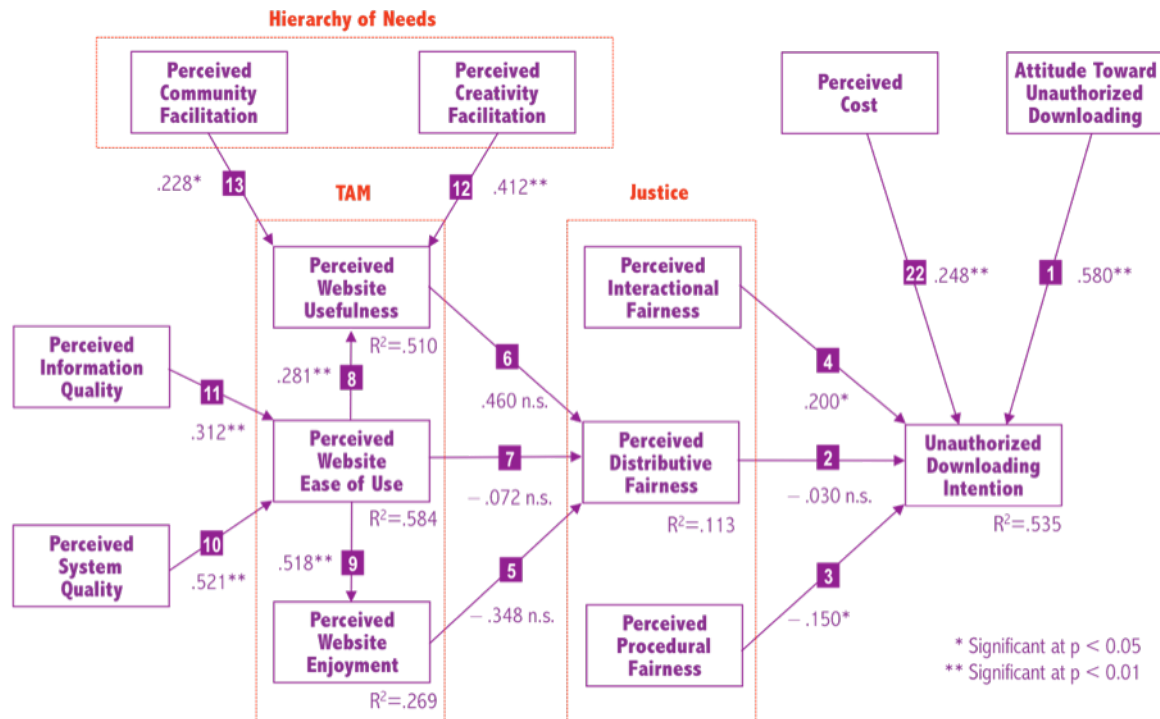


Figure 15

### 5.5 Website Attributes and Unauthorized Downloading Intention

The link between website attributes on unauthorized downloading intention from a justice theory perspective was not established. However, the question regarding the influence of website attributes remained. In the revised model, without the mediating variable of perceived distributed fairness, a strong link between website attributes and unauthorized downloading intention was revealed. Subjects that found a music website interface useful and easy to use were less inclined to engage in unauthorized file sharing. Important specific exchange interface attributes were perceived website information quality, perceived website system quality, perceived creativity facilitation, and perceived community facilitation.

#### 5.5.1 Reliability

In this second model, which addressed the impact of website attributes on unauthorized downloading intention from a TAM perspective, item reliability and internal consistency was

reasonably good. Table 12 below summarizes the results. Cronbach’s alpha was well above the recommended value of 0.70 for most constructs. The exceptions were perceived cost and perceived website information quality, which only exceeded a value of 0.60. As noted earlier, this would be considered suitable for an exploratory study only [48]. However, given that Cronbach’s alpha can be biased with short scales it was important to examine other measures of item reliability.

The composite reliability statistic for every construct, which is a more robust measure of item reliability, surpassed the recommended value of 0.70. In addition, the AVE was well above the minimum threshold of 0.50 for every construct. One could conclude from these results that the reliability of the measurement instrument was reasonably adequate.

**Table 12. Website Attributes Revised Model Results Overview**

	AVE	Composite Reliability	R Square	Cronbach's Alpha	Communality	Redundancy
ATUD	0.789	0.949		0.933	0.789	
PC	0.542	0.774		0.624	0.542	
PCMF	0.584	0.892		0.856	0.584	
PCRF	0.578	0.889		0.850	0.578	
PEOU	0.563	0.864	0.580	0.806	0.563	0.176
PWIQ	0.519	0.809		0.691	0.519	
PWSQ	0.537	0.821		0.710	0.537	
PWE	0.661	0.921	0.262	0.897	0.661	0.165
PWU	0.561	0.864	0.512	0.803	0.561	0.104
UDI	0.689	0.869	0.510	0.774	0.689	0.309

**5.5.2 Measurement Model Assessment**

The measurement model associated with the exploration of website attributes and their impact on unauthorized downloading intention revealed that the convergent validity of the constructs was good. As noted in Table 15.1 and 15.2, each item loaded highly on its latent construct and with a

significant t-value. In addition, the AVE exceeded 0.50 for all constructs, which further supported convergent validity.

The discriminant validity of the constructs was also satisfactory. As noted in Table 13, the square root of the AVE associated with each construct, was greater than the correlations between that construct and others indicating that the construct shared more variance with its own measures. As noted in Table 14, no item loaded higher on latent constructs other than the construct it was designed to measure with one exception. PWUA1 loaded slightly higher on perceived website enjoyment than on perceived website usefulness. As suggested earlier, this could be attributed to links between website usefulness, product usefulness, and enjoyment, which was discussed in section 5.4.2. Additional evidence in support of discriminant validity was the fact that the correlations among all constructs were below the threshold of 0.90, which is noted in Table 13.

**Table 13. Website Attributes Revised Model Correlations (Square Root AVE in Bold)**

	ATUD	COST	PCMF	PCRF	PEOU	PWIQ	PWSQ	PWE	PWU	UDI
ATUD	<b>0.888</b>									
COST	0.173	<b>0.736</b>								
PCMF	-0.114	-0.059	<b>0.764</b>							
PCRF	-0.244	-0.068	0.609	<b>0.760</b>						
PEOU	0.047	-0.177	0.165	0.323	<b>0.750</b>					
PWIQ	-0.016	-0.222	0.323	0.509	0.658	<b>0.720</b>				
PWSQ	0.016	-0.205	0.206	0.389	0.728	0.661	<b>0.741</b>			
PWE	-0.270	-0.343	0.409	0.527	0.511	0.619	0.678	<b>0.813</b>		
PWU	-0.151	-0.176	0.522	0.639	0.459	0.631	0.633	0.700	<b>0.749</b>	
UDI	0.672	0.294	-0.280	-0.309	0.001	-0.104	0.020	-0.250	-0.248	<b>0.830</b>

**Table 14. Website Attributes Revised Model Cross Loadings**

	ATUD	PC	PCMF	PCRF	PEOU	PWIQ	PWSQ	PWE	PWU	UDI
ATUD1	<b>0.926</b>	0.180	-0.054	-0.183	0.091	0.009	0.021	-0.248	-0.113	0.641
ATUD2	<b>0.906</b>	0.195	-0.118	-0.204	0.071	-0.003	0.031	-0.230	-0.130	0.625
ATUD3	<b>0.848</b>	0.141	-0.151	-0.233	0.029	0.001	0.031	-0.240	-0.101	0.549
ATUD4	<b>0.849</b>	0.133	-0.114	-0.244	-0.053	-0.077	-0.019	-0.239	-0.165	0.509
ATUD5	<b>0.909</b>	0.118	-0.078	-0.231	0.051	-0.012	0.004	-0.244	-0.165	0.644
PC1	0.094	<b>0.645</b>	-0.062	-0.079	-0.254	-0.190	-0.229	-0.194	-0.160	0.128
PC2	0.026	<b>0.601</b>	0.105	0.054	-0.035	-0.088	-0.124	-0.146	-0.034	0.108
PC3	0.194	<b>0.922</b>	-0.093	-0.081	-0.132	-0.201	-0.150	-0.348	-0.168	0.319
PCMF1	-0.042	-0.067	<b>0.852</b>	0.462	0.120	0.202	0.145	0.341	0.439	-0.175
PCMF2	-0.172	-0.060	<b>0.868</b>	0.566	0.165	0.292	0.156	0.306	0.458	-0.304
PCMF3	-0.015	-0.139	<b>0.649</b>	0.365	0.146	0.285	0.166	0.326	0.253	-0.138
PCMF4	-0.096	-0.030	<b>0.825</b>	0.530	0.132	0.278	0.229	0.340	0.480	-0.234
PCMF5	-0.121	0.030	<b>0.786</b>	0.481	0.074	0.252	0.130	0.293	0.439	-0.302
PCMF6	-0.023	-0.056	<b>0.555</b>	0.342	0.157	0.191	0.121	0.319	0.230	-0.041
PCRF1	-0.201	-0.052	0.557	<b>0.872</b>	0.307	0.475	0.375	0.477	0.581	-0.275
PCRF2	-0.173	-0.063	0.443	<b>0.792</b>	0.350	0.507	0.437	0.416	0.554	-0.194
PCRF3	-0.161	-0.294	0.389	<b>0.547</b>	0.192	0.308	0.190	0.407	0.304	-0.263
PCRF4	-0.236	-0.032	0.550	<b>0.890</b>	0.296	0.432	0.361	0.483	0.608	-0.291
PCRF5	-0.181	0.164	0.462	<b>0.760</b>	0.068	0.229	0.187	0.256	0.441	-0.192
PCRF6	-0.157	-0.152	0.340	<b>0.640</b>	0.209	0.321	0.100	0.367	0.312	-0.217
PEOU1	0.062	-0.154	0.064	0.161	<b>0.765</b>	0.490	0.534	0.403	0.360	0.051
PEOU2	0.048	-0.212	0.004	0.115	<b>0.746</b>	0.416	0.487	0.292	0.262	0.038
PEOU3	-0.085	-0.109	-0.080	0.098	<b>0.565</b>	0.230	0.385	0.280	0.086	0.013
PEOU4	0.055	-0.122	0.314	0.412	<b>0.808</b>	0.667	0.634	0.507	0.520	-0.073
PEOU5	0.045	-0.091	0.160	0.308	<b>0.837</b>	0.531	0.631	0.376	0.347	0.008
PWIQ1	0.030	-0.133	0.226	0.347	0.608	<b>0.810</b>	0.619	0.544	0.482	0.000
PWIQ2	-0.083	-0.169	0.226	0.401	0.321	<b>0.626</b>	0.271	0.378	0.418	-0.176
PWIQ5	0.046	-0.123	0.317	0.483	0.523	<b>0.818</b>	0.585	0.486	0.578	-0.044
PWIQ6	-0.101	-0.266	0.158	0.247	0.369	<b>0.597</b>	0.321	0.337	0.319	-0.163
PWSQ1	0.060	-0.117	0.213	0.311	0.625	0.593	<b>0.786</b>	0.527	0.562	0.015
PWSQ2	-0.038	-0.101	0.134	0.361	0.488	0.473	<b>0.733</b>	0.588	0.473	0.006
PWSQ3	0.055	-0.169	0.113	0.206	0.536	0.416	<b>0.746</b>	0.419	0.408	0.047
PWSQ4	0.021	-0.158	0.125	0.193	0.434	0.405	<b>0.587</b>	0.376	0.339	-0.019
PWSQ7	-0.044	-0.216	0.166	0.358	0.586	0.540	<b>0.831</b>	0.591	0.533	0.016
PWE1	-0.210	-0.298	0.367	0.501	0.535	0.585	0.689	<b>0.859</b>	0.645	-0.229
PWE2	-0.247	-0.209	0.433	0.450	0.314	0.471	0.433	<b>0.809</b>	0.597	-0.317
PWE3	-0.193	-0.370	0.259	0.271	0.389	0.429	0.488	<b>0.729</b>	0.442	-0.111
PWE4	-0.292	-0.301	0.243	0.413	0.446	0.510	0.564	<b>0.868</b>	0.526	-0.240
PWE5	-0.118	-0.220	0.424	0.501	0.472	0.552	0.642	<b>0.828</b>	0.697	-0.106
PWE6	-0.277	-0.292	0.255	0.408	0.263	0.438	0.420	<b>0.776</b>	0.471	-0.216
PWUA1	-0.189	-0.297	0.305	0.431	0.559	0.588	0.703	0.768	<b>0.734</b>	-0.188
PWUA2	-0.178	-0.159	0.396	0.412	0.219	0.346	0.340	0.443	<b>0.681</b>	-0.276
PWUA3	-0.077	-0.045	0.454	0.540	0.159	0.388	0.400	0.475	<b>0.798</b>	-0.163
PWUA4	-0.005	-0.136	0.320	0.419	0.516	0.570	0.578	0.488	<b>0.764</b>	-0.129
PWUA5	-0.114	-0.019	0.480	0.581	0.241	0.451	0.331	0.431	<b>0.763</b>	-0.180
UDI1	0.593	0.223	-0.168	-0.270	-0.010	-0.014	0.029	-0.177	-0.151	<b>0.806</b>
UDI2	0.539	0.283	-0.254	-0.203	0.039	-0.105	0.085	-0.179	-0.189	<b>0.850</b>
UDI3	0.540	0.228	-0.279	-0.296	-0.027	-0.142	-0.066	-0.266	-0.279	<b>0.832</b>

**Table 15.1 Website Attributes Revised Model Loadings/Weights**

<b>REFLECTIVE INDICATORS</b>				
<b>Attitude Towards Unauthorized Downloading</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>ATUD1</b>	0.926	—	65.740	0.000
<b>ATUD2</b>	0.906	—	49.624	0.000
<b>ATUD3</b>	0.848	—	18.599	0.000
<b>ATUD4</b>	0.849	—	27.350	0.000
<b>ATUD5</b>	0.909	—	26.011	0.000
<b>Perceived Cost</b>				
<b>PC1</b>	0.645	—	3.812	0.000
<b>PC2</b>	0.601	—	3.880	0.000
<b>PC3</b>	0.922	—	17.133	0.000
<b>Perceived Community Facilitation</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>PCMF1</b>	0.852	—	23.174	0.000
<b>PCMF2</b>	0.868	—	25.820	0.000
<b>PCMF3</b>	0.649	—	6.189	0.000
<b>PCMF4</b>	0.825	—	23.106	0.000
<b>PCMF5</b>	0.786	—	18.502	0.000
<b>PCMF6</b>	0.555	—	4.585	0.000
<b>Perceived Creativity Facilitation</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>PCRF1</b>	0.872	—	47.567	0.000
<b>PCRF2</b>	0.792	—	19.454	0.000
<b>PCRF3</b>	0.547	—	5.339	0.000
<b>PCRF4</b>	0.890	—	49.694	0.000
<b>PCRF5</b>	0.760	—	14.178	0.000
<b>PCRF6</b>	0.640	—	7.372	0.000
<b>Perceived Ease of Use</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>PEOU1</b>	0.767	—	12.128	0.000
<b>PEOU2</b>	0.744	—	14.442	0.000
<b>PEOU3</b>	0.564	—	5.674	0.000
<b>PEOU4</b>	0.809	—	19.085	0.000
<b>PEOU5</b>	0.837	—	25.086	0.000
<b>Perceived Information Quality</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>PWIQ1</b>	0.810	—	22.641	0.000
<b>PWIQ2</b>	0.626	—	5.932	0.000
<b>PWIQ5</b>	0.818	—	23.856	0.000
<b>PWIQ6</b>	0.597	—	5.152	0.000

**Table 15.2 Website Attributes Revised Model Loadings/Weights**

REFLECTIVE INDICATORS				
Attitude Towards Unauthorized Downloading				
Item	Loading	Weight	T Statistics	P Value
PWSQ1	0.823	—	20.366	0.000
PWSQ2	0.703	—	13.294	0.000
PWSQ3	0.745	—	10.689	0.000
PWSQ4	0.648	—	7.806	0.000
PWSQ7	0.831	—	22.599	0.000
Perceived Website Enjoyment				
Item	Loading	Weight	T Statistics	P Value
PWE1	0.859	—	37.942	0.000
PWE2	0.809	—	20.521	0.000
PWE3	0.729	—	14.874	0.000
PWE4	0.868	—	39.270	0.000
PWE5	0.828	—	28.489	0.000
PWE6	0.776	—	15.485	0.000
Perceived Website Usefulness				
Item	Loading	Weight	T Statistics	P Value
PWUA1	0.734	—	15.627	0.000
PWUA2	0.681	—	8.850	0.000
PWUA3	0.798	—	21.239	0.000
PWUA4	0.764	—	15.254	0.000
PWUA5	0.763	—	20.994	0.000
Attitude Towards Unauthorized Downloading				
Item	Loading	Weight	T Statistics	P Value
UDI1	0.806	—	18.598	0.000
UDI2	0.850	—	23.541	0.000
UDI3	0.832	—	18.082	0.000

### ***5.5.3 Structural Model Assessment***

The overall fit of the model was satisfactory. The standardized path coefficients and their significance are indicated in Figure 14 below. The explained variance associated with unauthorized downloading intention was relatively high with an r-square value of 0.510. The impact of perceived cost and attitude towards unauthorized downloading was large and significant, and was also consistent with other studies. Attitude towards unauthorized downloading intention was the most important factor with a coefficient of 0.636 and p-value < 0.01. Perceived cost had a smaller, but substantial influence on unauthorized downloading intention with a coefficient of 0.195 and p-value < 0.05.

On the core question of whether the TAM variables influenced unauthorized downloading intention, the results were clear. Perceived website usefulness showed a significant relationship with unauthorized downloading intention with a coefficient of  $-0.225$  and p-value < 0.05. There was essentially no relationship revealed between perceived website ease of use and unauthorized downloading intention or perceived website enjoyment and unauthorized downloading intention directly. However, the impact indirectly of perceived website ease of use via perceived website usefulness was supported with a coefficient of .290, which was significant with a p-value < 0.01.

The relevance of the website attributes examined in this study were supported. The relationships involving perceived website usefulness and perceived community facilitation was supported with a coefficient of .226 and p-value < 0.01. The link between perceived website usefulness and perceived creativity facilitation was also supported with a coefficient of 0.408 and p-value < 0.05. Perceived community facilitation, perceived creativity facilitation, and perceived website usefulness combined to account for more than half the explained variance with an r-square value of 0.512.

The link between quality and unauthorized downloading intention was also supported. Perceived website information quality was positively related to perceived website ease of use with a coefficient of 0.313, which was significant with a p-value < 0.01. In addition, perceived website system quality was positively related to perceived website ease of use, with a coefficient of .520, which was significant with a p-value < 0.01. Both quality variables accounted for a great deal of variation, evidenced by an r-square value of 0.580.

### Results from the PLS Analysis – Website Attributes Revised Model

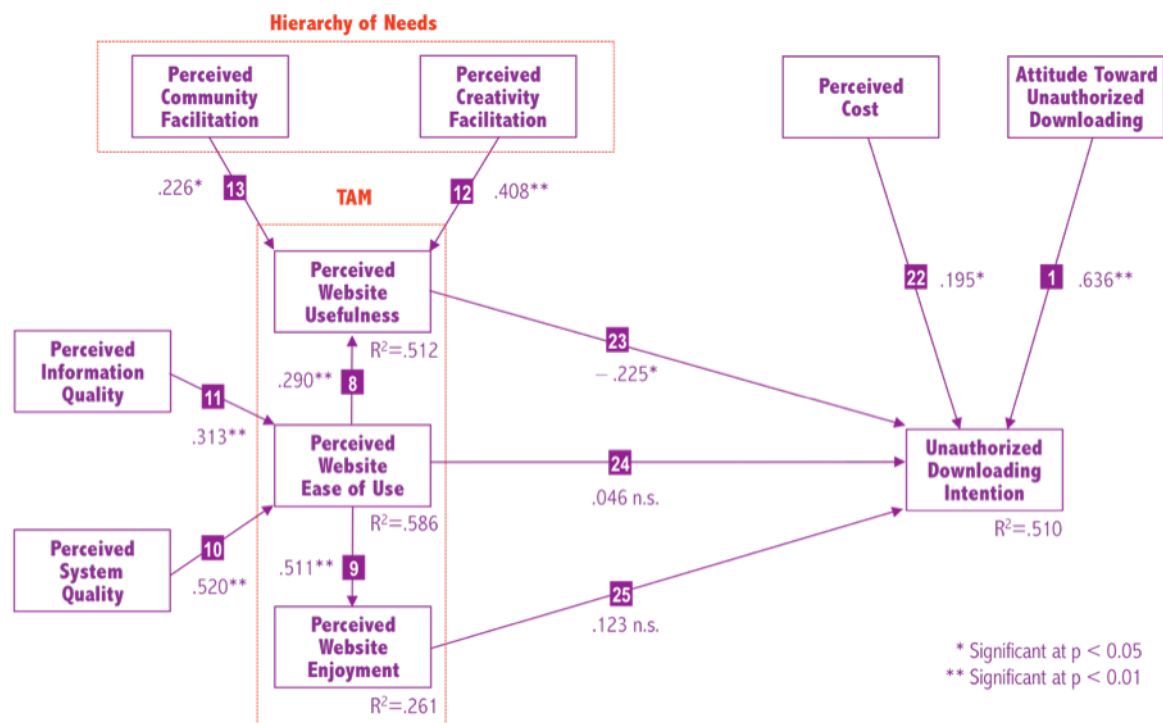


Figure 16

### 5.6 Product Attributes, Justice, and Unauthorized Downloading Intention

The third model addressed the influence of product attributes on unauthorized downloading intention from a TAM and justice theory perspective. The two primary variables associated with the TAM theory were perceived product usefulness and perceived product enjoyment. As was the case regarding the impact of website attributes on perceived distributive fairness, the results were also decidedly mixed. Consistent with the previous model, perceived distributive fairness

appeared to have had no impact on unauthorized downloading intention. Furthermore, the relationship of perceived product usefulness and perceived product enjoyment on perceived distributed fairness was not supported. However, there appeared to be a significant relationship between various product attributes and perceived product usefulness and perceived product enjoyment.

### 5.6.1 Reliability

The composite reliability statistic, which is a more robust measure, surpassed the recommended value of 0.70 for every construct, except perceived cost. Composite reliability for perceived cost was 0.624. The AVE for every construct was above the minimum threshold of 0.50. One could conclude, therefore, that the reliability of the measurement instrument was reasonably adequate.

<b>Table 16. Product Attributes Initial Model Results Overview</b>						
	<b>AVE</b>	<b>Composite Reliability</b>	<b>R Square</b>	<b>Cronbach's Alpha</b>	<b>Communality</b>	<b>Redundancy</b>
ATUD	0.789	0.949		0.933	0.789	
PC	0.542	0.773		0.624	0.542	
PDF			0.025		0.264	0.006
PEPM	0.658	0.885		0.828	0.658	
PEPPS	0.596	0.855		0.776	0.596	
PEPS	0.570	0.868		0.809	0.570	
PEPSS	0.563	0.834		0.732	0.563	
PEPT	0.542	0.852		0.783	0.542	
PEPTS	0.621	0.831		0.700	0.621	
PPE	0.626	0.909	0.220	0.881	0.626	0.090
PPU	0.649	0.902	0.449	0.865	0.649	0.201
UDI	0.688	0.869	0.486	0.774	0.688	0.310

### 5.6.2 Measurement Model Assessment

The measurement model associated with the exploration of product attributes and their impact on unauthorized downloading intention revealed that the convergent validity of the constructs was good. Note that in Table 19.1 and 19.2, each item loaded highly on its latent construct and with a significant t-value. As noted earlier, AVE exceeded 0.50 for all constructs. This supported the assertion of convergent validity for the constructs associated with this model.

Discriminant validity of the construct measures was also satisfactory. In Table 17, the square root of the AVE associated with each construct was greater than the correlations between that construct and others indicating that the construct shared more variance with its own measures. In addition, as noted in Table 18, no item loaded higher on other latent constructs than the construct it was designed to measure. In Table 17, we can see that discriminant validity was further support by the fact that the correlations among all constructs were below the threshold of 0.90.

<b>Table 17. Product Attributes Initial Model Correlations (Square Root AVE in Bold)</b>												
	ATUD	COST	PDF	PEPM	PEPPS	PEPS	PEPSS	PEPT	PEPTS	PPE	PPU	UDI
ATUD	<b>0.888</b>											
COST	0.174	<b>0.736</b>										
PDF	-0.255	-0.098	<b>NA</b>									
PEPM	-0.091	0.033	-0.053	<b>0.811</b>								
PEPPS	0.012	-0.152	-0.008	0.405	<b>0.772</b>							
PEPS	-0.076	-0.249	0.067	0.335	0.536	<b>0.755</b>						
PEPSS	0.012	-0.238	0.034	0.422	0.723	0.536	<b>0.750</b>					
PEPT	-0.052	-0.305	-0.063	0.141	0.417	0.455	0.400	<b>0.736</b>				
PEPTS	-0.030	-0.233	0.064	0.419	0.639	0.525	0.726	0.564	<b>0.788</b>			
PPE	-0.258	-0.201	0.111	0.463	0.390	0.401	0.280	0.399	0.406	<b>0.791</b>		
PPU	-0.205	-0.186	0.004	0.580	0.466	0.458	0.407	0.398	0.523	0.737	<b>0.806</b>	
UDI	0.673	0.295	-0.173	-0.237	-0.050	-0.115	-0.076	-0.036	-0.155	-0.297	-0.324	<b>0.830</b>

**Table 18. Product Attributes Initial Model Cross Loadings**

	ATUD	PC	PDF	PEPM	PEPPS	PEPS	PEPSS	PEPT	PEPTS	PPE	PPU	UDI
ATUD1	<b>0.926</b>	0.180	-0.249	-0.048	0.027	-0.064	0.063	-0.047	0.013	-0.240	-0.196	0.641
ATUD2	<b>0.906</b>	0.195	-0.220	-0.044	0.027	-0.020	0.049	-0.039	-0.031	-0.231	-0.155	0.626
ATUD3	<b>0.847</b>	0.142	-0.230	-0.078	0.007	-0.099	-0.014	-0.103	0.037	-0.221	-0.163	0.549
ATUD4	<b>0.849</b>	0.133	-0.212	-0.162	-0.083	-0.107	-0.071	-0.060	-0.102	-0.276	-0.223	0.510
ATUD5	<b>0.909</b>	0.118	-0.223	-0.088	0.056	-0.059	0.007	0.007	-0.057	-0.190	-0.180	0.645
PC1	0.094	<b>0.644</b>	-0.053	-0.109	-0.123	-0.279	-0.252	-0.267	-0.192	-0.212	-0.227	0.127
PC2	0.026	<b>0.600</b>	-0.054	0.033	-0.057	-0.075	-0.049	-0.174	0.016	-0.096	-0.118	0.107
PC3	0.194	<b>0.923</b>	-0.096	0.077	-0.141	-0.208	-0.211	-0.257	-0.251	-0.160	-0.126	0.320
EqCalcArt	0.027	-0.149	<b>-0.083</b>	0.252	0.090	0.126	0.163	-0.065	0.082	0.032	0.087	-0.015
EqCalcLbl	-0.196	-0.174	<b>0.784</b>	0.113	0.050	0.135	0.130	-0.094	0.105	0.112	0.058	-0.154
EqCalcVndr	-0.108	-0.023	<b>0.412</b>	0.205	-0.037	0.111	0.031	-0.158	0.043	0.111	0.110	-0.089
PEPM1	-0.089	0.033	-0.073	<b>0.833</b>	0.308	0.275	0.337	0.056	0.304	0.408	0.468	-0.242
PEPM2	0.008	0.042	-0.038	<b>0.803</b>	0.358	0.267	0.370	0.171	0.376	0.341	0.392	-0.107
PEPM4	-0.094	0.009	-0.031	<b>0.873</b>	0.372	0.321	0.419	0.127	0.446	0.440	0.592	-0.215
PEPM5	-0.109	0.030	-0.031	<b>0.729</b>	0.267	0.206	0.217	0.113	0.199	0.286	0.385	-0.189
PEPPS1	-0.075	-0.057	0.100	0.415	<b>0.808</b>	0.421	0.642	0.232	0.610	0.335	0.408	-0.130
PEPPS2	0.036	-0.121	-0.083	0.267	<b>0.790</b>	0.507	0.492	0.377	0.429	0.303	0.391	-0.026
PEPPS4	0.080	-0.112	0.006	0.290	<b>0.732</b>	0.235	0.528	0.251	0.444	0.334	0.279	-0.051
PEPPS5	0.020	-0.191	-0.054	0.265	<b>0.756</b>	0.452	0.570	0.429	0.475	0.238	0.340	0.066
PEPS1	-0.115	-0.221	0.057	0.285	0.443	<b>0.814</b>	0.440	0.351	0.424	0.294	0.370	-0.104
PEPS2	-0.005	-0.113	-0.023	0.274	0.442	<b>0.821</b>	0.459	0.411	0.455	0.343	0.390	-0.025
PEPS3	-0.045	-0.236	0.156	0.050	0.317	<b>0.626</b>	0.282	0.263	0.272	0.247	0.162	-0.029
PEPS4	-0.052	-0.129	0.064	0.383	0.336	<b>0.714</b>	0.381	0.291	0.403	0.336	0.421	-0.165
PEPS5	-0.078	-0.280	0.025	0.216	0.481	<b>0.782</b>	0.443	0.392	0.399	0.273	0.341	-0.105
PEPSS1	-0.022	-0.210	0.105	0.292	0.624	0.457	<b>0.856</b>	0.390	0.674	0.224	0.366	-0.074
PEPSS3	0.069	-0.194	-0.004	0.291	0.466	0.319	<b>0.709</b>	0.181	0.442	0.170	0.248	-0.065
PEPSS4	-0.014	-0.222	0.032	0.324	0.610	0.448	<b>0.839</b>	0.322	0.631	0.277	0.350	-0.118
PEPSS5	0.029	-0.060	-0.078	0.402	0.443	0.372	<b>0.558</b>	0.278	0.369	0.149	0.229	0.066
PEPT1	-0.027	-0.328	-0.010	0.134	0.317	0.327	0.319	<b>0.806</b>	0.459	0.313	0.312	-0.001
PEPT2	0.017	-0.212	0.023	-0.084	0.134	0.141	0.059	<b>0.512</b>	0.139	0.172	0.137	0.054
PEPT3	-0.025	-0.149	-0.089	0.100	0.397	0.422	0.330	<b>0.780</b>	0.460	0.314	0.306	-0.071
PEPT4	-0.047	-0.217	-0.101	0.112	0.281	0.338	0.290	<b>0.802</b>	0.472	0.347	0.353	-0.005
PEPT5	-0.090	-0.234	-0.022	0.187	0.362	0.394	0.402	<b>0.738</b>	0.456	0.287	0.308	-0.084
PEPTS1	-0.068	-0.174	0.039	0.227	0.484	0.412	0.600	0.432	<b>0.770</b>	0.233	0.347	-0.109
PEPTS3	0.034	-0.218	-0.008	0.385	0.583	0.430	0.516	0.494	<b>0.812</b>	0.428	0.486	-0.124
PEPTS4	-0.057	-0.150	0.137	0.358	0.423	0.398	0.624	0.397	<b>0.781</b>	0.264	0.380	-0.133
PPE1	-0.136	-0.062	-0.098	0.485	0.435	0.408	0.280	0.334	0.353	<b>0.843</b>	0.714	-0.214
PPE2	-0.222	-0.096	0.080	0.461	0.308	0.278	0.165	0.216	0.285	<b>0.765</b>	0.706	-0.270
PPE3	-0.229	-0.210	0.218	0.228	0.286	0.319	0.242	0.358	0.347	<b>0.797</b>	0.512	-0.203
PPE4	-0.263	-0.246	0.116	0.308	0.168	0.306	0.153	0.393	0.326	<b>0.797</b>	0.513	-0.274
PPE5	-0.147	-0.074	0.122	0.405	0.403	0.328	0.293	0.249	0.317	<b>0.740</b>	0.549	-0.228
PPE6	-0.227	-0.247	0.074	0.354	0.268	0.246	0.189	0.303	0.283	<b>0.801</b>	0.539	-0.228
PPU1	-0.172	-0.263	0.006	0.514	0.453	0.390	0.382	0.394	0.504	0.738	<b>0.818</b>	-0.267
PPU2	-0.169	-0.160	0.010	0.460	0.367	0.394	0.372	0.308	0.412	0.506	<b>0.844</b>	-0.263
PPU3	-0.127	-0.147	0.011	0.355	0.393	0.308	0.278	0.312	0.372	0.533	<b>0.756</b>	-0.258
PPU5	-0.133	-0.034	-0.030	0.444	0.254	0.358	0.222	0.281	0.388	0.509	<b>0.757</b>	-0.218
PPU6	-0.214	-0.121	0.018	0.538	0.396	0.387	0.364	0.298	0.414	0.645	<b>0.848</b>	-0.298
UDI1	0.593	0.223	-0.212	-0.183	-0.034	-0.089	-0.113	0.007	-0.111	-0.217	-0.188	<b>0.811</b>
UDI2	0.539	0.283	-0.129	-0.101	-0.024	-0.022	-0.007	-0.056	-0.127	-0.242	-0.245	<b>0.849</b>
UDI3	0.540	0.228	-0.084	-0.308	-0.067	-0.177	-0.066	-0.043	-0.149	-0.282	-0.381	<b>0.828</b>

**Table 19.1 Product Attributes Initial Model Loadings/Weights**

<b>REFLECTIVE INDICATORS</b>				
<b>Attitude Towards Unauthorized Downloading</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>ATUD1</b>	0.926	—	69.789	0.000
<b>ATUD2</b>	0.906	—	48.519	0.000
<b>ATUD3</b>	0.847	—	17.664	0.000
<b>ATUD4</b>	0.849	—	24.777	0.000
<b>ATUD5</b>	0.909	—	30.706	0.000
<b>Perceived Cost</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>PC1</b>	0.644	—	4.158	0.000
<b>PC2</b>	0.600	—	3.637	0.000
<b>PC3</b>	0.923	—	11.712	0.000
<b>Perceived Ease of Product Modification</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>PEPM1</b>	0.833	—	19.101	0.000
<b>PEPM2</b>	0.803	—	16.478	0.000
<b>PEPM4</b>	0.873	—	44.253	0.000
<b>PEPM5</b>	0.729	—	12.050	0.000
<b>Perceived Ease of Product Platform Shifting</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>PEPPS1</b>	0.808	—	19.299	0.000
<b>PEPPS2</b>	0.790	—	17.472	0.000
<b>PEPPS4</b>	0.732	—	12.109	0.000
<b>PEPPS5</b>	0.756	—	13.145	0.000
<b>Perceived Ease of Product Sharing</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>PEPS1</b>	0.814	—	19.837	0.000
<b>PEPS2</b>	0.821	—	20.052	0.000
<b>PEPS3</b>	0.626	—	5.590	0.000
<b>PEPS4</b>	0.714	—	12.002	0.000
<b>PEPS5</b>	0.782	—	12.808	0.000
<b>Perceived Ease of Product Space Shifting</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>PEPSS1</b>	0.856	—	24.161	0.000
<b>PEPSS3</b>	0.709	—	6.789	0.000
<b>PEPSS4</b>	0.839	—	18.673	0.000
<b>PEPSS5</b>	0.558	—	5.238	0.000

**Table 19.2 Product Attributes Initial Model Loadings/Weights**

<b>REFLECTIVE INDICATORS</b>				
<b>Perceived Ease of Product Trial</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>PEPT1</b>	0.806	—	18.520	0.000
<b>PEPT2</b>	0.512	—	3.682	0.000
<b>PEPT3</b>	0.780	—	15.980	0.000
<b>PEPT4</b>	0.802	—	16.409	0.000
<b>PEPT5</b>	0.738		11.405	0.000
<b>Perceived Ease of Product Time Shifting</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>PEPTS1</b>	0.770	—	9.993	0.000
<b>PEPTS3</b>	0.812	—	20.221	0.000
<b>PEPTS4</b>	0.781	—	12.842	0.000
<b>Perceived Product Enjoyment</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>PPE1</b>	0.843	—	30.641	0.000
<b>PPE2</b>	0.765	—	17.319	0.000
<b>PPE3</b>	0.797	—	13.002	0.000
<b>PPE4</b>	0.797	—	11.719	0.000
<b>PPE5</b>	0.740	—	12.518	0.000
<b>PPE6</b>	0.801		15.508	0.000
<b>Perceived Product Usefulness</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>PPU1</b>	0.818	—	22.823	0.000
<b>PPU2</b>	0.844	—	29.620	0.000
<b>PPU3</b>	0.756	—	15.936	0.000
<b>PPU4</b>	0.757	—	12.978	0.000
<b>PPU5</b>	0.848	—	20.094	0.000
<b>PPU6</b>	0.818		22.823	0.000
<b>Attitude Towards Unauthorized Downloading</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>UDI1</b>	0.811	—	18.311	0.000
<b>UDI2</b>	0.849	—	20.944	0.000
<b>UDI3</b>	0.828	—	17.483	0.000
<b>FORMATIVE INDICATORS</b>				
<b>Perceived Distributed Fairness — OK</b>				
<b>Item</b>	<b>Loading</b>	<b>Weight</b>	<b>T Statistics</b>	<b>P Value</b>
<b>EqArt</b>	—	-0.745	1.030	0.305
<b>EqLbl</b>	—	1.200	1.388	0.167
<b>EqVndr</b>	—	-0.005	0.008	0.993

### ***5.6.3 Structural Model Assessment***

The overall fit of the model appeared to be reasonably good. The standardized path coefficients and their significance are indicated in Figure 17 below. The explained variance associated with unauthorized downloading intention was substantial with an r-square value of 0.486. The impact of perceived cost and attitude towards unauthorized downloading was large and significant with p-values less than 0.05 and 0.01, respectively. These results were consistent with other results in this study. Attitude towards unauthorized downloading intention was the most important factor with a coefficient of 0.644. Perceived cost had a smaller, but substantial influence on unauthorized downloading intention with a coefficient of 0.184.

As in the previous model that examined website attributes, there was essentially no relationship between perceived distributive fairness and unauthorized downloading intention, as evidenced by a very small coefficient ( $-0.025$ ), which is not significant. None of the TAM variables were found to have influenced perceived distributive fairness. The coefficients of perceived product usefulness and perceived product enjoyment were modest with values of 0.169 and 0.235, respectively, but they were not significant. Furthermore, the value of the coefficient associated with perceived product enjoyment was in the opposite direction hypothesized.

Four of the six product attributes were found to have a significant relationship with their respective TAM constructs. Perceived ease of product time shifting and perceived ease of product modification were positively linked to perceived product usefulness. The significant path coefficients were 0.334 and 0.428, respectively with p-values  $< 0.01$ . The explained variance associated with perceived product usefulness was relatively high with an r-square value of 0.449. In addition, perceived ease of product trial and perceived ease of product sharing were positively linked to perceived product enjoyment. The significant path coefficients were 0.273 and 0.277,

respectively, with p-values < 0.01. It is worth noting that perceived ease of product platform shifting was significant with a p-value < 0.10, but current professional practice is to only include constructs that are significant at 0.05 or better.

### Results from the PLS Analysis – Product Attributes Revised Model

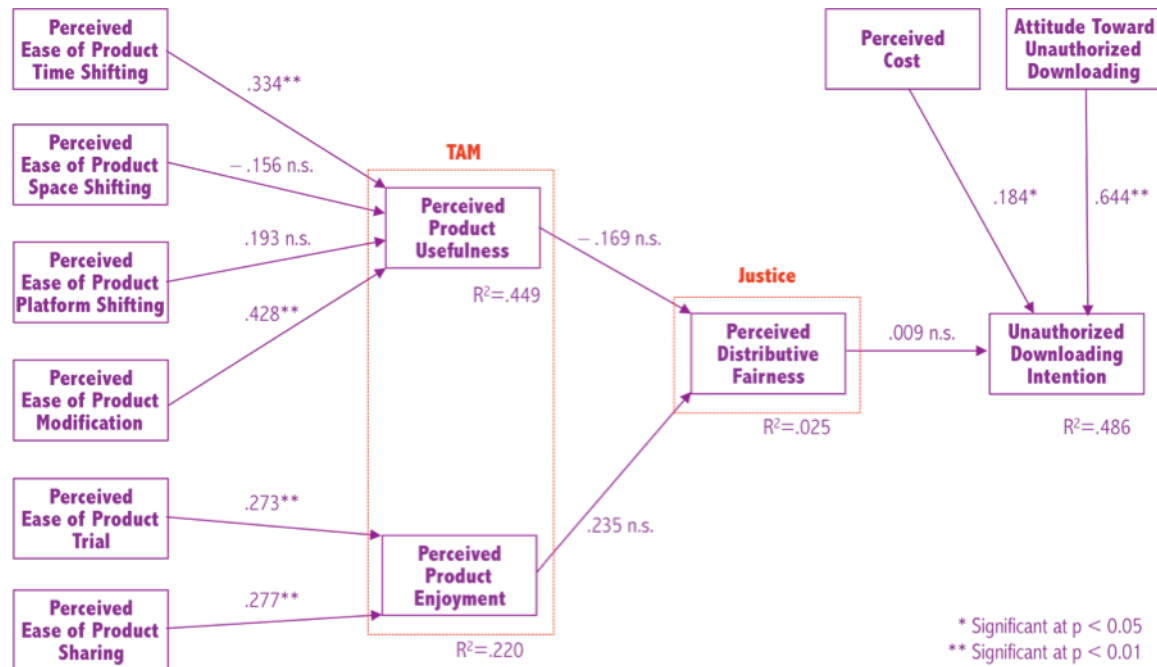


Figure 17

### 5.7 Product Attributes and Unauthorized Downloading Intention

The link between product attributes on unauthorized downloading intention from a justice theory perspective was not established. This does not mean that the product attributes did not have some impact on unauthorized downloading intention. In this last analysis, the link between product attributes and unauthorized downloading intention was examined. In a revised model, in which the mediating variable of perceived distributive fairness was removed, strong links between product attributes and unauthorized downloading intention were revealed. Consumers that perceived a product to be useful were less inclined to engage in unauthorized downloading. The two most important factors that influence perceived website usefulness were perceived ease of product time shifting and perceived ease of product modification.

### 5.7.1 Reliability

In this final model item reliability and internal consistency was reasonably good. The results are summarized below in Table 20. Cronbach's alpha was well above the recommended value of 0.70 for most constructs. The only exception was perceived cost, which had a value of .624. The composite reliability statistic, however, demonstrated good item reliability. Every statistic was above the recommended value of 0.70. In addition, the AVE for every construct was well above the minimum threshold of 0.50. One could conclude that the reliability of the measurement instrument was reasonably adequate.

<b>Table 20. Product Attributes Revised Model Results Overview</b>						
	AVE	Composite Reliability	R Square	Cronbach's Alpha	Communality	Redundancy
ATUD	0.789	0.949		0.933	0.789	
COST	0.543	0.774		0.624	0.543	
PEPM	0.658	0.885		0.828	0.658	
PEPPS	0.596	0.855		0.776	0.596	
PEPS	0.570	0.868		0.809	0.570	
PEPSS	0.563	0.834		0.732	0.563	
PEPT	0.542	0.852		0.783	0.542	
PEPTS	0.621	0.831		0.700	0.621	
PPE	0.627	0.910	0.218	0.881	0.627	0.090
PPU	0.649	0.902	0.448	0.865	0.649	0.201
UDI	0.689	0.869	0.513	0.774	0.689	0.308

### 5.7.2 Measurement Model Assessment

The measurement model for this last analysis revealed that the convergent validity of the constructs was good. Note that in Table 23.1 and 23.2, each item loaded highly on its latent construct and with a significant t-value. In Table 20 we can note that the AVE exceeded 0.50 for all constructs. This further supported the convergent validity of the constructs in this model.

Discriminant validity of the construct measures was also satisfactory. As noted in Table 21, the square root of the AVE associated with each construct was greater than the correlations between that construct and others indicating that the construct shares more variance with its own measures. In addition, as noted in Table 22, no item loaded higher on other latent constructs than the construct it was designed to measure. Discriminant validity is further support by the fact that the correlations among all constructs were below the threshold of 0.90, as noted in Table 21.

<b>Table 21. Product Attributes Revised Model Correlations (Square Root AVE in Bold)</b>											
	ATUD	COST	PEPM	PEPPS	PEPS	PEPSS	PEPT	PEPTS	PPE	PPU	UDI
ATUD	<b>0.888</b>										
COST	0.173	<b>0.737</b>									
PEPM	-0.091	0.032	<b>0.811</b>								
PEPPS	0.012	-0.152	0.405	<b>0.772</b>							
PEPS	-0.076	-0.250	0.335	0.535	<b>0.755</b>						
PEPSS	0.012	-0.238	0.422	0.724	0.536	<b>0.750</b>					
PEPT	-0.052	-0.306	0.141	0.417	0.455	0.400	<b>0.736</b>				
PEPTS	-0.030	-0.233	0.420	0.639	0.525	0.727	0.564	<b>0.788</b>			
PPE	-0.257	-0.198	0.470	0.392	0.400	0.279	0.396	0.405	<b>0.792</b>		
PPU	-0.205	-0.186	0.579	0.467	0.458	0.407	0.398	0.522	0.741	<b>0.806</b>	
UDI	0.672	0.294	-0.240	-0.051	-0.117	-0.076	-0.037	-0.155	-0.299	-0.328	<b>0.830</b>

**Table 22. Product Attributes Revised Model Cross Loadings**

	ATUD	PC	PEPM	PEPPS	PEPS	PEPSS	PEPT	PEPTS	PPE	PPU	UDI
ATUD1	<b>0.926</b>	0.180	-0.048	0.027	-0.063	0.063	-0.047	0.013	-0.239	-0.196	0.641
ATUD2	<b>0.906</b>	0.194	-0.044	0.027	-0.020	0.049	-0.039	-0.031	-0.231	-0.155	0.624
ATUD3	<b>0.848</b>	0.141	-0.078	0.007	-0.099	-0.014	-0.103	0.037	-0.220	-0.163	0.549
ATUD4	<b>0.849</b>	0.132	-0.162	-0.083	-0.107	-0.071	-0.060	-0.102	-0.275	-0.222	0.508
ATUD5	<b>0.909</b>	0.117	-0.088	0.056	-0.059	0.007	0.007	-0.057	-0.189	-0.180	0.644
PC1	0.094	<b>0.648</b>	-0.109	-0.123	-0.279	-0.252	-0.267	-0.192	-0.212	-0.227	0.130
PC2	0.026	<b>0.602</b>	0.033	-0.057	-0.075	-0.049	-0.174	0.016	-0.098	-0.119	0.109
PC3	0.194	<b>0.920</b>	0.077	-0.141	-0.208	-0.211	-0.257	-0.251	-0.156	-0.125	0.318
PEPM1	-0.089	0.033	<b>0.833</b>	0.308	0.275	0.337	0.057	0.304	0.414	0.467	-0.245
PEPM2	0.008	0.041	<b>0.803</b>	0.359	0.267	0.370	0.171	0.376	0.346	0.391	-0.108
PEPM4	-0.094	0.008	<b>0.873</b>	0.372	0.322	0.419	0.127	0.446	0.445	0.592	-0.219
PEPM5	-0.109	0.029	<b>0.729</b>	<b>0.267</b>	0.207	0.217	0.113	0.199	0.292	0.384	-0.190
PEPPS1	-0.075	-0.057	0.415	<b>0.808</b>	0.421	0.642	0.232	0.610	0.334	0.409	-0.132
PEPPS2	0.037	-0.120	0.267	<b>0.790</b>	0.506	0.492	0.377	0.429	0.305	0.391	-0.027
PEPPS4	0.081	-0.113	0.290	<b>0.732</b>	0.235	0.529	0.251	0.444	0.335	0.279	-0.050
PEPPS5	0.020	-0.192	0.265	<b>0.756</b>	0.452	0.570	0.429	0.475	0.239	0.340	0.065
PEPS1	-0.115	-0.222	0.285	0.443	<b>0.814</b>	0.440	0.351	0.424	0.293	0.370	-0.106
PEPS2	-0.005	-0.113	0.274	0.442	<b>0.821</b>	0.459	0.411	0.455	0.343	0.389	-0.028
PEPS3	-0.045	-0.235	0.050	0.317	<b>0.624</b>	0.282	0.263	0.272	0.244	0.161	-0.027
PEPS4	-0.052	-0.129	0.383	0.336	<b>0.715</b>	0.381	0.291	0.403	0.337	0.421	-0.166
PEPS5	-0.078	-0.281	0.216	0.481	<b>0.782</b>	0.443	0.392	0.399	0.273	0.341	-0.107
PEPSS1	-0.022	-0.209	0.292	0.624	0.457	<b>0.856</b>	0.390	0.674	0.222	0.366	-0.074
PEPSS3	0.069	-0.195	0.291	0.466	0.319	<b>0.709</b>	0.181	0.442	0.168	0.248	-0.064
PEPSS4	-0.014	-0.223	0.324	0.610	0.448	<b>0.839</b>	0.322	0.631	0.274	0.350	-0.118
PEPSS5	0.029	-0.061	0.402	0.443	0.372	<b>0.558</b>	0.278	0.369	0.151	0.229	0.067
PEPT1	-0.027	-0.328	0.134	0.317	0.327	0.319	<b>0.806</b>	0.459	0.311	0.311	0.000
PEPT2	0.017	-0.212	-0.084	0.134	0.140	0.059	<b>0.511</b>	0.139	0.170	0.137	0.055
PEPT3	-0.025	-0.149	0.100	0.397	0.422	0.330	<b>0.780</b>	0.460	0.310	0.307	-0.072
PEPT4	-0.047	-0.217	0.112	0.281	0.339	0.290	<b>0.802</b>	0.472	0.344	0.352	-0.007
PEPT5	-0.090	-0.235	0.187	0.362	0.394	0.402	<b>0.739</b>	0.456	0.286	0.307	-0.085
PEPTS1	-0.068	-0.173	0.227	0.484	0.412	0.600	0.432	<b>0.770</b>	0.230	0.347	-0.110
PEPTS3	0.034	-0.219	0.386	0.583	0.430	0.517	0.494	<b>0.812</b>	0.429	0.486	-0.124
PEPTS4	-0.057	-0.150	0.358	0.423	0.398	0.624	0.397	<b>0.781</b>	0.262	0.380	-0.133
PPE1	-0.136	-0.063	0.485	0.435	0.408	0.280	0.334	0.353	<b>0.849</b>	0.713	-0.216
PPE2	-0.222	-0.096	0.461	0.308	0.278	0.165	0.216	0.286	<b>0.776</b>	0.705	-0.270
PPE3	-0.229	-0.210	0.228	0.286	0.319	0.242	0.358	0.347	<b>0.782</b>	0.510	-0.202
PPE4	-0.263	-0.246	0.309	0.168	0.306	0.153	0.393	0.326	<b>0.794</b>	0.512	-0.275
PPE5	-0.147	-0.074	0.405	0.403	0.328	0.293	0.249	0.317	<b>0.743</b>	0.549	-0.230
PPE6	-0.227	-0.247	0.354	0.268	0.246	0.189	0.303	0.283	<b>0.801</b>	0.538	-0.229
PPU1	-0.172	-0.264	0.514	0.453	0.390	0.382	0.395	0.504	0.740	<b>0.815</b>	-0.270
PPU2	-0.168	-0.161	0.460	0.367	0.394	0.372	0.308	0.412	0.512	<b>0.845</b>	-0.266
PPU3	-0.127	-0.148	0.355	0.393	0.309	0.278	0.312	0.372	0.539	<b>0.760</b>	-0.260
PPU5	-0.133	-0.034	0.444	0.254	0.359	0.222	0.281	0.388	0.513	<b>0.756</b>	-0.222
PPU6	-0.214	-0.122	0.538	0.396	0.387	0.364	0.298	0.414	0.650	<b>0.848</b>	-0.300
UDI1	0.593	0.222	-0.183	-0.035	-0.089	-0.113	0.007	-0.111	-0.216	-0.188	<b>0.803</b>
UDI2	0.539	0.282	-0.102	-0.024	-0.022	-0.007	-0.056	-0.127	-0.244	-0.246	<b>0.848</b>
UDI3	0.540	0.228	-0.308	-0.068	-0.178	-0.066	-0.044	-0.149	-0.284	-0.381	<b>0.838</b>

**Table 23.1 Product Attributes Revised Model Loadings/Weights**

REFLECTIVE INDICATORS				
<b>Attitude Towards Unauthorized Downloading</b>				
Item	Loading	Weight	T Statistics	P Value
ATUD1	0.926	—	66.175	0.000
ATUD2	0.906	—	53.308	0.000
ATUD3	0.848	—	19.985	0.000
ATUD4	0.849	—	28.351	0.000
ATUD5	0.909	—	28.360	0.000
<b>Perceived Ease of Product Modification</b>				
Item	Loading	Weight	T Statistics	P Value
PC1	0.648	—	3.702	0.000
PC2	0.602	—	3.469	0.001
PC3	0.920	—	15.769	0.000
<b>Perceived Ease of Product Modification</b>				
Item	Loading	Weight	T Statistics	P Value
PEPM1	0.833	—	18.331	0.000
PEPM2	0.803	—	17.705	0.000
PEPM4	0.873	—	42.821	0.000
PEPM5	0.729	—	13.717	0.000
<b>Perceived Ease of Product Platform Shifting</b>				
Item	Loading	Weight	T Statistics	P Value
PEPPS1	0.808	—	17.239	0.000
PEPPS2	0.790	—	15.477	0.000
PEPPS4	0.732	—	10.215	0.000
PEPPS5	0.756	—	14.028	0.000
<b>Perceived Ease of Product Sharing</b>				
Item	Loading	Weight	T Statistics	P Value
PEPS1	0.814	—	19.865	0.000
PEPS2	0.821	—	20.421	0.000
PEPS3	0.624	—	5.599	0.000
PEPS4	0.715	—	12.026	0.000
PEPS5	0.782	—	13.542	0.000
<b>Perceived Ease of Product Space Shifting</b>				
Item	Loading	Weight	T Statistics	P Value
PEPSS1	0.856	—	23.345	0.000
PEPSS3	0.709	—	7.280	0.000
PEPSS4	0.839	—	21.073	0.000
PEPSS5	0.558	—	4.401	0.000

**Table 23.2 Product Attributes Revised Model Loadings/Weights**

REFLECTIVE INDICATORS				
<b>Perceived Ease of Product Trial</b>				
Item	Loading	Weight	T Statistics	P Value
PEPT1	0.806	—	16.647	0.000
PEPT2	0.511	—	4.386	0.000
PEPT3	0.780	—	14.026	0.000
PEPT4	0.802	—	19.109	0.000
PEPT5	0.739		13.076	0.000
<b>Perceived Ease of Product Time Shifting</b>				
Item	Loading	Weight	T Statistics	P Value
PEPTS1	0.770	—	9.647	0.000
PEPTS3	0.812	—	17.840	0.000
PEPTS4	0.781	—	14.651	0.000
<b>Perceived Product Enjoyment</b>				
Item	Loading	Weight	T Statistics	P Value
PPE1	0.849	—	33.693	0.000
PPE2	0.776	—	19.209	0.000
PPE3	0.782	—	17.645	0.000
PPE4	0.794	—	16.040	0.000
PPE5	0.743	—	13.702	0.000
PPE6	0.801		18.400	0.000
<b>Perceived Product Usefulness</b>				
Item	Loading	Weight	T Statistics	P Value
PPU1	0.815	—	23.295	0.000
PPU2	0.845	—	28.280	0.000
PPU3	0.760	—	16.036	0.000
PPU4	0.756	—	11.115	0.000
PPU5	0.848	—	24.760	0.000
PPU6	0.815		23.295	0.000
<b>Attitude Towards Unauthorized Downloading</b>				
Item	Loading	Weight	T Statistics	P Value
UDI1	0.803	—	18.762	0.000
UDI2	0.848	—	24.330	0.000
UDI3	0.838	—	17.043	0.000

### ***5.7.3 Structural Model Assessment***

The overall fit of the model appeared to be reasonably good. The standardized path coefficients and their significance are indicated in Figure 18 below. The explained variance associated with unauthorized downloading intention was substantial with an r-square value of 517. The impact of perceived cost and attitude towards unauthorized downloading was large and significant with p-values less than 0.05 and 0.01, respectively. These results were consistent with other results in this study. As before, attitude towards unauthorized downloading intention was the most important factor with a coefficient of 0.611. Perceived cost had a smaller, but substantial influence on unauthorized downloading intention with a coefficient of 0.156.

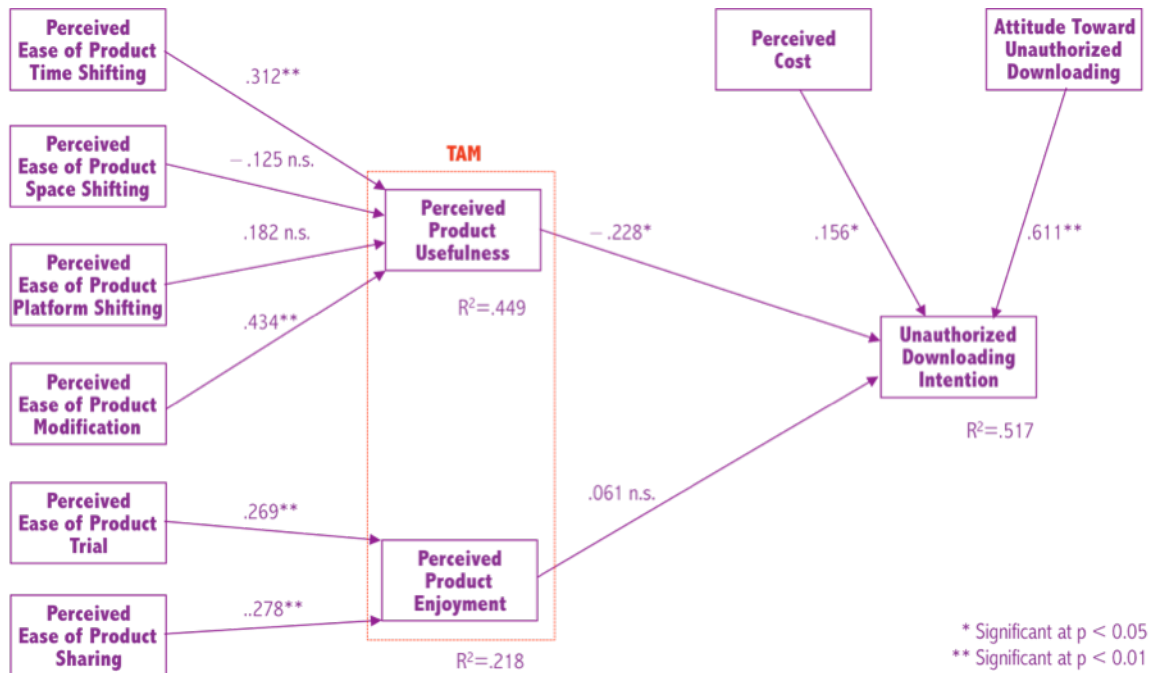
Consistent with the earlier model, perceived usefulness was found to have a negative relationship with unauthorized downloading intention. Specifically, the results showed that perceived product usefulness was negatively related to unauthorized downloading intention. It had a coefficient of  $-0.204$ . The relationship was significant with a p-value  $< 0.05$ . There is, however, no evidence to support any relationship between perceived product enjoyment and unauthorized downloading intention. The coefficient associated with this relationship was not significant and was essentially zero.

As in the previous model, four of the six product attributes were found to have a significant relationship with their respective TAM constructs. Perceived ease of product time shifting and perceived ease of product modification were strongly linked to perceived product usefulness with significant path coefficients of 0.312 and 0.434, respectively. The p-value, in both cases, was less than 0.01. The explained variance associated with perceived product usefulness was relatively high with an r-square value of 0.449. In addition, perceived ease of product trial and perceived ease of product sharing were strongly linked to perceived product enjoyment with significant

path coefficients of 0.269 and 0.278, respectively. The p-value, in both cases, was less than 0.01.

The explained variance of perceived product enjoyment was modest with an r-square value of 0.218. In the next section, the results for the hypothesis for all four models are summarized.

**Results from the PLS Analysis – Product Attributes Revised Model**



**Figure 18**

## 5.8 Hypothesis Results Summary

Table 24 Hypothesis Results

	<b>Hypothesis</b>	<b>Supported</b>
H1	A positive attitude towards unauthorized downloading is positively related to unauthorized downloading intention.	Yes
H2	Perceived distributive fairness of an exchange is negatively related to attitude towards unauthorized downloading of digital products.	No
H3	Perceived procedural fairness of an exchange is negatively related to attitude towards unauthorized downloading of digital products.	Yes
H4	Perceived interactional fairness of an exchange is negatively related to attitude towards unauthorized downloading of digital products.	No
H5	Perceived website enjoyment of the exchange interface positively related to perceived distributive fairness.	No
H6	The perceived usefulness of the website is positively related to perceived distributed fairness.	No
H7	The perceived ease of use of the website is positively related to perceived distributed fairness.	No
H8	The perceived ease of use of the website is positively related to perceived usefulness.	Yes
H9	The perceived ease of use of the website is positively related to perceived enjoyment.	Yes
H10	Website system quality is positively related to perceived ease of use.	Yes
H11	Website information quality is positively related to perceived ease of use.	Yes
H12	Perceived creativity facilitation is positively related to perceived website usefulness.	Yes
H13	Perceived community facilitation is positively related to perceived website usefulness.	Yes
H14	Perceived product usefulness is positively related to perceived distributive fairness.	No

	<b>Hypothesis</b>	<b>Supported</b>
H15	Perceived product enjoyment is positively related to perceived distributive fairness.	No
H16	Perceived ease of product time shifting is positively related to perceived product usefulness.	Yes
H17	Perceived ease of product space shifting is positively related to perceived product usefulness.	No
H18	Perceived ease of product platform shifting is positively related to perceived usefulness.	No
H19	Perceived ease of product trial is positively related to perceived enjoyment.	Yes
H20	Perceived ease of sharing a digital product is positively related to perceived enjoyment.	Yes
H21	Perceived ease of product modification is positively related to perceived usefulness.	Yes
H22	Perceived cost is positively related to unauthorized downloading intention.	Yes
H23	Perceived website usefulness is negatively related to unauthorized downloading intention	Yes
H24	Perceived website ease of use is negatively related to unauthorized downloading intention.	No
H25	Perceived website enjoyment is negatively related to unauthorized downloading intention.	No
H26	Perceived product usefulness is negatively related to unauthorized downloading intention.	Yes
H27	Perceived product enjoyment is negatively related to unauthorized downloading intention	No

## **6 DISCUSSION**

This study addressed several questions. The first set of research questions considered whether there was a connection between product and exchange interface attributes and unauthorized downloading. It is an area that has been relatively unexplored and one that will become increasingly important to understand given the emergence of new business models for digital product consumption. Many of the new business models, apart from attempting to generate profits, try to offer an alternative to unauthorized downloading. It is important to understand what aspects of digital product consumption are most appealing to consumers.

The second set of questions considered how the influence of product and interface attributes could be explained. Two perspectives examined were the extended TAM and justice theory. The TAM was found to be a useful framework for understanding unauthorized downloading intention. It allows one to clarify the nature of product and interface attributes and how they translate into the benefits that can attract users to legitimate sites and away from P2P file-sharing services. The role of justice theory was less clear and more difficult to interpret.

### **6.1 Key Findings and Implications for Theory and Practice**

The results of this research have demonstrated that the usability of a product and the exchange interface can appeal to consumers and help discourage the unauthorized downloading of digital products. In addition, this research has clearly identified some of the specific attributes that define usability. The study has affirmed the relevance of the TAM and the need to address fundamental consumer needs if progress is to be made in steering consumers away from unauthorized downloading and towards the many emerging and legitimate services for digital products.

Specific findings showed that it was important to afford users the ability to modify products and the flexibility to consume products at a time of their choosing. It was important to allow consumers an outlet to exercise their creative needs. Affording consumers an opportunity to develop, establish, and nurture a sense of community were appealing and offered advantages over P2P file-sharing networks. This study also revealed the importance of quality in attracting consumers to legitimate sites for digital product consumption and away from unauthorized file-sharing sites.

Based on the results of this study, the relevance of justice in transactions involving digital culture products was mixed. It appeared that distributive justice was not an important factor that motivated consumers to engage unauthorized file exchanges. In fact, it appeared that it had no impact at all. In addition, a positive sense of interactional justice may paradoxically drive consumers towards unauthorized downloading; however, a definitive determination could not be made because of the unreliability of the measurement instrument. The only form of justice that did seem to have had a potential impact on consumer behavior was procedural justice. Consumers that found an exchange process to be procedurally unfair appeared to be more willing to engage in the unauthorized downloading of digital products.

### ***6.1.1 Unauthorized Downloading Intention***

The results of this study indicated that the usefulness of an exchange interface such as the website and the usefulness of a product were key determinants of unauthorized downloading intention. Other factors such as website enjoyment and product enjoyment were not significant. In fact, there was evidence to support the possibility that website enjoyment and product enjoyment could actually stimulate consumers to engage in unauthorized downloading.

One explanation could be that the joy and entertainment value associated with using products at legitimate sites could actually excite and heighten interest among consumers in general. Consumers could become more willing to search, acquire, and subsequently consume more products than they would normally. They could become motivated to acquire products from any source regardless of whether they were authorized or not. These results could be especially applicable to hedonic products such as music, which are largely consumed for entertainment purposes.

The relevance of product usefulness and website usefulness suggests that when consumers have specific utilitarian needs for a product, they become much more open to paying for them. The reality is that searching for products via P2P file-sharing sites can be time consuming, especially when one has specific requirements. For example, in general, the less popular a particular music track the fewer file-sharing hosts will be available. This will directly impact the length of time it can take to acquire the file. Differences in file characteristics such as bit rate, format, and quality will further add to the time necessary to acquire a suitable file. Purchasing a track from a legitimate site is not only faster, but there are assurances regarding the quality of the product. In addition, legitimate sites typically provide product information that is often lacking at file-sharing sites.

Unauthorized downloading was also motivated by the associated costs of acquiring authorized digital products and by pre-existing attitudes towards unauthorized downloading. This has been consistently revealed in previous studies. Given the relevance of these factors they were included in this model as control variables and for completeness. It is interesting to note that perceived cost was not the main driver of file-sharing behavior in this study. Attitude toward unauthorized downloading was the most significant factor, followed by usability.

### ***6.1.2 Impact of Justice***

The influence of perceived distributive fairness was not manifested. This result was surprising and disappointing. There was no evidence to support the assertion that consumers take into account the fairness of an exchange in determining whether to download unauthorized products. In addition, there was no evidence to support the view that website and product attributes influence attitudes regarding the perceived distributive justice of an exchange. There are several possible explanations for this outcome.

First, it could be have been an issue with respect to how perceived distributive fairness was conceptualized and assessed. This study used a traditional equity definition in which the benefit-cost ratio of the referent other was compared with the benefit-cost ratio of the subject. It is possible that alternative forms of defining distributive justice were more appropriate for the type of scenario examined in this study.

Other forms of determining perceived distributive fairness include an equality perspective in which costs are not taken into account. Instead, justice is based on whether benefits, regardless of costs or investment, are evenly distributed. It was also possible that perceived distributive fairness should have instead been defined by need. Justice in this case would have been determined by whether the benefits of an exchange were distributed in a way that optimally addressed the needs of the transaction partners. Consumers may, for example, believe that their music needs outweigh the needs of the vendor, label, or artist to make a profit on their work. The consumer may justify this on the basis that culture products should be viewed as a public good.

A second possibility is whether the impact of benefits and costs should be weighted. Subjects may not necessarily assess fairness on the basis of whether the equity ratios are equal. Perceived justice may be a function of some other linear combination of the variables. This may arise if

consumers have different levels of sensitivity or tolerance towards degrees of justice or injustice. Sensitivity may require the introduction of a new moderating variable. Different levels of tolerance may mean that a different linear combination of the equity equation should be investigated.

A third possibility could simply be that the subjects were not afforded the time required to become sensitive to the issues of justice for the type of transactions examined in this particular study. The process of social exchange and reciprocation that the exchange of certain digital products might engender may not register with subjects in a situation in which the interaction is brief and with relatively unfamiliar entities. The referent other may not have become sufficiently salient to the subject in the one-hour time frame of the study.

Issues regarding the time frame of the study may have been exacerbated by the unfamiliarity of the website and the music. In this study, a requirement was that the subjects be unfamiliar with the vendor, which was part of the screening process. Country music was the focus precisely because it was unlikely, given the subject pool, that subjects would be familiar with any of the artists. At the very least, they would not be expected to have formed strong opinions. This was supported in post study interviews.

Several subjects indicated that they were unfamiliar with the specific record labels. They indicated that country music was not very popular with them. In fact, several subjects in the post briefing indicated that they did not like country music at all. These factors may have created a substantial distance between the subjects and the various potential transaction partners. The social connection may not have been sufficiently strong to influence behavior based on perceptions of justice. The results regarding justice might have been different if there were some history between the transaction partners or if there were expectations of an ongoing relationship.

A final possibility may be that subjects did not make comparative judgments vis-à-vis the artist, record label, or vendor when making decisions about whether to engage in unauthorized downloading. There could be other referent others that were more relevant and salient. The most obvious possibility is subject peers. If subjects believe that their peers are not paying for music they may feel it to be unfair that they alone should pay for music.

The outcome with respect to perceived interactional fairness is more difficult to explain. It appeared that perceived interactional fairness was *positively* related to unauthorized downloading intention. This could mean that in this particular context, the friendly, courteous experience that subjects were exposed to might actually stimulate interest and excitement regarding digital products in general. Whether the digital culture products were acquired as an authorized download or not may not matter to the user. But before any conclusions could be drawn, it is important to recognize the instability of the measurement scale used to assess perceived interactional fairness. Another study with a more reliable instrument would be warranted in order to confirm this relationship. The theoretical foundation and the context in which this study was conducted would require further examination as well in order to better understand the relationship of interactional fairness and unauthorized downloading.

Of the three main justice variables, only perceived procedural fairness was negatively linked to unauthorized downloading intention, as theorized. This could mean that indeed when consumers believe that a website is not responsive to their needs, or if they believe that their issues will not be appropriately addressed, they could be motivated to avoid the site. Instead, they could be inclined to seek an alternative, which could include the unauthorized downloading of digital products via P2P networks.

The results with respect to perceived procedural fairness should be taken with some caution. The instrument used to measure perceived procedural fairness, which had been validated in another unrelated study, appeared to be less than robust in this study. Only two of the four items were deemed to be reliable. As a result, further studies would be warranted in order to shore up support for this hypothesis.

### ***6.1.3 Website Attributes and the Technology Acceptance Model***

The results of the study supported the assertion that both interface and product attributes do in fact influence unauthorized downloading intention through their impact on specific TAM variables. The results also revealed that TAM could in turn explain and predict unauthorized downloading intention. In particular, perceived usefulness of both the product and the exchange interface appeared to have had direct impact on unauthorized downloading intention. Perceived ease of use had an impact on unauthorized downloading intention, but indirectly through perceived usefulness. The impact of justice on unauthorized downloading intention, as noted earlier, was decidedly mixed.

Perceived community facilitation and perceived creativity facilitation were two of the specific interface attributes examined. These were newly defined variables that are relevant to the many emerging business models for digital products. Both were found to ultimately impact unauthorized downloading intention through the mediating variable of perceived website usefulness. These characteristics tend to vary a great deal across vendors. Many websites now feature community building features and opportunities for the consumer to be creative. To date, these characteristics have not been conceptualized and their relevance has not been explored in depth.

Community facilitation can be realized in a variety of ways. The website vendor could enable the easy sharing of products via the website. They could enable discussion boards that allow consumers to discuss products. They could allow consumers to create fan clubs, rate music, and leave comments. They could allow consumers to share playlists. All of these factors allow the consumer to connect with others and create a sense of community. And based on the results of this study, that ability to connect with others and be part of a community could potentially draw consumers to legitimate websites for their digital culture products and away from P2P networks. P2P networks in general are limited in what they offer in terms of community facilitation tools.

Creativity facilitation can be realized in various ways as well. It could be a function of whether the website allows the user to modify its products. It could be a function of whether the website promotes creativity by helping the consumer to discover new or related products. It could be a function of whether the website allows the user to create playlists. It could also be a function of whether the website allows the user to discover user-generated playlists. In general, legitimate websites have many options to promote and facilitate creativity in a way that P2P file-sharing services may not.

The results of the study also supported the importance of website quality as a factor that could indirectly reduce unauthorized downloading intention. Specifically, perceived website information quality and perceived website system quality were found to strongly influence perceived website ease of use, which in turn influenced perceived website usefulness. Perceived website usefulness, as noted earlier, was found to be a key factor that influenced unauthorized downloading intention. Most legitimate music websites provide much more detailed information such as artist background, related artists, discography, and news than do P2P file-sharing networks. They provide extensive and easy to find information that tends to be more complete, timely, and

reliable. This amounts to substantial advantages over P2P file-sharing networks that the consumer may find very appealing.

Acquiring music via P2P file-sharing networks often requires that the consumer really know what they are looking for beforehand. P2P file-sharing networks tend to offer comparatively less information than the typical legitimate website. The information available at P2P file-sharing sites is usually limited to product availability and product descriptions such as the name of the song, the file format, and perhaps the bit rate. Furthermore, there are no guarantees that the product descriptions will be accurate in the first place.

Consumers may also be attracted to websites that are fast, that are designed in an appropriate and appealing manner, and to sites that are reliable. While the interfaces associated with P2P file-sharing networks are often well designed, the process of acquiring products is not always fast and reliable. There is a multistep process involved that includes start-up, searching for content, finding and connecting to peers, downloading the product, and launching the player. All of this can take a relatively long time compared to the process at a legitimate website. In addition, there is no guarantee ahead of time that the digital product downloaded from a P2P file-sharing service will be of acceptable quality.

#### ***6.1.4 Product Attributes and the Technology Acceptance Model***

A more detailed look at specific product attributes revealed a link to certain TAM related variables, which in turn influenced unauthorized downloading intention. Among the specific product attributes examined, perceived ease of product time shifting and perceived ease of product modification were clearly significant factors that had a strong impact on perceived product usefulness. Perceived ease of product trial and perceived ease of product sharing had significant impacts on perceived product enjoyment. However, perceived ease of product

enjoyment was not found to be a critical factor that influenced unauthorized downloading intention.

The ability to time shift product use varies a great deal depending on how the product is sourced. For example, as of October 2010, Grooveshark did not have an application that would allow users to stream content via their iPhones. Users could only enjoy their music on a Flash supported device that was connected to the Internet. They could not, for example, readily listen to their music while in transit. On the other hand Rhapsody has offered an iPhone application. In addition, it has recently upgraded the application to allow consumers to store temporary copies on their iPhone so that they could continue to enjoy their music when even when their wireless or Internet connection was interrupted.

A product whose consumption cannot be easily time shifted seems to have been an important consideration for users. This seems to be a factor that informs the decision on whether to purchase a product from a legitimate source or whether to acquire the product as an unauthorized download. Digital products via P2P networks are generally free of time shifting restrictions.

The ability to modify a product also varies greatly depending on how the product is sourced. The results of this study supported the view that the ability to modify a digital product is an important factor that helps to determine whether a consumer will choose to acquire unauthorized products via P2P networks. Most products available as an unauthorized download via P2P networks tend to be unencumbered with modification restrictions. Music files on file-sharing networks, for example, are commonly encoded as MP3s, which are easily modified for the purposes of remixing or incorporating into movies and slideshows.

Consumers are already open to unauthorized file sharing. Placing restrictions on product modification only intensifies this predisposition. The advantage that paying for a product offers

the consumer is the opportunity to source a product more easily and the assurance that the product will perform as expected. Authorized channels for acquiring music offers the user the promise of accurate product information.

## **6.2 Limitations**

This research was a survey-based field study. Field studies have some advantages over certain methodologies such as lab experiments. Perhaps the most important is that the results can be generalized to a greater degree because the phenomenon is studied in a natural setting subject to realistic conditions that can often be difficult to replicate in an experimental laboratory setting. Furthermore, field studies are more appropriate than lab or field experiments when the control of independent variables is neither possible nor desirable, or when models are relatively complex [222].

Field studies also have the advantage of facilitating the inexpensive collection of large amounts of data over a relatively short period of time. It is also a methodology that is well understood and that has been used extensively in information system research, especially with respect to unauthorized file sharing. In fact, it is probably the most common research method for this particular subject matter. However this research is not without limitations.

The first limitation is that field studies do suffer from issues regarding internal validity. It is more difficult to take the results of a survey-based field study and assert causality. There are often a number of confounding variables that cannot be easily controlled. In many cases, confounding variables that may influence results are often difficult to identify. It is possible to reduce the need to identify and control confounding variables through appropriate sampling techniques. These considerations guided the sampling process in this study. Furthermore, a

model that successfully explains a large amount of variation, as was the case in this study, may reduce the importance of identifying additional variables.

Internal validity can be addressed to a certain extent by conducting a field study that is supported by a rigorously developed theoretical model, which was done for this study. The relationships among constructs have been affirmed in previous studies or they were supported by well-established theories. Internal validity could also be supported by the triangulation of multiple research methods. This suggests avenues for future investigations in support of this research.

The second limitation has to do with the fact that this was a cross-sectional study that examined attitudes developed within a relatively short period of time and measured at a point in time. Any changes in attitude towards something as complex as unauthorized downloading may have required significantly more time to develop. This may especially be the case with attitude towards unauthorized downloading, which have developed and probably become stable for most users over an extended period of time prior to the study.

No matter how intensive and complete an introduction to the products and exchange interfaces, subjects might have required much more time to become fully aware of the attributes that were being examined, in order to form opinions. The relatively brief exposure may not have been enough to change downloading intention. It is not clear how persistent the effects would be going forward.

The third limitation of this study is the fact that only unauthorized intention was measured and not actual behavior. Even though intent precedes actual behavior, it is possible that actual behavior may in fact be different from self-reported intentions. This can only be fully examined

in a longitudinal study, which would be a logical next step in this research stream. Research results could also be improved if there were a mechanism for direct observation.

A fourth limitation concerns the subject pool. Even though there were solid reasons to argue for the type of subjects used in this study, which were young adults in college, the question remains whether the results of this study could be applied to other demographic segments. It is not clear that older adults, for example, with more disposable income, and who are less comfortable with technology, would behave in the same way as the subjects of this study.

A fifth limitation concerns the presence of the researcher and the possibility that this may have influenced responses from the subjects. Instructions may be perceived and understood differently from different moderators. The same moderator may not express instructions the same way every time. Subjects may feel inclined to answer in a way that they think would satisfy researcher expectations. In many cases, the subject may not necessarily be cognizant of their own bias.

This potential bias issue was handled in a few ways. The first was to present the website, subject tasks, and procedures via an online instructional video. This helped to ensure that all participants received a consistent set of instructions. In addition, responses were entered via an online form instead of through any face-to-face communication. As a last precaution, the site moderator maintained distance while the subjects were engaged, except to answer questions when called upon. Interaction with the subjects was otherwise limited.

Finally, there was the additional problem that subjects may not have been completely convinced of their anonymity. There was the potential that this could have influenced responses. In an effort to minimize this possibility, anonymity concerns were addressed in a consent form that clearly emphasized that the results would be anonymous. It was explained to the subjects

that any information that could uniquely identify individuals would not be recorded and that only the principal investigators and advisors would have access to the raw data. They were also told that the results would only be published in aggregate form.

### **6.3 Future Research**

There are several future research possibilities stemming from this study. First, there are still many unanswered questions regarding the role of justice and its impact on unauthorized downloading behavior. Even though the impact of perceived distributive fairness was not manifested, it may still exist. Its absence in this study could have been due to the context and the manner in which the study was conducted. It is possible that the manner in which the concept of distributive fairness was conceptualized influenced the results of the study. The absence of distributive fairness as a factor could have been due to how it was being measured.

Other forms of distributive fairness may influence behavior in ways that was not revealed in this study. As discussed earlier, it may be necessary to explore equality-based or needs-based justice rather than the equity-based conceptualization in this study. It may be necessary to explore different referent others besides the artist, record label or vendor. It is possible that distributive fairness does not play a role when the transaction partners do not already have an established, ongoing relationship. It is also possible that perceived distributive fairness does not play a role initially, but does so over time.

The impact of interactional fairness was not affirmed in this study. In fact, there was evidence to the contrary suggesting that interactional fairness was positively related to unauthorized downloading. This warrants further exploration with a more reliable instrument. Questions to resolve include whether issues of context and the nature of salient referent other play a role in how individuals perceive and respond to this variable.

The relevance of product and interface attributes on behavior encourages further exploration into additional attributes that may influence downloading behavior. With respect to website attributes, possible areas of investigation include the role of recommendation systems, automatically generated playlists based on user tastes, and other ways in which a website can help users discover music. Areas of investigation could include how specific types of information, services, and system features contribute to overall quality and usability.

Other areas that may warrant further exploration include how the specific manner in which products are shared and modified influence attitudes towards unauthorized downloading. The effect of time, platform, and space shifting could be further explored in different contexts, for different types of digital products. Not explored in this study was the role of product involvement and its impact.

Finally, many of the website and product attributes addressed in this study were focused on how to discourage unauthorized behavior. A closely related question is what factors lead to the adoption of a particular business model for delivering digital products? Addressing this issue is becoming more relevant given the emergence of cloud based services that stream content to the user instead of having the user download file objects that they themselves have to manage.

#### **6.4 Conclusion**

The results of this research suggests new ways of understanding unauthorized file sharing that is particularly relevant in light of the emerging business models for digital culture products. New firms such as Rhapsody are offering consumers new ways to enjoy music and film. These business models are made possible by digitalization, which allows product rights owners to deconstruct, commoditize, and customize every aspect of product consumption.

The consumer can be offered a completely unrestricted experience. They can be allowed to freely consume, modify, and share products on the platform of their choice. The exchange interface can be infused with numerous features that go well beyond the mere delivery of goods and services. A vendor can create a rich, varied, and customized experience for the user that facilitates community and creativity. A vendor can continually improve the quality of the exchange interface. The alternative is to offer the consumer a consumption experience that is highly circumscribed at an undifferentiated website that is slow to address evolving expectations.

This research was an effort to begin understanding how this all may impact consumer behavior. The findings indicate that product rights owner need to carefully consider what types of restrictions they design into their product offerings. Certain restrictions could actually motivate consumers to source their products through alternative channels including P2P file-sharing networks.

The results of this study may have implications for various types of digital culture products. Of particular interest are e-books, which is a relatively new market space that is being rapidly adopted. Consumers are increasingly turning to dedicated electronic readers, smartphones, and tablet devices and away from traditional print media for the consumption of books. Up until now, the unauthorized file sharing e-books has been subdued. But that could change if publishers are not careful in how they deconstruct, commoditize, and design the value proposition.

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## APPENDIX A – Principal Components Analysis

Component	Total Variance Explained					
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	23.654	21.504	21.504	23.654	21.504	21.504
2	7.669	6.972	28.476	7.669	6.972	28.476
3	6.014	5.467	33.943	6.014	5.467	33.943
4	3.850	3.500	37.443	3.850	3.500	37.443
5	3.825	3.477	40.919	3.825	3.477	40.919
6	3.137	2.852	43.771	3.137	2.852	43.771
7	2.722	2.474	46.245	2.722	2.474	46.245
8	2.646	2.406	48.651	2.646	2.406	48.651
9	2.535	2.304	50.955	2.535	2.304	50.955
10	2.252	2.047	53.002	2.252	2.047	53.002
11	2.185	1.986	54.988	2.185	1.986	54.988
12	1.949	1.772	56.761	1.949	1.772	56.761
13	1.907	1.734	58.494	1.907	1.734	58.494
14	1.783	1.621	60.116	1.783	1.621	60.116
15	1.722	1.566	61.682	1.722	1.566	61.682
16	1.698	1.544	63.226	1.698	1.544	63.226
17	1.612	1.466	64.691	1.612	1.466	64.691
18	1.555	1.414	66.105	1.555	1.414	66.105
19	1.467	1.334	67.439	1.467	1.334	67.439
20	1.352	1.229	68.668	1.352	1.229	68.668

<b>Communalities</b>		
	<b>Initial</b>	<b>Extraction</b>
PCRF1	1.000	0.732
PCRF2	1.000	0.668
PCRF3	1.000	0.641
PCRF4	1.000	0.761
PCRF5	1.000	0.685
PCRF6	1.000	0.650
PCMF1	1.000	0.794
PCMF2	1.000	0.762
PCMF3	1.000	0.777
PCMF4	1.000	0.735
PCMF5	1.000	0.682
PCMF6	1.000	0.669
PEPTS1	1.000	0.656
PEPTS2	1.000	0.635
PEPTS3	1.000	0.613
PEPTS4	1.000	0.721
PEPTS5	1.000	0.631
PEPSS1	1.000	0.761
PEPSS2	1.000	0.657
PEPSS3	1.000	0.666
PEPSS4	1.000	0.707
PEPSS5	1.000	0.688
PEPPS1	1.000	0.723
PEPPS2	1.000	0.676
PEPPS3	1.000	0.715
PEPPS4	1.000	0.749
PEPPS5	1.000	0.735

<b>Communalities Continued</b>		
	<b>Initial</b>	<b>Extraction</b>
PEPS1	1.000	0.702
PEPS2	1.000	0.612
PEPS3	1.000	0.610
PEPS4	1.000	0.541
PEPS5	1.000	0.683
PEPM1	1.000	0.742
PEPM2	1.000	0.788
PEPM3	1.000	0.724
PEPM4	1.000	0.724
PEPM5	1.000	0.716
PEPT1	1.000	0.760
PEPT2	1.000	0.599
PEPT3	1.000	0.645
PEPT4	1.000	0.715
PEPT5	1.000	0.686
ATUD1	1.000	0.861
ATUD2	1.000	0.821
ATUD3	1.000	0.818
ATUD4	1.000	0.766
ATUD5	1.000	0.851
UDI1	1.000	0.694
UDI2	1.000	0.699
UDI3	1.000	0.691
PC1	1.000	0.617
PC2	1.000	0.723
PC3	1.000	0.663

Communalities Continued		
	Initial	Extraction
PEOU1	1.000	0.602
PEOU2	1.000	0.641
PEOU3	1.000	0.625
PEOU4	1.000	0.729
PEOU5	1.000	0.778
PWIQ1	1.000	0.663
PWIQ2	1.000	0.659
PWIQ3	1.000	0.669
PWIQ4	1.000	0.618
PWIQ5	1.000	0.645
PWIQ6	1.000	0.576
PWSQ1	1.000	0.692
PWSQ2	1.000	0.667
PWSQ3	1.000	0.640
PWSQ4	1.000	0.634
PWSQ5	1.000	0.684
PWSQ6	1.000	0.676
PWSQ7	1.000	0.802
PWSQ8	1.000	0.572
PWSQ9	1.000	0.732
PPC	1.000	0.566
PVC	1.000	0.632
PAC	1.000	0.577
PLC	1.000	0.669
PPB	1.000	0.632
PVB	1.000	0.690
PAB	1.000	0.616
PLB	1.000	0.625

Communalities Continued		
	Initial	Extraction
PWIF1	1.000	0.637
PWIF2	1.000	0.705
PWIF3	1.000	0.630
PWIF4	1.000	0.666
PWIF5	1.000	0.672
PWIF6	1.000	0.641
PPF1	1.000	0.660
PPF2	1.000	0.550
PPF3	1.000	0.613
PPF4	1.000	0.542
PPE1	1.000	0.780
PPE2	1.000	0.768
PPE3	1.000	0.745
PPE4	1.000	0.718
PPE5	1.000	0.726
PPE6	1.000	0.655
PPU1	1.000	0.827
PPU2	1.000	0.774
PPU3	1.000	0.704
PPU4	1.000	0.646
PPU5	1.000	0.668
PPU6	1.000	0.729
PPU7	1.000	0.664
PWUA1	1.000	0.761
PWUA2	1.000	0.671
PWUA3	1.000	0.724
PWUA4	1.000	0.707
PWUA5	1.000	0.730
PWUA6	1.000	0.568

Component Matrix																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PCRF1	0.658	-0.304	0.065	0.158	0.178	-0.086	0.014	0.269	-0.033	-0.062	-0.012	0.105	-0.019	-0.006	-0.093	0.014	0.008	-0.127	0.139	0.066
PCRF2	0.648	-0.214	0.097	0.069	0.089	-0.066	-0.181	0.146	0.135	-0.155	-0.127	0.067	0.123	-0.151	0.016	-0.037	0.033	0.012	0.133	-0.009
PCRF3	0.434	-0.116	-0.253	0.163	0.360	0.034	-0.077	-0.007	0.078	-0.353	-0.118	0.049	0.029	0.105	0.080	0.000	-0.155	-0.031	-0.069	0.130
PCRF4	0.648	-0.349	0.066	0.145	0.148	-0.164	0.014	0.264	0.018	-0.054	-0.014	0.099	-0.016	-0.044	0.052	0.028	-0.031	-0.187	0.141	0.030
PCRF5	0.441	-0.481	0.198	0.165	0.065	-0.085	-0.043	0.300	0.047	-0.051	-0.240	0.044	-0.084	-0.062	-0.043	0.059	-0.080	0.017	-0.032	-0.041
PCRF6	0.392	-0.148	-0.219	0.237	0.392	0.039	-0.052	0.265	-0.003	-0.189	-0.126	-0.032	0.139	-0.068	0.193	0.034	-0.041	-0.073	0.122	-0.071
PCMF1	0.388	-0.309	0.224	0.170	0.458	-0.372	0.059	-0.226	-0.064	0.029	-0.002	-0.101	0.084	0.077	-0.031	-0.041	0.022	0.094	-0.116	0.112
PCMF2	0.495	-0.392	0.155	0.065	0.421	-0.258	0.135	-0.059	-0.027	0.016	0.130	-0.105	0.057	-0.061	-0.009	0.141	0.052	-0.006	-0.108	0.001
PCMF3	0.347	-0.107	-0.137	0.460	0.403	-0.009	0.135	-0.106	0.125	-0.094	0.314	-0.124	-0.022	-0.127	0.004	-0.116	0.082	0.170	-0.135	-0.017
PCMF4	0.508	-0.352	0.154	0.219	0.255	-0.226	0.141	-0.170	-0.028	0.009	0.157	0.081	0.044	-0.053	-0.165	0.044	0.183	0.003	-0.127	0.028
PCMF5	0.452	-0.421	0.156	0.154	0.259	-0.133	0.261	-0.148	-0.003	0.001	0.083	-0.059	-0.002	0.025	-0.031	0.210	-0.137	-0.037	0.024	-0.037
PCMF6	0.280	-0.064	-0.138	0.424	0.488	-0.001	-0.115	-0.046	0.157	0.073	0.241	0.042	-0.062	-0.091	-0.124	-0.079	-0.018	-0.064	-0.076	0.030
PEPTS1	0.539	0.139	0.072	-0.270	0.255	-0.012	-0.281	-0.083	-0.052	0.102	-0.140	0.099	-0.094	-0.001	0.005	0.043	-0.033	0.090	0.085	0.219
PEPTS2	0.213	0.322	-0.350	-0.034	0.172	0.136	0.207	-0.164	-0.154	0.004	0.038	0.217	0.024	-0.204	0.193	0.021	-0.111	0.262	0.073	0.082
PEPTS3	0.680	0.170	0.107	-0.072	0.021	0.042	0.020	-0.025	-0.075	-0.073	-0.081	-0.062	-0.007	0.180	0.062	0.025	0.105	0.165	-0.068	-0.019
PEPTS4	0.555	0.122	0.044	-0.267	0.232	0.155	-0.275	0.017	-0.229	0.114	-0.024	0.163	0.010	0.117	0.127	-0.018	-0.125	0.068	-0.150	0.074
PEPTS5	0.314	-0.007	0.219	-0.159	0.187	0.061	0.239	0.394	0.123	-0.145	-0.229	-0.018	-0.172	0.052	-0.063	-0.160	-0.199	0.127	-0.022	0.014
PEPSS1	0.551	0.168	0.120	-0.382	0.288	0.112	-0.238	-0.130	-0.083	-0.029	-0.203	-0.052	-0.130	0.009	-0.054	0.026	0.118	-0.009	0.044	0.110
PEPSS2	0.315	0.243	-0.365	0.039	0.318	0.119	-0.128	-0.137	-0.141	0.214	-0.070	0.057	-0.252	-0.074	-0.076	0.078	-0.029	0.094	-0.110	-0.194
PEPSS3	0.379	0.158	0.116	-0.297	0.220	0.285	0.086	0.018	-0.202	0.174	-0.040	-0.201	0.196	0.033	-0.103	0.026	-0.103	-0.189	0.051	0.214
PEPSS4	0.543	0.125	0.097	-0.340	0.327	0.172	-0.015	-0.026	-0.029	-0.046	-0.108	-0.121	0.031	0.168	0.005	0.068	0.122	0.109	-0.117	0.175
PEPSS5	0.427	0.129	0.242	-0.181	0.217	0.043	0.096	0.251	0.068	-0.096	0.115	0.150	-0.154	-0.021	-0.335	-0.148	-0.176	-0.005	0.009	-0.195
PEPPS1	0.560	0.011	0.156	-0.387	0.139	0.261	-0.120	-0.089	0.071	0.026	-0.148	-0.162	-0.106	-0.006	0.163	0.053	0.118	0.087	0.033	-0.086
PEPPS2	0.534	0.253	0.109	-0.162	0.096	0.045	0.191	-0.054	0.046	0.154	0.100	-0.131	-0.201	0.014	-0.030	0.296	0.118	0.088	0.088	-0.163
PEPPS3	0.269	0.400	-0.275	-0.035	0.208	0.120	0.187	0.166	0.379	-0.034	0.106	-0.141	-0.206	-0.021	0.048	0.008	-0.045	-0.012	-0.213	0.127
PEPPS4	0.473	0.114	0.197	-0.169	0.102	0.196	-0.007	0.071	0.078	-0.207	-0.251	-0.418	-0.025	-0.081	-0.053	0.155	-0.039	0.241	0.089	-0.053
PEPPS5	0.503	0.295	0.165	-0.272	0.138	0.009	0.037	0.044	0.001	0.058	0.169	-0.094	-0.007	0.017	-0.426	0.056	0.123	0.126	0.100	-0.067
PEPS1	0.550	0.150	0.036	-0.276	0.062	-0.145	0.180	-0.147	0.136	0.107	0.051	0.131	-0.129	0.045	-0.064	-0.009	-0.004	-0.355	-0.078	-0.127
PEPS2	0.613	0.211	0.118	-0.094	0.047	-0.178	0.100	-0.084	0.012	0.129	0.072	0.102	0.060	0.104	0.106	-0.002	-0.045	-0.169	-0.027	-0.168
PEPS3	0.352	0.244	-0.213	-0.041	0.285	0.064	0.181	-0.264	0.227	0.043	0.070	0.178	-0.152	0.063	0.053	0.014	-0.180	-0.057	0.051	-0.183
PEPS4	0.535	-0.084	0.142	-0.082	0.107	-0.041	0.206	-0.139	-0.031	0.111	-0.096	0.209	0.002	0.087	-0.015	-0.048	-0.010	-0.251	-0.056	0.059
PEPS5	0.566	0.246	0.001	-0.199	0.120	-0.191	0.346	-0.040	0.108	0.099	0.046	-0.026	0.068	0.137	0.045	-0.092	0.036	-0.165	-0.055	0.028
PEPM1	0.470	-0.390	0.200	-0.070	-0.033	0.351	0.027	0.165	0.035	-0.017	0.065	0.019	0.029	0.056	-0.055	-0.116	0.186	-0.280	-0.134	-0.116
PEPM2	0.502	-0.185	0.291	-0.076	0.047	0.308	0.074	0.227	-0.152	0.033	0.179	0.134	0.167	-0.281	0.021	-0.226	-0.091	0.056	0.051	-0.109
PEPM3	0.175	-0.029	-0.152	0.029	0.047	0.414	0.363	0.345	-0.260	-0.023	0.172	0.185	0.101	0.015	0.227	-0.159	-0.003	-0.064	0.093	0.105
PEPM4	0.573	-0.356	0.229	-0.085	-0.017	0.349	0.021	0.053	-0.003	-0.080	0.063	0.124	-0.019	-0.039	0.018	-0.183	0.140	-0.048	-0.040	0.002
PEPM5	0.408	-0.298	0.187	-0.027	-0.038	0.196	0.304	0.338	-0.072	-0.005	0.214	0.192	0.038	-0.023	0.008	-0.065	0.177	0.204	-0.037	-0.101
PEPT1	0.527	0.357	-0.146	0.092	-0.021	-0.189	-0.155	0.146	-0.070	-0.215	-0.157	0.156	0.146	0.020	-0.167	-0.028	0.241	0.040	0.176	-0.041
PEPT2	0.182	0.413	-0.349	0.109	-0.075	0.108	-0.011	0.067	0.017	-0.121	0.167	0.142	-0.175	0.048	0.143	0.189	0.110	-0.057	0.215	0.164
PEPT3	0.533	0.397	-0.098	-0.054	-0.033	-0.200	-0.159	0.106	-0.012	-0.021	0.148	0.079	0.043	-0.086	0.100	0.128	0.137	-0.153	0.081	0.008
PEPT4	0.531	0.222	-0.095	0.115	0.077	-0.176	-0.191	-0.008	0.015	-0.086	-0.026	0.290	0.343	0.063	-0.028	0.230	-0.048	0.034	0.040	0.125
PEPT5	0.509	0.250	-0.099	-0.130	0.096	-0.106	-0.123	0.084	-0.028	-0.289	0.085	0.257	0.159	-0.150	-0.170	0.226	-0.077	0.033	-0.027	-0.046

Component Matrix Continued

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
ATUD1	-0.149	0.449	0.639	0.348	0.129	0.213	0.020	-0.026	-0.086	-0.091	-0.006	-0.061	-0.029	0.048	-0.047	0.008	0.018	-0.087	-0.064	0.079
ATUD2	-0.149	0.449	0.626	0.287	0.049	0.237	0.060	-0.109	-0.072	-0.126	0.028	0.023	0.060	0.014	0.030	-0.018	0.004	-0.094	-0.060	0.096
ATUD3	-0.167	0.428	0.501	0.299	0.018	0.269	0.008	-0.080	-0.256	-0.106	0.011	-0.013	-0.171	0.060	0.181	0.125	0.077	-0.088	-0.098	-0.074
ATUD4	-0.231	0.391	0.502	0.319	0.058	0.149	0.007	-0.161	-0.080	-0.289	0.004	0.013	-0.013	0.075	0.131	-0.030	-0.041	-0.028	-0.192	0.027
ATUD5	-0.165	0.471	0.566	0.338	0.069	0.228	0.076	-0.129	-0.054	-0.155	-0.025	-0.055	0.097	-0.031	-0.065	0.155	0.120	-0.057	0.013	0.024
UDI1	-0.202	0.411	0.479	0.252	-0.077	0.015	-0.173	-0.228	0.088	0.052	-0.016	0.115	0.158	-0.152	-0.037	0.101	-0.002	0.006	-0.136	-0.037
UDI2	-0.197	0.458	0.453	0.185	-0.038	0.118	0.066	0.050	0.256	0.074	-0.126	0.226	-0.023	0.019	-0.113	-0.134	-0.038	-0.044	0.128	0.010
UDI3	-0.313	0.524	0.260	0.277	0.144	0.215	-0.019	0.052	0.109	0.111	-0.106	0.081	-0.081	-0.062	-0.075	0.011	-0.124	-0.043	0.156	-0.067
PC1	-0.283	-0.160	0.169	0.193	0.056	0.036	-0.217	0.166	0.205	0.207	-0.096	0.064	-0.286	-0.005	0.287	0.199	0.219	0.079	0.097	-0.012
PC2	-0.082	-0.162	0.272	0.114	0.152	-0.056	-0.203	0.290	0.220	0.547	0.063	-0.014	0.003	0.255	-0.019	0.143	-0.081	-0.046	-0.069	0.024
PC3	-0.231	-0.154	0.506	0.078	-0.219	0.022	-0.123	0.162	0.298	0.231	0.117	0.128	0.000	-0.190	0.098	0.090	0.010	0.006	0.074	-0.054
PEOU1	0.488	0.412	-0.016	0.002	-0.160	-0.003	0.044	0.049	0.082	0.065	0.181	-0.150	0.015	-0.135	0.043	-0.197	0.022	-0.096	0.169	-0.006
PEOU2	0.428	0.444	0.049	-0.247	-0.039	-0.112	0.040	0.095	0.100	-0.067	0.064	-0.297	-0.012	-0.076	0.079	-0.147	-0.105	-0.104	-0.040	0.092
PEOU3	0.286	0.438	-0.295	-0.077	-0.038	0.005	0.085	0.246	0.262	0.063	0.060	0.052	-0.154	-0.169	0.153	0.073	0.060	-0.048	-0.137	0.066
PEOU4	0.681	0.302	0.094	0.047	-0.004	-0.162	-0.137	0.131	-0.086	0.014	0.222	-0.129	0.075	-0.034	0.004	0.088	-0.095	0.025	-0.045	0.028
PEOU5	0.562	0.411	0.100	-0.103	0.001	-0.212	-0.045	0.302	0.140	0.064	-0.005	-0.209	-0.048	0.007	0.041	-0.047	0.188	-0.118	-0.086	0.060
PWIQ1	0.621	0.304	0.064	0.005	-0.044	-0.113	-0.231	-0.005	-0.070	-0.070	0.157	0.055	0.100	-0.098	0.018	0.050	-0.121	0.035	0.169	-0.090
PWIQ2	0.483	-0.091	0.042	0.054	-0.073	0.056	0.058	0.143	-0.107	-0.057	-0.280	-0.334	0.163	-0.135	0.095	0.067	0.023	-0.291	0.136	-0.117
PWIQ3	0.336	-0.125	0.194	0.098	-0.174	0.058	0.116	0.276	-0.357	0.320	-0.077	0.046	0.181	0.068	-0.121	0.244	-0.049	0.042	-0.124	-0.015
PWIQ4	0.097	0.172	-0.160	0.354	0.124	0.149	0.063	0.067	-0.015	0.365	0.132	-0.276	0.172	0.041	0.023	-0.334	0.037	0.092	0.020	0.040
PWIQ5	0.706	0.078	0.202	0.088	-0.083	0.049	-0.129	0.043	-0.148	0.022	0.000	-0.029	0.114	-0.023	0.139	-0.038	-0.071	-0.018	0.016	0.036
PWIQ6	0.419	0.182	-0.353	0.212	0.111	0.125	-0.069	-0.016	-0.067	0.062	-0.037	-0.161	0.094	-0.112	0.169	-0.209	0.158	-0.007	-0.110	0.000
PWSQ1	0.653	0.326	0.046	0.105	-0.197	-0.065	-0.055	-0.011	-0.085	0.137	0.120	-0.012	-0.130	0.112	0.067	0.093	0.075	-0.064	0.057	-0.058
PWSQ2	0.541	0.219	-0.044	0.207	-0.287	-0.191	-0.046	0.060	0.206	-0.096	-0.187	0.064	-0.017	-0.104	0.057	-0.116	-0.111	-0.117	-0.068	0.092
PWSQ3	0.527	0.336	0.112	-0.068	-0.164	-0.124	-0.016	0.106	-0.021	-0.045	0.090	0.162	-0.142	0.030	-0.225	-0.164	0.077	0.187	-0.045	-0.012
PWSQ4	0.413	0.306	-0.008	0.006	0.013	-0.153	-0.093	0.037	-0.108	0.098	-0.084	0.003	0.128	0.133	0.163	-0.240	0.232	0.119	0.009	-0.349
PWSQ5	-0.053	0.192	-0.201	0.423	0.100	0.007	-0.278	0.012	-0.142	0.313	-0.218	-0.101	0.148	0.049	-0.207	-0.225	-0.196	0.059	0.007	0.050
PWSQ6	0.402	0.172	-0.025	-0.200	0.017	0.081	-0.476	-0.013	0.023	0.248	-0.019	0.227	0.095	-0.071	0.187	-0.088	0.069	-0.062	-0.105	0.141
PWSQ7	0.657	0.269	0.009	0.039	-0.290	-0.136	-0.136	-0.023	0.151	-0.134	-0.057	0.043	-0.052	-0.059	-0.219	-0.116	-0.175	0.091	-0.143	0.044
PWSQ8	-0.066	0.025	-0.352	0.102	0.190	0.026	0.269	0.119	-0.150	0.268	0.166	-0.069	-0.046	0.153	0.114	0.228	-0.093	-0.048	0.097	0.268
PWSQ9	0.551	-0.096	0.024	0.162	-0.136	-0.018	0.141	0.097	0.166	0.045	-0.291	0.213	0.079	0.197	0.071	0.157	-0.081	0.014	-0.317	0.048
PPC	0.104	-0.062	0.243	0.228	0.159	0.050	-0.167	-0.009	0.322	0.272	0.007	-0.118	0.094	0.245	-0.040	0.131	-0.106	0.126	0.272	-0.064
PVC	0.185	-0.228	0.214	-0.233	-0.017	0.179	-0.036	-0.191	0.269	0.256	0.003	-0.029	0.223	-0.330	0.081	-0.127	-0.192	0.006	-0.134	0.019
PAC	0.093	-0.259	0.399	-0.135	0.065	0.065	0.133	-0.205	0.340	-0.012	-0.017	0.019	0.236	0.026	0.217	-0.007	0.041	-0.071	0.169	0.025
PLC	0.139	-0.244	0.102	-0.240	0.157	0.190	-0.069	-0.364	0.372	0.105	-0.004	0.180	0.089	-0.120	0.106	-0.154	0.212	0.187	-0.058	-0.024
PPB	0.499	-0.073	-0.004	-0.089	0.085	0.142	0.031	-0.182	-0.344	-0.065	-0.193	-0.004	-0.005	0.133	0.081	-0.102	-0.277	0.056	0.035	-0.182
PVB	0.375	-0.125	-0.092	-0.004	-0.060	-0.017	-0.321	0.056	0.015	-0.231	0.180	-0.253	0.197	0.341	0.129	0.020	0.055	-0.072	-0.193	-0.217
PAB	0.338	-0.089	0.052	0.007	-0.181	0.043	-0.189	0.119	0.275	-0.072	0.165	-0.079	-0.054	0.414	0.047	-0.167	-0.265	0.069	0.108	-0.021
PLB	0.266	-0.100	0.070	0.129	-0.009	0.108	-0.174	-0.008	0.053	-0.182	0.473	0.066	-0.071	0.231	0.224	-0.072	-0.091	0.285	0.106	-0.036

Component Matrix Continued																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PWIF1	0.368	0.266	0.079	0.077	-0.130	-0.291	0.364	-0.108	0.034	0.166	-0.122	-0.010	0.108	0.014	0.163	-0.125	-0.075	0.263	0.024	0.016
PWIF2	0.350	0.335	0.124	0.105	-0.192	-0.238	0.393	-0.043	0.109	-0.118	-0.223	-0.014	-0.046	0.080	0.163	-0.055	-0.017	0.151	0.023	0.239
PWIF3	0.325	-0.004	-0.361	0.124	0.140	0.237	0.160	-0.177	0.255	-0.102	-0.172	0.096	0.192	-0.110	0.000	0.006	0.009	-0.012	0.271	0.096
PWIF4	0.303	0.221	-0.163	0.053	-0.126	0.017	0.215	0.070	0.119	0.097	-0.260	0.127	0.172	0.299	-0.055	-0.034	0.395	0.079	0.188	0.023
PWIF5	0.294	0.244	-0.158	-0.014	0.031	-0.138	0.154	-0.333	0.134	-0.086	0.148	-0.015	0.414	0.106	-0.006	0.118	0.019	-0.077	0.134	-0.280
PWIF6	-0.003	0.424	-0.400	0.287	0.106	0.145	0.110	0.020	0.075	0.176	-0.143	-0.053	-0.067	-0.197	-0.205	0.020	0.096	-0.006	0.032	-0.134
PPF1	0.499	-0.128	0.274	-0.105	-0.064	-0.093	0.000	0.109	0.019	0.008	-0.042	0.055	0.023	-0.279	0.237	0.240	-0.072	0.234	-0.161	-0.030
PPF2	0.493	-0.250	0.160	0.171	0.029	-0.258	0.015	0.069	-0.032	0.013	-0.122	0.031	-0.110	0.027	0.208	0.045	0.077	0.186	0.017	-0.036
PPF3	0.206	0.158	-0.451	0.344	0.166	0.050	-0.068	0.093	-0.056	-0.045	-0.055	0.128	-0.249	0.025	0.046	-0.007	0.050	-0.040	-0.198	-0.218
PPF4	0.374	0.061	0.176	0.093	-0.094	-0.250	-0.069	0.167	0.016	0.037	0.291	-0.187	0.076	-0.190	-0.121	-0.031	0.060	0.129	0.041	0.232
PPE1	0.691	-0.125	0.003	0.074	-0.347	0.209	0.024	-0.118	0.015	0.056	0.128	-0.115	0.046	-0.132	-0.033	0.191	-0.056	-0.021	0.054	-0.081
PPE2	0.613	-0.279	-0.095	0.232	-0.340	0.201	0.174	-0.038	0.039	-0.003	-0.110	-0.048	-0.075	0.010	-0.045	0.066	-0.016	0.178	0.018	-0.066
PPE3	0.553	0.049	-0.414	0.177	-0.129	0.320	-0.012	-0.033	0.107	0.179	-0.134	0.004	0.115	0.023	-0.053	0.114	-0.052	0.032	-0.121	0.061
PPE4	0.577	-0.069	-0.372	0.195	-0.220	0.178	-0.178	-0.031	0.047	-0.026	0.014	-0.034	0.096	-0.115	0.053	0.099	-0.098	-0.158	-0.121	-0.047
PPE5	0.604	-0.191	0.002	0.106	-0.213	0.096	0.055	0.018	0.309	-0.085	-0.179	-0.203	0.024	-0.020	-0.143	0.073	0.122	0.002	-0.190	-0.048
PPE6	0.544	-0.055	-0.261	0.075	-0.364	0.251	0.130	0.020	0.048	0.031	0.032	-0.034	0.077	-0.040	-0.032	0.170	-0.116	-0.016	-0.113	-0.025
PPU1	0.706	-0.080	-0.091	0.007	-0.290	0.242	0.076	-0.082	-0.110	0.040	0.072	0.062	0.092	0.093	-0.231	0.146	-0.052	0.178	-0.062	0.082
PPU2	0.658	-0.238	0.074	0.025	-0.173	0.005	-0.009	-0.279	-0.072	0.011	0.084	0.072	-0.179	-0.044	-0.187	-0.049	0.028	-0.101	0.073	0.255
PPU3	0.620	-0.121	0.011	0.066	-0.274	-0.013	-0.107	-0.202	-0.061	-0.105	0.125	-0.228	-0.175	-0.074	0.023	-0.056	0.136	0.027	-0.044	0.170
PPU4	0.311	-0.243	-0.257	0.077	0.202	0.441	-0.235	-0.072	0.150	-0.112	0.005	-0.094	-0.129	0.038	-0.114	0.068	0.099	-0.069	0.165	0.027
PPU5	0.584	-0.245	0.057	0.119	-0.216	0.034	-0.021	-0.202	-0.029	0.090	0.005	0.187	-0.199	0.029	-0.018	-0.007	0.229	-0.117	-0.059	0.082
PPU6	0.654	-0.256	-0.019	-0.002	-0.250	0.248	-0.043	-0.137	0.001	-0.001	0.108	0.077	-0.028	0.168	-0.146	-0.020	0.049	0.073	0.078	0.094
PPU7	0.581	-0.245	-0.021	0.199	-0.324	-0.019	0.047	-0.164	-0.063	-0.008	0.130	-0.083	-0.167	0.078	0.101	-0.010	-0.056	-0.031	0.109	0.058
PWUA1	0.751	0.116	-0.158	0.051	-0.170	-0.058	-0.105	-0.167	0.065	0.045	-0.042	0.022	-0.003	0.132	0.001	-0.190	-0.113	-0.057	-0.080	-0.015
PWUA2	0.471	-0.187	-0.045	0.155	0.000	-0.214	0.030	-0.105	-0.339	0.173	-0.199	-0.076	-0.075	-0.280	0.034	-0.108	0.174	0.059	0.045	-0.088
PWUA3	0.558	-0.315	0.186	0.242	-0.030	-0.060	0.001	-0.137	-0.055	0.052	-0.219	0.046	-0.237	0.116	-0.037	-0.212	-0.056	-0.078	0.107	-0.059
PWUA4	0.693	0.112	0.137	-0.015	-0.039	-0.049	-0.049	-0.046	-0.346	0.180	0.038	0.056	-0.077	0.001	0.073	-0.046	-0.004	-0.050	0.124	0.002
PWUA5	0.571	-0.294	0.195	0.137	0.020	-0.135	-0.131	-0.159	0.004	-0.021	-0.081	-0.090	-0.240	-0.151	0.044	-0.054	-0.143	-0.105	0.256	0.039
PWUA6	0.438	0.256	0.105	-0.124	-0.129	-0.049	0.127	-0.108	-0.053	0.101	0.017	-0.062	-0.236	-0.114	0.125	0.119	-0.280	-0.044	0.071	-0.192

Principal Component Scores									
Case	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
1	0.376	-0.590	-0.202	-0.223	0.250	0.406	-0.247	-0.233	-0.701
2	0.425	-0.215	-0.290	-0.084	0.663	0.718	-0.424	0.057	0.279
3	-1.120	-0.105	-0.046	-0.471	-0.292	1.195	-0.226	0.309	0.015
4	0.144	-0.185	-0.065	-0.145	0.827	-0.947	-1.241	-1.751	-0.271
5	0.119	-1.054	0.586	0.537	0.417	0.556	-1.189	0.058	-0.103
6	-1.656	-0.334	0.376	0.533	0.360	0.928	-0.077	-0.391	-0.216
7	-0.329	-1.640	0.666	0.952	-2.129	0.093	-0.963	0.033	0.173
8	0.882	0.163	1.037	-0.265	-2.670	-0.646	0.847	0.617	-0.096
9	-0.663	2.362	0.333	0.548	-3.892	0.240	-0.508	0.431	-2.696
10	1.529	-0.265	1.978	-1.058	0.228	-0.284	0.384	-0.689	2.650
11	-0.440	-0.587	0.856	-0.371	-0.393	0.389	-0.180	0.741	-0.023
12	-1.305	-0.114	0.996	2.156	0.758	-1.737	0.410	0.072	0.686
13	-1.290	-0.953	0.597	-0.293	0.484	1.290	-0.119	-0.771	-0.102
14	0.125	-0.814	1.721	-0.556	0.011	0.013	-0.347	-0.276	-0.470
15	-1.405	-1.426	-0.371	0.007	0.537	0.612	-0.238	-0.272	-0.431
16	-0.347	1.510	0.488	0.011	1.027	1.835	0.297	0.750	0.673
17	-1.064	-0.128	-0.318	1.701	0.707	0.094	0.675	0.627	0.199
18	1.149	0.404	-1.769	-0.098	-0.405	-1.235	-0.477	-0.309	-0.478
19	-0.995	-1.569	1.031	-0.388	0.225	0.597	-0.393	-0.184	-0.697
20	0.614	0.840	0.274	0.427	-0.209	2.740	-1.602	1.921	-0.920
21	0.271	-0.622	0.378	0.661	0.776	0.795	-0.419	-0.014	0.615
22	0.397	-0.057	-0.401	-0.296	0.221	-0.031	-0.056	-0.507	-0.528
23	-0.431	1.323	0.839	0.690	-0.475	-1.067	-0.352	1.442	-0.903
24	0.133	-0.078	-0.214	-0.359	-0.324	0.838	0.521	0.122	0.459
25	0.853	-0.498	-0.568	0.481	0.330	0.278	0.153	-0.065	-0.269

Principal Component Scores Continued									
Case	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
26	-0.784	-0.724	0.156	-0.139	0.180	0.225	-0.483	-0.572	-0.619
27	0.211	0.547	-0.226	-1.125	0.823	0.466	-1.549	-0.390	0.087
28	-0.166	0.624	-0.999	1.179	-1.007	0.273	-2.064	0.296	-2.382
29	0.286	2.423	-1.158	-1.288	1.435	-0.701	-1.359	1.030	-0.600
30	0.512	-0.416	0.460	0.176	0.439	0.542	-0.202	-1.207	-1.537
31	0.532	0.956	0.007	1.276	2.156	-1.831	1.342	0.705	-0.526
32	2.106	0.172	0.406	1.499	0.625	0.479	1.196	0.109	-2.052
33	0.021	0.728	0.180	-1.304	-1.796	0.024	0.902	-0.343	2.689
34	0.759	-0.874	-0.262	1.627	-0.457	-0.751	0.112	-0.987	-0.154
35	-0.308	-0.050	-0.561	1.633	0.159	-0.616	1.271	0.476	1.227
36	0.865	0.082	-0.400	0.736	-0.175	-1.542	-0.324	0.485	0.003
37	-1.269	0.261	0.098	0.041	0.783	-1.348	-0.884	0.172	0.204
38	-1.887	-1.222	-2.654	0.785	-0.779	0.693	-0.283	-0.846	-0.636
39	-0.811	1.357	-0.257	-0.370	0.605	-0.211	1.267	0.428	0.667
40	-0.487	-0.574	-1.223	-2.157	-0.007	-0.211	0.658	1.190	-0.392
41	1.850	-0.425	0.900	0.550	0.344	0.424	0.487	-0.721	-2.309
42	-0.980	2.703	-0.213	-2.821	0.429	-2.272	-0.122	0.089	1.382
43	-0.086	-0.388	0.149	0.093	0.337	0.130	-0.037	-0.550	-0.989
44	1.088	-0.223	-1.028	-0.061	-1.349	-0.365	-0.350	-1.395	1.082
45	0.159	-0.257	-1.244	-0.101	-0.468	-0.928	-0.596	0.197	0.892
46	0.370	-0.217	-1.506	-0.265	0.531	-1.672	0.672	0.780	0.393
47	-1.069	1.293	-2.021	-0.820	0.502	1.511	-2.078	0.988	-0.422
48	0.843	1.627	0.300	1.513	1.152	-0.697	-1.417	0.330	-0.060
49	1.566	0.881	-0.419	-0.094	0.091	0.261	-0.536	-0.581	0.456
50	-0.557	-0.206	-0.405	-0.846	1.242	0.087	-0.099	-0.459	-0.700

Principal Component Scores Continued									
Case	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
51	-1.125	-0.134	-0.854	-0.887	0.541	-0.186	-0.702	-0.748	0.751
52	0.124	-0.142	-1.065	0.500	-0.477	-0.542	-0.161	0.022	0.045
53	-0.910	-0.560	1.701	1.055	0.374	-0.226	-0.581	0.176	-0.293
54	-2.454	-0.139	0.436	-0.763	-0.371	1.154	4.252	-0.472	0.660
55	-0.068	0.615	-0.210	0.040	0.959	0.450	0.080	0.630	-0.980
56	-0.224	0.176	-1.874	-1.120	-1.048	0.544	-0.208	-1.524	0.118
57	0.558	-1.674	-0.740	-0.542	0.358	0.337	0.633	0.143	0.914
58	-1.711	-0.064	-0.044	0.629	0.363	-1.415	1.439	0.389	1.090
59	0.528	1.830	1.513	-0.878	-1.177	2.481	1.141	-0.349	1.321
60	2.251	-2.221	1.388	-2.715	-1.834	-2.206	-0.192	0.698	0.187
61	-2.096	1.432	0.475	-0.626	-1.133	-0.670	2.459	1.967	-2.422
62	0.499	1.337	-0.502	0.464	2.253	0.460	2.023	0.588	-2.748
63	1.117	-0.846	1.050	0.352	0.150	0.438	0.192	0.925	-0.193
64	-0.589	0.708	1.191	1.690	-0.626	-1.745	-2.652	1.240	-1.160
65	-0.772	0.368	0.859	0.365	-0.398	-0.536	0.593	-1.306	0.763
66	-0.342	0.491	0.188	-3.184	1.374	1.103	0.949	0.212	-0.375
67	-0.151	-0.820	-0.182	0.098	1.102	0.894	0.105	-0.403	0.269
68	-0.378	-0.898	1.102	-1.863	-0.155	-0.075	0.673	-2.541	-1.574
69	1.574	-0.880	4.851	-1.454	-2.101	-2.047	-0.052	0.052	-1.590
70	-1.361	-1.707	0.040	0.134	-0.101	1.002	0.112	-0.026	-0.454
71	-1.338	0.097	1.467	1.110	-1.040	-0.143	-0.145	0.562	1.167
72	0.006	-0.692	-0.293	-0.465	-0.167	-0.121	-0.205	-0.138	-0.731
73	-0.374	0.080	0.406	1.067	-0.040	0.722	-0.069	-0.468	-0.679
74	-0.514	-1.412	1.030	-0.421	-0.270	-0.073	-1.047	-0.136	-0.273
75	2.058	-0.655	0.109	0.073	0.254	-0.381	-0.426	-0.662	1.827

Principal Component Scores Continued									
Case	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
76	0.494	-0.451	0.650	0.618	-0.108	0.518	0.012	-0.831	1.439
77	0.474	-1.144	-0.912	-0.229	-0.316	-0.336	-0.749	-0.667	0.109
78	0.367	0.611	-0.192	-0.685	-0.005	-0.078	0.507	0.240	0.352
79	-0.791	1.595	1.012	-0.528	1.002	0.072	-0.520	0.673	-0.860
80	1.892	-0.938	-1.446	-0.371	0.494	-0.421	1.911	0.010	-0.686
81	0.150	-1.574	0.483	-0.248	-0.580	0.002	-0.077	0.013	-0.363
82	-1.402	0.429	0.839	2.009	-0.377	-0.569	-0.593	2.048	1.477
83	2.517	-0.940	-0.794	0.114	1.557	0.353	0.312	1.203	0.718
84	0.778	0.325	1.175	-1.443	0.108	0.688	0.528	2.369	-0.235
85	1.319	-0.751	0.183	-0.129	0.919	0.607	-0.224	-0.141	-0.093
86	-1.007	-1.484	1.526	1.040	0.597	-0.109	-1.015	0.755	0.240
87	0.723	1.112	-1.539	-1.688	-1.021	-0.100	0.606	-0.641	-0.886
88	1.444	-0.002	-1.371	0.557	-0.545	1.233	0.381	2.077	-0.365
89	0.111	1.548	-2.756	0.018	-2.283	-2.999	0.498	-2.364	0.481
90	0.804	2.055	-0.250	-0.180	-1.604	0.980	0.106	-0.971	-1.562
91	0.151	0.133	0.538	-0.131	0.671	-0.916	-1.204	-1.312	0.302
92	-0.522	0.073	0.371	1.917	-0.245	0.693	0.642	-0.408	-0.451
93	1.975	-1.190	-0.017	-0.371	0.647	-1.124	-0.062	0.757	1.224
94	-1.096	0.072	-0.835	-1.930	-0.437	0.461	0.408	1.671	1.074
95	0.835	-0.242	-0.382	0.774	0.869	1.011	-0.523	-0.156	-0.236
96	0.339	0.444	0.421	0.848	-0.295	-0.897	1.471	-2.314	0.005
97	0.477	0.594	1.086	-0.734	-1.530	1.745	0.463	-0.718	0.366
98	-0.526	-1.433	-0.383	1.025	-0.118	-0.637	-0.180	-0.291	0.007
99	-0.160	-0.035	-2.744	-0.291	-1.034	-0.519	-2.128	0.245	-0.162

Principal Component Scores Continued									
Case	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
100	0.097	0.282	-0.247	0.410	0.251	0.135	-0.756	-0.543	0.129
101	-0.577	1.145	0.884	0.387	2.338	-2.027	0.421	-1.198	-0.102
102	0.714	0.354	-0.890	1.907	-2.006	-1.162	3.158	1.204	-0.386
103	-0.970	0.377	-1.191	0.319	-0.877	0.421	-1.122	-0.408	0.594
104	-0.243	-1.541	-1.197	0.723	-0.944	0.275	-0.890	0.007	-0.514
105	-1.135	-1.557	-1.109	-0.474	-0.637	0.747	-1.215	0.016	-0.619
106	0.490	0.483	-0.477	0.990	-1.064	-0.529	-0.136	-0.405	0.170
107	-0.628	-0.004	-1.094	1.215	0.158	0.623	1.361	0.670	0.273
108	-1.790	-0.990	-0.433	-0.077	-0.600	0.415	1.980	-0.138	-0.490
109	-0.081	0.623	0.198	-0.356	0.036	-0.013	-0.374	-1.188	1.229
110	-0.782	-1.173	0.214	-0.184	-0.016	0.433	-0.138	0.271	0.066
111	-0.735	-1.621	-0.047	0.521	-0.797	1.704	0.764	-0.618	0.862
112	-0.356	-0.550	0.048	-0.956	0.408	-0.426	-0.726	0.837	-0.506
113	2.127	-0.415	-0.138	0.401	0.761	0.179	0.356	1.526	0.581
114	0.670	-0.562	-0.595	-1.307	0.468	1.599	0.505	-0.059	-0.383
115	0.813	0.083	0.519	0.357	-0.011	-0.092	-0.815	-0.276	0.265
116	-1.039	-0.078	1.291	-0.472	-0.004	-0.370	-0.444	-0.258	-0.183
117	-1.863	-1.783	-0.405	-3.574	0.945	-2.432	-0.279	2.476	-1.161
118	1.008	0.876	0.519	0.790	1.790	1.543	0.804	0.622	0.589
119	0.527	0.360	-1.071	1.139	-0.384	0.355	1.556	-0.333	0.909
120	1.311	2.331	0.474	0.100	-0.121	1.597	-0.659	-0.851	-0.042
121	-1.018	0.879	0.481	0.530	1.794	-0.878	0.282	0.704	2.804
122	-0.507	0.601	0.305	0.975	0.808	-1.333	0.423	-2.480	-2.172
123	0.625	1.202	0.381	0.333	-0.089	-0.354	0.527	1.485	-0.557
124	0.873	1.380	1.325	0.067	1.976	-0.212	-0.087	-1.454	0.299

Principal Component Scores Continued									
Case	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
125	0.652	-1.083	-1.390	-0.446	0.669	0.551	-0.115	-0.778	0.360
126	-1.748	0.926	0.295	-0.973	1.877	-0.273	1.341	-3.175	-0.860
127	-1.310	1.111	0.119	0.592	0.071	0.064	-2.693	1.565	2.368
128	0.482	0.644	-0.612	-0.863	1.036	-0.766	-0.228	0.633	0.760
129	0.014	0.009	0.811	-0.614	0.146	-0.171	-0.114	0.552	0.763
130	-0.952	0.848	0.580	0.644	-2.388	0.085	0.883	1.221	1.636
131	0.103	0.222	0.095	1.293	0.105	0.466	-0.157	-1.616	1.190
132	0.720	2.464	0.478	-1.231	-0.907	1.813	-1.378	-0.645	0.565
133	-0.442	0.827	1.333	-0.336	-0.304	-0.709	-1.551	-0.345	-0.465
134	0.680	-0.032	-0.361	-0.152	-0.607	0.117	-0.729	-1.646	0.482
135	1.298	-1.055	-1.332	0.570	0.277	-2.381	0.775	1.809	-0.918
136	-0.635	-0.505	0.092	0.726	0.445	-0.230	-0.595	-0.723	1.043
137	0.695	-0.360	-0.225	0.278	0.116	1.772	0.610	1.943	-0.206
138	-0.218	-1.070	-0.088	0.365	0.774	0.394	0.244	0.294	-0.378
139	0.744	-0.188	-0.239	-0.051	-1.477	0.554	0.673	0.279	1.918
<b>Mean</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Std Dev</b>	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
<b>Skewness</b>	0.110	0.370	0.381	-0.687	-0.609	-0.311	0.560	-0.155	-0.038
<b>Kurtosis</b>	-0.268	-0.037	3.621	1.475	1.543	0.614	2.646	0.740	1.062
<b>Maximum</b>	2.517	2.703	4.851	2.156	2.338	2.740	4.252	2.476	2.804
<b>Minimum</b>	-2.454	-2.221	-2.756	-3.574	-3.892	-2.999	-2.693	-3.175	-2.748

## APPENDIX B – Factor Analysis

### Unrotated Solution

Extraction Method: Maximum Likelihood

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	23.654	21.504	21.504	23.175	21.068	21.068
2	7.669	6.972	28.476	6.568	5.971	27.039
3	6.014	5.467	33.943	5.968	5.426	32.464
4	3.850	3.500	37.443	3.382	3.075	35.539
5	3.825	3.477	40.919	3.658	3.325	38.864
6	3.137	2.852	43.771	2.949	2.681	41.546
7	2.722	2.474	46.245	2.245	2.041	43.586
8	2.646	2.406	48.651	2.270	2.064	45.650
9	2.535	2.304	50.955	2.057	1.870	47.520
10	2.252	2.047	53.002	1.889	1.718	49.238
11	2.185	1.986	54.988	1.718	1.562	50.800
12	1.949	1.772	56.761	1.531	1.391	52.191
13	1.907	1.734	58.494	1.475	1.341	53.532
14	1.783	1.621	60.116	1.411	1.283	54.815
15	1.722	1.566	61.682	1.380	1.254	56.069
16	1.698	1.544	63.226	1.275	1.159	57.228
17	1.612	1.466	64.691	1.240	1.127	58.355
18	1.555	1.414	66.105	1.183	1.075	59.431
19	1.467	1.334	67.439	1.104	1.004	60.435
20	1.352	1.229	68.668	0.980	0.891	61.326

<b>Communalities</b>		
	<b>Initial</b>	<b>Extraction</b>
PCRF1	0.943	0.718
PCRF2	0.919	0.660
PCRF3	0.932	0.568
PCRF4	0.965	0.781
PCRF5	0.904	0.715
PCRF6	0.887	0.555
PCMF1	0.916	0.799
PCMF2	0.937	0.799
PCMF3	0.927	0.829
PCMF4	0.904	0.715
PCMF5	0.917	0.654
PCMF6	0.907	0.582
PEPTS1	0.857	0.529
PEPTS2	0.914	0.466
PEPTS3	0.955	0.589
PEPTS4	0.896	0.706
PEPTS5	0.861	0.463
PEPSS1	0.884	0.715
PEPSS2	0.855	0.544
PEPSS3	0.880	0.509
PEPSS4	0.923	0.630
PEPSS5	0.880	0.499
PEPPS1	0.907	0.667
PEPPS2	0.930	0.596
PEPPS3	0.887	0.663
PEPPS4	0.872	0.687
PEPPS5	0.915	0.672

<b>Communalities Continued</b>		
	<b>Initial</b>	<b>Extraction</b>
PEPS1	0.881	0.649
PEPS2	0.913	0.649
PEPS3	0.918	0.550
PEPS4	0.771	0.447
PEPS5	0.945	0.765
PEPM1	0.944	0.654
PEPM2	0.930	0.853
PEPM3	0.899	0.569
PEPM4	0.948	0.719
PEPM5	0.875	0.610
PEPT1	0.915	0.750
PEPT2	0.814	0.481
PEPT3	0.879	0.627
PEPT4	0.891	0.726
PEPT5	0.896	0.604
ATUD1	0.963	0.878
ATUD2	0.948	0.795
ATUD3	0.952	0.825
ATUD4	0.921	0.735
ATUD5	0.952	0.865
UDI1	0.872	0.627
UDI2	0.917	0.621
UDI3	0.890	0.627
PC1	0.831	0.392
PC2	0.922	0.696
PC3	0.889	0.592

Communalities Continued		
	Initial	Extraction
PEOU1	0.875	0.512
PEOU2	0.881	0.590
PEOU3	0.805	0.535
PEOU4	0.927	0.718
PEOU5	0.937	0.800
PWIQ1	0.907	0.607
PWIQ2	0.870	0.543
PWIQ3	0.868	0.523
PWIQ4	0.810	0.401
PWIQ5	0.925	0.607
PWIQ6	0.903	0.496
PWSQ1	0.940	0.669
PWSQ2	0.886	0.629
PWSQ3	0.833	0.544
PWSQ4	0.816	0.365
PWSQ5	0.850	0.638
PWSQ6	0.934	0.549
PWSQ7	0.917	0.848
PWSQ8	0.811	0.315
PWSQ9	0.906	0.697
PPC	0.783	0.365
PVC	0.809	0.423
PAC	0.894	0.458
PLC	0.898	0.558
PPB	0.936	0.439
PVB	0.858	0.429
PAB	0.906	0.360
PLB	0.849	0.312

Communalities Continued		
	Initial	Extraction
PWIF1	0.884	0.594
PWIF2	0.847	0.622
PWIF3	0.897	0.439
PWIF4	0.863	0.395
PWIF5	0.836	0.407
PWIF6	0.846	0.580
PPF1	0.934	0.523
PPF2	0.904	0.498
PPF3	0.870	0.489
PPF4	0.791	0.360
PPE1	0.955	0.806
PPE2	0.962	0.772
PPE3	0.903	0.739
PPE4	0.935	0.731
PPE5	0.911	0.665
PPE6	0.935	0.615
PPU1	0.938	0.840
PPU2	0.915	0.753
PPU3	0.904	0.659
PPU4	0.918	0.553
PPU5	0.871	0.651
PPU6	0.911	0.754
PPU7	0.900	0.606
PWUA1	0.932	0.735
PWUA2	0.869	0.566
PWUA3	0.901	0.681
PWUA4	0.897	0.700
PWUA5	0.911	0.757
PWUA6	0.863	0.423

Component Matrix																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PCRF1	0.672	-0.127	0.280	0.162	0.062	-0.019	0.287	-0.003	-0.023	-0.092	0.029	-0.007	0.061	-0.087	-0.085	0.099	-0.001	-0.102	0.055	0.083
PCRF2	0.652	-0.059	0.184	0.093	-0.011	-0.086	0.245	-0.150	0.173	-0.147	-0.128	0.026	0.019	0.018	0.085	0.097	-0.047	0.101	0.000	-0.023
PCRF3	0.423	-0.130	-0.013	0.273	0.250	0.164	0.034	-0.160	0.161	-0.221	0.004	0.056	0.109	-0.087	0.081	-0.114	0.134	-0.107	0.131	-0.132
PCRF4	0.664	-0.172	0.300	0.167	0.033	-0.095	0.312	0.007	-0.029	-0.092	0.050	-0.052	0.098	-0.119	0.074	0.119	-0.020	-0.126	0.085	0.049
PCRF5	0.470	-0.208	0.441	0.032	0.023	-0.143	0.321	-0.026	0.176	-0.136	0.114	0.007	0.006	0.041	-0.046	0.017	0.064	-0.034	-0.138	0.199
PCRF6	0.384	-0.132	0.052	0.287	0.226	0.211	0.306	-0.092	0.057	-0.214	0.070	-0.031	-0.013	0.005	0.162	0.047	-0.054	-0.007	0.143	0.017
PCMF1	0.402	-0.058	0.457	0.520	0.114	-0.176	-0.221	-0.045	-0.043	0.015	0.036	0.112	-0.090	0.099	-0.039	-0.145	-0.028	-0.002	-0.021	-0.048
PCMF2	0.512	-0.164	0.452	0.446	0.037	-0.031	-0.108	0.074	-0.049	0.009	0.008	0.000	-0.207	-0.023	0.073	0.030	0.037	-0.041	-0.161	-0.082
PCMF3	0.355	-0.034	0.183	0.378	0.541	0.201	-0.072	0.189	0.023	0.113	-0.276	-0.089	0.019	0.035	-0.076	-0.109	0.059	0.131	0.020	0.112
PCMF4	0.529	-0.103	0.416	0.270	0.181	-0.112	-0.154	0.080	-0.104	0.028	-0.079	0.135	-0.035	-0.138	-0.115	0.054	-0.091	0.101	-0.109	-0.021
PCMF5	0.470	-0.168	0.452	0.209	0.131	-0.033	-0.166	0.127	-0.034	-0.006	0.090	0.060	-0.112	0.032	0.090	0.092	0.148	-0.148	0.013	-0.093
PCMF6	0.277	-0.017	0.122	0.394	0.423	0.181	0.077	-0.086	0.042	0.241	-0.126	0.029	0.076	-0.058	-0.075	0.060	-0.004	-0.022	0.007	-0.117
PEPTS1	0.513	0.139	-0.078	0.208	-0.264	0.087	-0.072	-0.300	0.065	0.039	0.046	0.068	0.047	0.034	-0.045	0.035	0.047	0.038	-0.044	0.020
PEPTS2	0.191	0.086	-0.359	0.126	0.122	0.307	-0.140	0.056	-0.215	-0.095	-0.016	0.100	0.123	0.122	0.127	0.024	0.085	0.074	-0.125	0.067
PEPTS3	0.650	0.240	-0.062	0.034	-0.100	0.022	-0.068	-0.037	0.037	-0.130	0.119	-0.010	-0.049	-0.038	-0.079	-0.081	0.082	0.141	0.007	-0.109
PEPTS4	0.530	0.129	-0.061	0.120	-0.279	0.279	0.003	-0.329	-0.128	0.093	0.113	0.071	0.080	-0.022	0.025	-0.190	0.191	0.037	-0.013	-0.053
PEPTS5	0.300	0.107	0.131	0.107	-0.232	0.082	0.228	0.215	0.204	-0.192	0.094	0.000	0.128	0.131	-0.141	-0.014	0.141	-0.083	0.086	-0.017
PEPSS1	0.519	0.190	-0.064	0.201	-0.369	0.195	-0.190	-0.311	0.180	-0.084	0.061	-0.028	-0.001	0.029	-0.067	0.031	-0.040	0.041	-0.030	0.058
PEPSS2	0.293	0.022	-0.321	0.236	0.165	0.273	-0.098	-0.222	-0.016	0.114	0.159	-0.067	0.078	0.062	-0.104	0.141	0.100	0.032	-0.164	0.131
PEPSS3	0.355	0.202	-0.002	0.074	-0.288	0.336	-0.087	-0.026	-0.058	0.013	0.154	0.031	-0.092	0.108	-0.053	-0.030	-0.127	-0.225	0.035	-0.110
PEPSS4	0.515	0.162	-0.026	0.209	-0.295	0.284	-0.164	-0.064	0.182	-0.102	0.110	0.054	-0.071	-0.033	-0.083	-0.101	0.056	0.064	0.073	0.042
PEPSS5	0.408	0.208	0.066	0.136	-0.262	0.121	0.148	0.119	0.021	0.017	-0.122	0.066	0.133	0.035	-0.207	0.139	0.128	-0.160	0.005	-0.057
PEPPS1	0.538	0.088	0.031	0.011	-0.377	0.247	-0.158	-0.122	0.262	-0.007	0.074	-0.132	0.000	0.054	0.053	0.005	0.039	0.132	0.043	0.083
PEPPS2	0.502	0.253	-0.099	0.092	-0.166	0.110	-0.188	0.197	0.012	0.072	0.117	-0.111	-0.114	-0.067	-0.059	0.247	0.082	0.087	-0.015	0.141
PEPPS3	0.245	0.166	-0.399	0.245	0.091	0.214	0.059	0.295	0.310	0.075	-0.018	-0.136	0.047	-0.072	-0.040	0.017	0.188	-0.074	-0.092	-0.181
PEPPS4	0.451	0.229	0.033	0.000	-0.193	0.178	-0.034	-0.004	0.331	-0.233	0.014	-0.103	-0.289	0.282	-0.009	0.010	0.090	0.031	0.103	0.031
PEPPS5	0.482	0.283	-0.125	0.129	-0.289	0.095	-0.088	0.088	0.013	0.078	-0.127	0.095	-0.180	0.036	-0.300	0.217	-0.057	-0.020	0.095	0.069
PEPS1	0.531	0.109	-0.131	0.164	-0.233	-0.057	-0.195	0.185	0.015	0.096	0.046	-0.006	0.200	-0.163	0.050	0.088	-0.114	-0.169	-0.208	0.093
PEPS2	0.586	0.217	-0.081	0.141	-0.133	-0.077	-0.096	0.120	-0.104	0.118	0.068	0.057	0.102	-0.044	0.154	-0.041	-0.057	-0.102	0.006	0.318
PEPS3	0.328	0.091	-0.236	0.234	0.105	0.194	-0.233	0.123	0.112	0.097	-0.026	0.063	0.258	-0.004	0.129	0.122	0.072	-0.173	-0.014	0.212
PEPS4	0.521	0.044	0.139	0.079	-0.116	-0.016	-0.133	0.058	-0.039	0.003	0.174	0.119	0.170	-0.042	0.097	0.064	-0.081	-0.080	-0.016	-0.101
PEPS5	0.542	0.164	-0.193	0.270	-0.170	-0.046	-0.170	0.377	-0.042	0.028	0.125	0.071	0.099	-0.074	0.045	-0.113	-0.206	-0.097	0.065	0.152
PEPM1	0.487	-0.109	0.369	-0.221	-0.140	0.225	0.128	0.072	0.106	-0.012	0.000	-0.020	0.056	-0.197	-0.066	-0.066	-0.201	-0.072	-0.123	-0.066
PEPM2	0.513	0.065	0.364	-0.154	-0.205	0.358	0.276	0.097	-0.227	0.063	-0.216	0.038	0.093	0.224	0.074	-0.011	-0.018	0.005	-0.042	-0.053
PEPM3	0.172	-0.048	0.004	-0.111	0.047	0.469	0.222	0.275	-0.285	-0.141	0.087	-0.038	0.194	-0.064	0.026	-0.112	-0.029	-0.024	0.106	-0.011
PEPM4	0.587	-0.079	0.370	-0.210	-0.156	0.254	0.044	0.027	0.060	-0.031	-0.091	0.004	0.173	-0.127	-0.048	-0.100	-0.128	0.081	-0.038	0.014
PEPM5	0.418	-0.095	0.317	-0.137	-0.119	0.192	0.200	0.324	-0.157	-0.069	-0.041	0.068	0.018	-0.072	-0.129	0.024	0.078	0.199	-0.047	-0.069
PEPT1	0.501	0.232	-0.342	0.124	0.071	-0.137	0.211	-0.157	-0.072	-0.292	-0.061	0.164	-0.041	-0.069	-0.097	0.139	-0.205	0.141	0.039	0.001
PEPT2	0.157	0.158	-0.451	-0.018	0.194	0.112	0.061	-0.003	-0.060	-0.070	-0.038	-0.130	0.097	-0.258	0.017	0.175	0.093	0.072	0.130	0.095
PEPT3	0.496	0.245	-0.361	0.143	-0.076	-0.109	0.132	-0.074	-0.131	0.024	-0.092	-0.075	-0.041	-0.198	0.130	0.119	-0.071	0.094	0.075	-0.080
PEPT4	0.516	0.156	-0.205	0.154	0.103	-0.099	0.124	-0.220	-0.112	-0.058	-0.028	0.386	-0.094	-0.114	0.198	0.117	0.087	0.054	0.108	-0.151
PEPT5	0.491	0.135	-0.252	0.152	-0.070	0.051	0.109	-0.082	-0.074	-0.164	-0.262	0.225	-0.092	-0.098	0.064	0.106	0.167	-0.040	-0.072	0.113

## Component Matrix Continued

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
ATUD1	-0.193	0.836	0.311	-0.019	0.121	0.043	0.029	-0.024	0.031	-0.011	0.040	-0.008	-0.012	-0.031	-0.077	-0.022	-0.043	-0.071	-0.008	-0.095
ATUD2	-0.191	0.801	0.263	-0.099	0.083	0.045	-0.043	0.020	0.000	-0.013	-0.030	0.062	0.074	-0.028	0.027	-0.075	-0.049	-0.045	0.077	-0.004
ATUD3	-0.214	0.733	0.224	-0.130	0.119	0.108	-0.054	-0.082	-0.097	-0.067	0.132	-0.211	0.030	-0.132	0.038	-0.034	0.138	0.033	-0.145	0.041
ATUD4	-0.270	0.685	0.225	-0.049	0.183	-0.010	-0.099	-0.047	0.035	-0.128	-0.070	0.025	0.098	-0.059	0.068	-0.186	0.113	-0.031	0.068	0.007
ATUD5	-0.208	0.813	0.248	-0.078	0.170	0.072	-0.073	0.007	0.031	-0.090	-0.014	0.056	-0.132	-0.026	0.063	0.095	-0.099	-0.005	-0.011	0.022
UDI1	-0.226	0.593	0.096	-0.094	0.070	-0.187	-0.049	-0.121	0.060	0.177	-0.107	0.189	-0.006	0.028	0.129	0.048	-0.035	0.091	-0.161	0.105
UDI2	-0.228	0.585	0.048	-0.079	-0.018	-0.089	0.144	0.103	0.172	0.127	0.022	0.178	0.256	0.065	-0.030	0.139	-0.046	0.000	0.031	0.088
UDI3	-0.348	0.563	-0.046	0.025	0.138	0.099	0.146	-0.037	0.118	0.135	0.080	0.051	0.104	0.153	-0.035	0.224	0.052	0.014	0.037	0.059
PC1	-0.273	-0.028	0.234	0.002	0.044	-0.051	0.185	-0.104	0.193	0.191	0.166	-0.146	0.009	-0.102	0.055	0.073	0.111	0.224	-0.011	0.090
PC2	-0.073	-0.005	0.278	0.099	-0.086	-0.083	0.306	-0.040	0.094	0.565	0.297	0.094	-0.127	-0.085	-0.083	-0.004	0.113	-0.040	0.136	-0.076
PC3	-0.215	0.100	0.372	-0.240	-0.153	-0.196	0.234	0.081	0.127	0.345	-0.089	0.023	0.002	-0.040	0.127	0.079	0.073	0.149	0.021	0.145
PEOU1	0.456	0.308	-0.295	-0.041	-0.022	-0.002	0.040	0.147	-0.062	0.112	-0.108	-0.151	-0.002	0.069	0.058	0.001	-0.162	-0.041	0.094	-0.027
PEOU2	0.391	0.330	-0.321	0.104	-0.251	-0.068	0.019	0.153	0.067	0.008	-0.120	-0.201	-0.050	0.109	0.042	-0.113	-0.046	-0.114	0.033	-0.136
PEOU3	0.260	0.148	-0.498	0.085	0.007	0.071	0.175	0.191	0.102	0.095	0.021	-0.125	0.061	-0.100	0.077	0.089	0.141	0.065	-0.090	-0.149
PEOU4	0.657	0.316	-0.141	0.119	-0.034	-0.082	0.113	-0.032	-0.167	0.121	-0.075	-0.084	-0.210	-0.010	0.027	-0.078	0.101	-0.061	0.099	0.011
PEOU5	0.529	0.363	-0.262	0.209	-0.200	-0.165	0.215	0.146	0.102	0.078	0.043	-0.203	-0.132	-0.098	-0.090	-0.102	-0.137	0.067	-0.067	-0.090
PWIQ1	0.595	0.283	-0.178	0.041	-0.043	-0.068	0.078	-0.166	-0.140	0.040	-0.196	0.019	-0.086	0.036	0.112	0.023	0.070	-0.063	0.018	0.096
PWIQ2	0.473	0.014	0.062	-0.062	-0.010	-0.007	0.125	0.021	0.054	-0.206	0.184	-0.202	-0.182	0.116	0.179	-0.017	-0.305	-0.061	-0.015	0.002
PWIQ3	0.339	0.053	0.182	-0.201	-0.040	-0.034	0.183	0.048	-0.271	0.033	0.318	0.113	-0.244	0.015	-0.131	-0.009	0.000	0.022	-0.164	0.034
PWIQ4	0.085	0.095	-0.101	0.107	0.308	0.167	0.108	0.103	-0.074	0.259	0.062	-0.088	0.004	0.178	-0.138	-0.125	-0.192	0.128	0.102	-0.061
PWIQ5	0.688	0.229	0.069	-0.081	-0.034	-0.021	0.087	-0.111	-0.098	0.041	0.017	-0.074	-0.024	0.068	0.105	-0.104	0.016	0.060	0.032	0.000
PWIQ6	0.400	0.027	-0.266	0.103	0.293	0.217	0.051	-0.075	-0.020	0.048	0.025	-0.169	0.022	0.084	0.085	-0.133	-0.131	0.166	0.054	-0.027
PWSQ1	0.624	0.310	-0.200	-0.058	0.034	-0.132	0.006	-0.024	-0.152	0.157	0.101	-0.198	-0.014	-0.113	0.010	0.053	0.079	0.043	0.012	-0.003
PWSQ2	0.533	0.171	-0.235	-0.089	0.158	-0.318	0.170	0.045	0.124	-0.053	-0.062	0.015	0.182	0.070	0.100	-0.126	-0.049	-0.035	-0.069	0.041
PWSQ3	0.503	0.310	-0.205	-0.043	-0.125	-0.141	0.040	0.050	-0.087	-0.018	-0.131	0.079	0.073	0.014	-0.259	0.011	0.029	0.058	-0.052	-0.002
PWSQ4	0.378	0.218	-0.198	0.131	-0.049	-0.043	0.075	-0.053	-0.133	0.011	0.073	-0.041	0.037	0.074	0.035	-0.129	-0.087	0.215	0.015	0.042
PWSQ5	-0.054	0.084	-0.177	0.078	0.372	0.003	0.162	-0.294	-0.042	0.213	0.150	0.108	0.006	0.361	-0.186	-0.134	-0.210	-0.084	0.045	0.148
PWSQ6	0.383	0.093	-0.198	0.003	-0.221	0.084	0.088	-0.363	0.003	0.262	0.002	0.068	0.123	-0.085	0.165	-0.090	-0.053	0.119	-0.101	-0.018
PWSQ7	0.654	0.227	-0.281	-0.142	0.032	-0.306	0.037	-0.048	0.149	-0.012	-0.234	0.100	0.066	0.111	-0.164	-0.072	0.092	-0.097	-0.129	-0.025
PWSQ8	-0.067	-0.146	-0.157	0.163	0.185	0.172	-0.005	0.151	-0.170	0.072	0.265	-0.054	-0.114	-0.063	-0.024	0.091	0.039	-0.124	0.038	-0.015
PWSQ9	0.552	-0.013	0.025	-0.103	0.111	-0.136	0.107	0.140	0.155	-0.065	0.332	0.308	0.069	-0.109	0.075	-0.180	0.125	0.051	-0.112	0.002
PPC	0.095	0.110	0.211	0.068	0.089	-0.048	0.050	-0.064	0.226	0.294	0.144	0.126	-0.111	-0.018	0.000	0.064	-0.051	-0.005	0.270	0.109
PVC	0.193	-0.087	0.211	-0.114	-0.230	0.068	-0.080	0.029	0.187	0.262	-0.134	0.117	0.054	0.196	0.194	-0.048	-0.075	0.025	-0.132	-0.127
PAC	0.092	0.004	0.373	-0.014	-0.213	-0.052	-0.144	0.141	0.230	0.055	-0.020	0.145	0.064	-0.065	0.270	0.027	-0.168	0.095	0.138	-0.076
PLC	0.146	-0.149	0.182	0.030	-0.169	0.151	-0.252	-0.042	0.284	0.210	-0.140	0.179	0.150	0.024	0.165	0.047	-0.108	0.322	-0.018	-0.140
PPB	0.480	-0.008	0.048	-0.020	-0.060	0.128	-0.164	-0.191	-0.109	-0.192	0.158	-0.039	0.119	0.135	0.009	-0.078	0.066	-0.055	-0.009	0.039
PVB	0.371	-0.096	-0.023	-0.006	0.020	0.005	0.058	-0.157	0.048	-0.029	-0.089	-0.060	-0.223	-0.235	0.071	-0.334	-0.014	-0.033	0.124	-0.032
PAB	0.337	-0.028	-0.004	-0.131	-0.040	-0.118	0.107	-0.011	0.191	0.109	-0.080	-0.026	0.065	-0.115	-0.117	-0.194	0.104	-0.123	0.225	0.020
PLB	0.265	0.011	0.125	-0.053	0.089	0.061	0.012	-0.047	-0.057	0.089	-0.263	-0.065	0.021	-0.148	-0.006	-0.116	0.217	0.061	0.195	0.003

**Component Matrix Continued**

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>
PWIF1	0.346	0.215	-0.134	0.054	0.026	-0.234	-0.097	0.288	-0.160	0.011	0.163	0.103	0.079	0.304	0.129	-0.029	0.106	0.179	0.137	-0.136
PWIF2	0.324	0.319	-0.150	0.008	0.056	-0.290	-0.084	0.321	0.024	-0.180	0.141	0.006	0.124	0.181	0.092	-0.032	0.152	0.131	0.160	-0.136
PWIF3	0.317	-0.115	-0.171	0.040	0.265	0.238	-0.064	0.049	0.187	-0.124	-0.012	0.125	0.108	0.059	0.168	0.158	-0.121	0.026	0.022	-0.105
PWIF4	0.282	0.092	-0.259	-0.042	0.071	-0.007	0.028	0.155	0.037	-0.087	0.245	0.174	0.042	-0.044	-0.048	0.066	-0.184	0.204	0.149	0.026
PWIF5	0.275	0.094	-0.237	0.132	0.095	-0.018	-0.240	0.124	-0.083	0.015	-0.110	0.159	-0.091	-0.024	0.269	0.106	-0.052	-0.026	0.159	0.028
PWIF6	-0.025	0.159	-0.422	0.089	0.380	0.190	0.078	0.060	0.047	0.061	0.113	-0.039	0.026	0.138	-0.105	0.281	-0.091	0.059	-0.139	-0.131
PPF1	0.496	0.049	0.193	-0.028	-0.182	-0.102	0.070	0.071	0.022	-0.024	-0.045	0.000	-0.115	0.053	0.185	-0.043	0.159	0.192	-0.192	0.169
PPF2	0.494	-0.068	0.261	0.094	0.049	-0.214	0.067	0.000	-0.021	-0.061	0.112	-0.057	0.030	0.044	0.039	-0.071	0.085	0.164	0.030	0.235
PPF3	0.190	-0.037	-0.305	0.157	0.413	0.142	0.116	-0.086	0.002	-0.049	0.097	-0.097	0.150	-0.099	-0.111	-0.035	0.038	0.076	-0.194	0.101
PPF4	0.368	0.133	0.052	0.054	-0.003	-0.182	0.109	0.082	-0.108	0.136	-0.214	-0.092	-0.200	0.015	-0.080	-0.044	-0.012	0.053	0.094	0.073
PPE1	0.709	-0.019	0.030	-0.402	0.094	0.028	-0.087	0.065	-0.004	0.122	-0.060	-0.079	-0.218	0.030	0.155	0.111	-0.024	-0.081	-0.013	0.041
PPE2	0.637	-0.179	0.086	-0.401	0.259	-0.008	-0.044	0.131	0.084	-0.072	0.109	-0.017	-0.024	0.107	-0.055	0.059	0.081	0.137	0.085	0.066
PPE3	0.557	-0.099	-0.309	-0.215	0.318	0.250	0.008	-0.030	0.121	0.139	0.197	0.134	-0.083	0.061	0.074	-0.033	-0.009	-0.026	-0.016	-0.061
PPE4	0.589	-0.157	-0.221	-0.222	0.308	0.089	0.067	-0.121	0.062	0.045	-0.031	-0.020	-0.113	-0.057	0.209	-0.096	-0.118	-0.151	-0.164	0.014
PPE5	0.617	-0.065	0.067	-0.205	0.129	-0.098	0.021	0.133	0.397	-0.052	0.002	-0.024	-0.125	-0.014	-0.040	-0.020	-0.055	0.044	-0.072	-0.014
PPE6	0.557	-0.119	-0.176	-0.369	0.177	0.105	0.027	0.132	-0.001	0.017	0.055	0.010	-0.104	-0.016	0.120	0.029	0.078	-0.096	-0.081	-0.109
PPU1	0.728	-0.037	-0.065	-0.377	0.079	0.125	-0.139	0.041	-0.105	0.003	0.035	0.227	-0.152	-0.010	-0.155	-0.012	0.081	-0.048	-0.011	0.017
PPU2	0.678	-0.083	0.163	-0.179	0.024	-0.141	-0.260	-0.114	-0.064	0.037	-0.081	-0.054	0.145	-0.062	-0.158	0.158	-0.020	-0.048	0.010	-0.185
PPU3	0.627	-0.028	0.031	-0.182	0.082	-0.148	-0.225	-0.072	0.010	-0.006	-0.144	-0.277	-0.054	-0.087	-0.070	-0.103	-0.057	0.124	0.068	0.024
PPU4	0.324	-0.214	0.044	-0.037	0.197	0.420	-0.028	-0.217	0.279	0.028	-0.033	-0.087	-0.051	-0.123	-0.031	0.071	-0.091	-0.074	0.100	0.027
PPU5	0.593	-0.083	0.155	-0.216	0.084	-0.122	-0.145	-0.076	-0.042	0.080	0.089	-0.057	0.168	-0.218	-0.043	0.110	-0.045	0.174	-0.053	-0.169
PPU6	0.678	-0.145	0.094	-0.345	0.038	0.094	-0.159	-0.043	0.007	0.040	-0.052	0.099	0.057	-0.123	-0.140	-0.026	-0.035	0.009	0.188	0.134
PPU7	0.594	-0.125	0.103	-0.268	0.164	-0.191	-0.148	0.007	-0.090	-0.009	0.039	-0.182	0.069	-0.083	0.006	0.000	0.008	-0.035	0.120	-0.008
PWUA1	0.744	0.042	-0.239	-0.047	0.089	-0.124	-0.087	-0.087	0.016	0.102	0.018	0.009	0.157	0.022	0.031	-0.185	-0.048	-0.087	0.001	-0.025
PWUA2	0.478	-0.118	0.114	0.061	0.101	-0.145	-0.039	-0.101	-0.229	-0.081	0.126	-0.146	0.018	0.251	-0.044	0.049	-0.186	0.156	-0.203	0.009
PWUA3	0.570	-0.061	0.335	-0.070	0.124	-0.200	-0.070	-0.136	0.036	-0.031	0.192	-0.086	0.260	0.125	-0.099	0.054	-0.023	-0.086	0.026	-0.075
PWUA4	0.675	0.196	0.013	-0.021	-0.110	-0.022	-0.038	-0.152	-0.334	0.065	0.132	-0.107	0.083	0.044	-0.030	0.059	-0.005	0.046	0.086	-0.024
PWUA5	0.585	-0.067	0.332	0.016	0.041	-0.198	-0.046	-0.209	0.059	0.031	-0.050	-0.266	0.125	0.179	0.123	0.215	0.058	-0.119	0.091	-0.030
PWUA6	0.406	0.224	-0.132	-0.057	-0.136	-0.056	-0.105	0.089	-0.082	0.070	0.067	-0.171	0.054	0.114	0.143	0.107	0.208	-0.064	-0.066	0.037

## **APPENDIX C – Instrument**

This section introduces the instrument, in its entirety, which was presented to the subjects. It includes the consent form and introduction, a description of the study, benefits and risks, and subject rights. With respect to the consent form, the Institutional Review Board suggested that subjects not sign the form due to potential harm. Their participation in the study constitutes understanding and acceptance of the terms of participation. The tasks, scenario, and questionnaire are presented. Regarding the instrument items, their sources are noted and whether they are used as is, adapted, or new.

### **Consent Form**

#### ***Study***

Thank you for participating in this study. You will be asked to consider a scenario, do a few tasks online, and answer some questions. The entire process should take approximately 60 minutes to complete. Before proceeding, please read the following information. You may ask questions at any time. The specific details of what to expect are indicated below under the section entitled “Procedure.”

#### ***Principal Investigator***

William Hampton-Sosa

Baruch College, City University of New York

Contact: William.Hampton-Sosa@baruch.cuny.edu

#### ***Description***

The purpose of this study is to examine attitudes towards online music and P2P file sharing.

### ***Benefits***

Your participation in this study will help us to understand why individuals decide to use P2P file-sharing services through which they can acquire digital products without paying. In the process, you may learn about different options for legally acquiring music. For your time and effort for participating in this study, you will be compensated \$20.

### ***Risks***

There risks associated with this research are negligible. You may experience some concern or anxiety regarding the nature of some of the questions because they ask about the unauthorized use of digital products. Several steps have been taken to ensure confidentiality as noted below. There are no penalties associated with any of your answers. There are no penalties for withdrawing from the study at any time. There are no penalties for refusing to participate in this research.

### ***Confidentiality***

All data collected will be kept strictly confidential. Only the principle investigators will have access to the raw data. The study will only publish aggregate statistics and results. Individual responses to the survey will be recorded anonymously. Your name, e-mail address, or any other data that could uniquely identify you will not be linked with any particular set of responses.

You will be asked for information such as the last four digits of your phone number and the day of the month you were born. This information cannot be used to identify you. It can be used, however, to match your survey responses with any potential follow up responses, without revealing your identity, should you be willing to participate in any follow up studies.

### ***Voluntary Participation***

Your participation in this study is completely voluntary. You may withdraw from the study, at any time, for any reason without penalty. However, in order to receive compensation, you must be willing to complete the study.

***Procedure (Same as above, in Section 3)***

1. You will be seated at a computer workstation. You will be prompted for some basic demographic information. You will be asked about your access to computers. You will be asked about your experience using digital music, about your purchases of digital music, and about your file-sharing habits. You will be asked about your familiarity with various websites and introduced to a website you have not used before.
2. A video will demonstrate key aspects of the website. You will then be allowed a several minutes to examine the website.
3. You will be asked a few questions regarding the many different ways a user can share and modify digital music.
4. Next you will be presented with a short shopping scenario and a shopping task as part of simulated shopping exercise. You are to select music at the assigned website for the special occasion described in the scenario. Please note that you will not make an actual purchase. You are simply asked to select a product that you find most suitable for the scenario presented. *If you decide to make an actual purchase, you will not be reimbursed.*
5. After you have made your shopping selection, you will be asked to respond to some questions regarding your perceptions of the website and the products on offer. The goal is to assess your perceptions and attitudes regarding the products available at the online site, the website itself, and about your general attitudes towards related issues such as online file sharing.

*Keep in mind that this is not a memory exercise. You can refer to the website and the scenario at any time during your session. You may ask any questions at any time during the study if something is unclear.*

***Informed Consent***

I have read the above description including the nature and purpose of the study, the benefits, confidentiality statement, and the right to withdraw from the study at any time. The investigator has answered my questions regarding the study, and I believe I understand what is involved. My participation indicates that I freely agree to participate in this study.

## SUBJECT ASSESSMENT

Please answer all questions to the best of your ability and as truthfully as possible.  
All responses are confidential and cannot be traced to any particular individual.

### DEFINITIONS

**Unauthorized** copies of digital songs are those that are illegal, pirated, or used in ways that are not sanctioned by the artists, vender, record company, or anyone else who may own the rights to the song.

**Digital songs** include those that exist in any digital audio format such as MP3, AAC, MP4, WMA, or audio CD file formats.

**System** refers to the combination of software and hardware required in order to listen to songs. Hardware can include, but are not limited to, devices such as iPods, personal computers, or car and home stereos. Software can include, but are not limited to, products such as Apple iTunes, Windows Media Players, or RealPlayer.

**Modification** or **to modify** is defined as changing, adapting, transforming, customizing, or remixing a product.

**Costs** can include money, time, and effort.

**Benefits** can include rewards, profits, and overall enjoyment.

### Assessing Website Familiarity

1. How often do you use the website Grooveshark.com?

*(1 = I have never used Grooveshark.com; 7 = I frequently use Grooveshark.com)*

2. How often do you use the website Rhapsody.com?

*(1 = I have never used Rhapsody.com; 7 = I frequently use Rhapsody.com)*

### Music Collection and Listening Habits

3. Which of the following file-sharing clients have you used? Check all that apply.

- |                                       |                                      |                                      |                                       |                                      |
|---------------------------------------|--------------------------------------|--------------------------------------|---------------------------------------|--------------------------------------|
| <input type="checkbox"/> None         | <input type="checkbox"/> Acquisition | <input type="checkbox"/> aMule       | <input type="checkbox"/> Ants P2P     | <input type="checkbox"/> Ares Galaxy |
| <input type="checkbox"/> BitComet     | <input type="checkbox"/> BitTorrent  | <input type="checkbox"/> Blubster    | <input type="checkbox"/> Cabos        | <input type="checkbox"/> DC+         |
| <input type="checkbox"/> eMule        | <input type="checkbox"/> FProxy      | <input type="checkbox"/> Frost       | <input type="checkbox"/> FrostWire    | <input type="checkbox"/> GUNet       |
| <input type="checkbox"/> gtk-gnutella | <input type="checkbox"/> iMesh       | <input type="checkbox"/> KCeazy      | <input type="checkbox"/> LimeWire     | <input type="checkbox"/> Manolito    |
| <input type="checkbox"/> MLDonkey     | <input type="checkbox"/> MonoTorrent | <input type="checkbox"/> Morpheus    | <input type="checkbox"/> MUTE         | <input type="checkbox"/> Nodezilla   |
| <input type="checkbox"/> Opera        | <input type="checkbox"/> Piolet      | <input type="checkbox"/> Qbittorrent | <input type="checkbox"/> Shareaza     | <input type="checkbox"/> StealthNet  |
| <input type="checkbox"/> Soulseek     | <input type="checkbox"/> SymTorrent  | <input type="checkbox"/> Thaw        | <input type="checkbox"/> Transmission | <input type="checkbox"/> µTorrent    |
| <input type="checkbox"/> Vuze         | <input type="checkbox"/> Wuala       |                                      |                                       |                                      |

Please list any others you have used. \_\_\_\_\_

4. Estimate the number of digital songs in your collection that are **unauthorized** copies. \_\_\_\_\_
5. Estimate the number of digital songs in your collection that are **authorized** copies. \_\_\_\_\_
6. In the last 30 days, estimate the number of **unauthorized** digital songs you have acquired. \_\_\_\_\_
7. In the last 30 days, estimate the number of **authorized** digital songs you have acquired. \_\_\_\_\_
8. Which of the following songs do you already own? Check all that apply.
  - Luckenbach, Texas (Back To The Basics Of Love)* by Waylon Jennings
  - Don't It Make My Brown Eyes Blue* by Crystal Gayle
  - Lucille* by Kenny Rogers
  - Heaven's Just A Sin Away* by Kendalls
  - It Was Almost Like A Song* by Ronnie Milsap
  - I do not own any of these songs.

### Belief Elicitation Task I

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9. List the many different ways you can think of that an individual can share a digital song. For example, one can e-mail a song, or they can play the song for someone else. There are no right or wrong answers to this question. Just try to be as thorough as you can.

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### Belief Elicitation Task II

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10. List the many different ways you can think of that an individual can modify or adapt a digital song. For example, one can change the file format or one can remix a song using software such as garageBand. There are no right or wrong answers to this question. Just try to be as thorough as you can.

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### Belief Elicitation Task III

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4. Imagine the following shopping scenario. You and several others have decided to celebrate an important birthday for a close friend. This will involve creating two projects. For the first project, the group will create an audiovisual montage (e.g., slideshow) of music, photos, and video clips associated with events in your friend's life. For the second project, the group will compile a playlist of music to play at the party. In creating these projects, audiovisual material will be collected, possibly edited and remixed, arranged, and subsequently shared among you and your circle of close friends. Both projects will be accomplished using programs of your choice such as PowerPoint or iMovie.

Your task is to go to the assigned website and FIND, SAMPLE, and SELECT one of the songs from the list below that could be used for both projects. Assume that these songs are available exclusively through your assigned website. They are also available as unauthorized MP3 downloads via P2P networks.

Enter the song you selected for the two projects.

\_\_\_ *Luckenbach, Texas (Back To The Basics Of Love)* by Waylon Jennings

\_\_\_ *Don't It Make My Brown Eyes Blue* by Crystal Gayle

\_\_\_ *Lucille* by Kenny Rogers

\_\_\_ *Heaven's Just A Sin Away* by Kendalls

\_\_\_ *It Was Almost Like A Song* by Ronnie Milsap

5. Who do you believe is the primary owner of the rights to the song you chose for the projects?
- \_\_\_ Online vender
- \_\_\_ Artist
- \_\_\_ Record label
- \_\_\_ Other (please list) \_\_\_\_\_)

### Perceived Creativity Facilitation (New Scale)

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10. [PCRf1] This website allows me to be very creative.  
*1 = strongly disagree — 7 = strongly agree*
11. [PCRf2] By using this website I am able to try out new ideas.  
*1 = strongly disagree — 7 = strongly agree*
12. [PCRf3] This website does NOT allow me to explore ideas.  
*1 = strongly disagree — 7 = strongly agree*
13. [PCRf4] This website allows me to be creative.  
*1 = strongly disagree — 7 = strongly agree*
14. [PCRf5] With this website I can develop original ideas.  
*1 = strongly disagree — 7 = strongly agree*
15. [PCRf6] This website does NOT allow me to experiment with ideas.  
*1 = strongly disagree — 7 = strongly agree*

### Perceived Community Facilitation (New Scale) (Some items adapted [171].)

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16. [PCMF1] This website helps me to keep in touch with members of a community.  
*1 = strongly disagree — 7 = strongly agree*
17. [PCMF2] This website helps me to maintain relationships with members of a community.  
*1 = strongly disagree — 7 = strongly agree*
18. [PCMF3] This website does NOT help me to interact with members of a community.  
*1 = strongly disagree — 7 = strongly agree*
19. [PCMF4] I can use this website to increase my connection to others.  
*1 = strongly disagree — 7 = strongly agree*
20. [PCMF5] I can use this website to show a commitment to a community.  
*1 = strongly disagree — 7 = strongly agree*
21. [PCMF6] This website does NOT allow me to re-connect with people.  
*1 = strongly disagree — 7 = strongly agree*

### Perceived Ease of Product Time Shifting (Adapted Scale [77])

---

22. [PEPTS1] Songs from this website are easy to listen to at a time of my choosing.  
*1 = strongly disagree — 7 = strongly agree*
23. [PEPTS2] It is NOT easy to choose when I can listen to songs from this website.  
*1 = strongly disagree — 7 = strongly agree*
24. [PEPTS3] Learning to choose the time that I can listen to songs from this website is easy.  
*1 = strongly disagree — 7 = strongly agree*
25. [PEPTS4] The songs from this website are flexible regarding when I can listen to them.  
*1 = strongly disagree — 7 = strongly agree*
26. [PEPTS5] How to set the time when I can listen to songs from this website is clear and understandable.  
*1 = strongly disagree — 7 = strongly agree*

### Perceived Ease of Product Space Shifting (Adapted Scale [77])

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27. [PEPSS1] Songs from this website are *easy* to listen to at a location of my choosing.  
*1 = strongly disagree — 7 = strongly agree*
28. [PEPSS2] It is NOT easy to choose the location where I can listen to songs from this website.  
*1 = strongly disagree — 7 = strongly agree*
29. [PEPSS3] Learning how to listen to songs from this website in different locations is easy.  
*1 = strongly disagree — 7 = strongly agree*
30. [PEPSS4] The songs from this website are flexible regarding where I can listen to them.  
*1 = strongly disagree — 7 = strongly agree*
31. [PEPSS5] How to set the location where I can listen to songs from this website is clear and understandable.  
*1 = strongly disagree — 7 = strongly agree*

### Perceived Ease of Product Platform Shifting (Adapted Scale [77])

---

32. [PEPPS1] Songs from this website are easy to listen to on any system I choose.

*1 = strongly disagree — 7 = strongly agree*

33. [PEPPS2] It is easy to choose the system for listening to songs from this website.

*1 = strongly disagree — 7 = strongly agree*

34. [PEPPS3] Learning how to listen to songs from this website on different systems is NOT easy.

*1 = strongly disagree — 7 = strongly agree*

35. [PEPPS4] The songs from this website are flexible regarding system requirements.

*1 = strongly disagree — 7 = strongly agree*

36. [PEPPS5] Choosing the system to listen to songs from this website is clear and understandable.

*1 = strongly disagree — 7 = strongly agree*

### Perceived Ease of Product Sharing (Adapted Scale [77])

---

37. [PEPS1] The songs from this website are easy to share with others.

*1 = strongly disagree — 7 = strongly agree*

38. [PEPS2] It is easy to choose with whom I can share songs from this website.

*1 = strongly disagree — 7 = strongly agree*

39. [PEPS3] Learning how to share songs from this website with others is NOT easy.

*1 = strongly disagree — 7 = strongly agree*

40. [PEPS4] The songs from this website are flexible regarding whether I can share them with others.

*1 = strongly disagree — 7 = strongly agree*

41. [PEPS5] How to share songs from this website with others is clear and understandable.

*1 = strongly disagree — 7 = strongly agree*

### Perceived Ease of Product Modification (Adapted Scale [77])

---

42. [PEPM1] The songs from this website are easy to modify for a variety of purposes.  
*(1 = strongly disagree — 7 = strongly agree)*
30. [PEPM2] It is easy to become skillful at modifying songs from this website for different purposes.  
*(1 = strongly disagree — 7 = strongly agree)*
31. [PEPM3] Learning to how to modify songs from this website for a variety of purposes is NOT easy.  
*(1 = strongly disagree — 7 = strongly agree)*
32. [PEPM4] The songs from this website are flexible regarding the many ways they can be modified for different purposes.  
*(1 = strongly disagree — 7 = strongly agree)*
33. [PEPM5] How to modify songs from this site for different purposes is clear and understandable.  
*(1 = strongly disagree — 7 = strongly agree)*

### Perceived Ease of Product Trial (Adapted Scale [77])

---

34. [PEPT1] The songs from this website are easy to try out before making a commitment to acquire them.  
*1 = strongly disagree — 7 = strongly agree*
35. [PEPT2] It is NOT easy to sample songs from this website before making a commitment to acquire them.  
*1 = strongly disagree — 7 = strongly agree*
36. [PEPT3] Learning how to sample songs from this website before making a commitment to acquire them is easy.  
*1 = strongly disagree — 7 = strongly agree*

37. [PEPT4] The songs from this website are flexible regarding whether I can try them out before making a commitment to acquire them.

*1 = strongly disagree — 7 = strongly agree*

38. [PEPT5] How to sample songs from this website before making a commitment to acquire them is clear and understandable.

*1 = strongly disagree — 7 = strongly agree*

### **Attitude Towards P2P Downloading (Adapted Scale [219])**

---

39. [ATUD1] To me, unauthorized downloading of songs from P2P networks is

*(1 = “very bad”; 7 = “very good”)*

40. [ATUD2] To me, unauthorized downloading of songs from P2P networks is

*(1 = “very unpleasant”; 7 = “very pleasant”)*

41. [ATUD3] To me, unauthorized downloading of songs from P2P networks is

*(1 = “very foolish”; 7 = “very wise”)*

42. [ATUD4] To me, unauthorized downloading of songs from P2P networks is

*(1 = “very wrong”; 7 = “very correct”)*

43. [ATUD5] To me, unauthorized downloading of songs from P2P networks is

*(1 = “very unacceptable”; 7 = “very acceptable”)*

### **P2P Downloading Intention (Adapted Scale [219])**

---

44. [UDI1] I may download unauthorized copies of songs from a P2P network in the future to avoid using this website for acquiring music. (Assume the song is available only from a P2P network or your assigned website.)

*(1 = strongly disagree — 7 = strongly agree)*

45. [UDI2] If I had the opportunity, I would download unauthorized songs from a P2P network to avoid using this website for acquiring music. (Assume the song is available only from a P2P network or your assigned website.)

*1 = strongly disagree — 7 = strongly agree*

46. [UDI3] I would never download unauthorized songs from a P2P network to avoid using this website for acquiring music. (Assume the song is available only from a P2P network or your assigned website.)

*1 = strongly disagree — 7 = strongly agree*

### **Product Cost (Adapted Scale [219])**

---

47. [PC1] I feel that the price for music at this website is very inexpensive.

*1 = strongly disagree — 7 = strongly agree*

48. [PC2] In my opinion, music at this website is

*1 = very inexpensive — 4 = just right — 7 = very expensive*

49. [PC3] If I wanted to acquire music from this website today, it would cost me too much money.

*1 = strongly agree — 7 = strongly disagree*

### **Perceived Ease of Website Use (Adapted Scale [77])**

---

50. [PWEOU1] The website is easy to use.

*1 = "strongly disagree" — 7 = "strongly agree"*

51. [PWEOU2] It is easy to become skillful at using the website.

*(1 = "strongly disagree" — 7 = "strongly agree")*

52. [PWEOU3] Learning to operate the website is NOT easy.

*(1 = "strongly disagree" — 7 = "strongly agree")*

53. [PWEOU4] The website is flexible to interact with.

*(1 = "strongly disagree" — 7 = "strongly agree")*

54. [PWEOU5] My interaction with the website is clear and understandable.

*(1 = "strongly disagree" — 7 = "strongly agree")*

### **Perceived Website Information Quality (Unmodified Scale [8])**

---

55. [PIQ1] This website has sufficient content where I expect to find information

*1 = strongly disagree — 7 = strongly agree*

56. [PIQ2] This website provides complete information.

*1 = strongly disagree — 7 = strongly agree*

57. [PIQ3] This website provides site-specific information.

*1 = strongly disagree — 7 = strongly agree*

58. [PIQ4] This website does not provide accurate information.

*1 = strongly disagree — 7 = strongly agree*

59. [PIQ5] This website provides timely information.

*1 = strongly disagree — 7 = strongly agree*

60. [PIQ6] This website does not provide reliable information.

*1 = strongly disagree — 7 = strongly agree*

### **Perceived Website System Quality (Unmodified Scale [8])**

---

61. [PSQ1] This website communicates information in an appropriate format.

*1 = strongly disagree — 7 = strongly agree*

62. [PSQ2] This website has an appropriate style of design for this type of website.

*1 = strongly disagree — 7 = strongly agree*

63. [PSQ3] This website has easy navigation to information.

*1 = strongly disagree — 7 = strongly agree*

64. [PSQ4] This website has fast response and transaction processing.

*1 = strongly disagree — 7 = strongly agree*

65. [PSQ5] This website does not keep personal information secure from exposure

*1 = strongly disagree — 7 = strongly agree*

66. [PSQ6] I can use this website when I want to use it.

*1 = strongly disagree — 7 = strongly agree*

67. [PSQ7] This website has good functionality relevant to this type of website.

*1 = strongly disagree — 7 = strongly agree*

68. [PSQ8] This website does not keep error-free transactions.

*1 = strongly disagree — 7 = strongly agree*

69. [PSQ9] This website creates an audio-visual experience

*1 = strongly disagree — 7 = strongly agree*

### **Distributive Justice (Adapted Scale [242])**

---

70. [PPC] My overall costs to acquire this song via the website are \_\_\_\_.

*1 = very little — 4 = just right — 7 = very great*

71. [PVC] The overall costs I believe experienced by the **website vender** in making this song available to me are \_\_\_\_.

*1 = very little — 4 = just right — 7 = very great*

72. [PAC] The overall costs I believe experienced by the **artist** in making this song available to me are \_\_\_\_.

*1 = very little — 4 = just right — 7 = very great*

73. [PLC] The overall costs I believe experienced by the **record label** in making this song available to me are \_\_\_\_.

*1 = very little — 4 = just right — 7 = very great*

74. [PPB] The overall benefits I receive from using the website to acquire my songs are \_\_\_\_.

*1 = very little — 4 = just right — 7 = very great*

38. [PVB] The overall benefits I believe enjoyed by the website vender in making this song available to me are \_\_\_\_.

*1 = very little — 4 = just right — 7 = very great*

39. [PAB] The overall benefits I believe experienced by the artist in making this song available to me are \_\_\_\_.

1 = very little — 4 = just right — 7 = very great

40. [PLB] The overall benefits I believe experienced by the record label in making this song available to me are \_\_\_\_.

1 = very little — 4 = just right — 7 = very great

### **Perceived Interactional Justice (Adapted Scale [278])**

---

41. [PIF1] During my visit to the website, I felt I was treated in a polite manner.

*1 = strongly disagree — 7 = strongly agree*

42. [PIF2] During my visit to the website, I felt I was treated with courtesy.

*1 = strongly disagree — 7 = strongly agree*

43. [PIF3] During my visit to the website, I felt I was NOT treated with dignity.

*1 = strongly disagree — 7 = strongly agree*

44. [PIF4] During my visit to the website, I felt I was NOT treated with respect.

*1 = strongly disagree — 7 = strongly agree*

45. [PIF5] During my visit to the website, I was NOT exposed to improper remarks or comments.

*1 = strongly disagree — 7 = strongly agree*

46. [PIF6] During my visit to the website, I felt I was exposed to inappropriate language, images, or sounds.

*1 = strongly disagree — 7 = strongly agree*

### Perceived Procedural Justice (Adapted Scale [37])

---

47. [PPF1] The website gives me the opportunity to convey any complaints regarding my experience in using the website to acquire music.  
*1 = strongly disagree — 7 = strongly agree*
48. [PPF2] The website gives me a chance to describe the details of any issue I may have regarding my experience in using the website to acquire music.  
*1 = strongly disagree — 7 = strongly agree*
49. [PPF3] At the website, I do NOT have the opportunity to describe my music requirements.  
*1 = strongly disagree — 7 = strongly agree*
50. [PPF4] I expect that any complaints regarding my experience in using the website to acquire music will be acknowledged and addressed by the appropriate parties.  
*1 = strongly disagree — 7 = strongly agree*

### Perceived Website Enjoyment (Adapted Scale [104])

---

51. [PWE1] To me, the website is enjoyable.  
*1 = strongly disagree — 7 = strongly agree*
52. [PWE2] To me, the website is exciting.  
*1 = strongly disagree — 7 = strongly agree*
53. [PWE3] To me, the website is unpleasant.  
*1 = strongly disagree — 7 = strongly agree*
54. [PWE4] To me, the website is boring.  
*1 = strongly disagree — 7 = strongly agree*
55. [PWE5] To me, the website is interesting.  
*1 = strongly disagree — 7 = strongly agree*
56. [PWE6] To me, the website is dull.  
*1 = strongly disagree — 7 = strongly agree*

### Perceived Product Enjoyment (Adapted Scale [104])

---

57. [PPE1] To me, the song format from this website is enjoyable.

*1 = strongly disagree — 7 = strongly agree*

58. [PPE2] To me, the song format from this website is exciting.

*1 = strongly disagree — 7 = strongly agree*

59. [PPE3] To me the song format from this website is unpleasant.

*1 = strongly disagree — 7 = strongly agree*

60. [PPE4] To me, the song format from this website is boring.

*1 = strongly disagree — 7 = strongly agree*

61. [PPE5] To me, the song format from this website is interesting.

*1 = strongly disagree — 7 = strongly agree*

62. [PPE6] To me, the song format from this website is dull.

*1 = strongly disagree — 7 = strongly agree*

### Perceived Product Usefulness (Adapted Scale [104])

---

63. [PPU1] The song format is useful.

*1 = strongly disagree — 7 = strongly agree*

64. [PPU2] The song format improves my overall music consumption experience.

*1 = strongly disagree — 7 = strongly agree*

65. [PPU3] The song format improves my overall music consumption performance.

*1 = strongly disagree — 7 = strongly agree*

66. [PPU4] The song format does not enable me to consume music in the way I prefer.

*1 = strongly disagree — 7 = strongly agree*

67. [PPU5] The song format enhances my overall effectiveness in consuming music.

*1 = strongly disagree — 7 = strongly agree*

68. [PPU6] The song format makes it easier to consume music.

*1 = strongly disagree — 7 = strongly agree*

## Perceived Website Usefulness (Adapted Scale [104])

---

69. [PWUA1] The website is useful.  
*1 = strongly disagree — 7 = strongly agree*
70. [PWUA2] The website saves me time.  
*1 = strongly disagree — 7 = strongly agree*
71. [PWUA3] The website helps me be productive.  
*1 = strongly disagree — 7 = strongly agree*
72. [PWUA4] The website makes the task I want to accomplish easier to get done.  
*1 = strongly disagree — 7 = strongly agree*
73. [PWUA5] The website helps me be more effective.  
*1 = strongly disagree — 7 = strongly agree*
74. [PWUA6] The website requires the fewest steps to accomplish what I want to do with it.  
*1 = strongly disagree — 7 = strongly agree*

## Anticipated File Sharing Behavior

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75. Imagine you have a personal account at this website. In the next 30 days, estimate the number of unauthorized digital songs you would expect to acquire through file sharing.  
\_\_\_\_\_
76. Imagine you have a personal account at this website. In the next 30 days, estimate the number of authorized digital songs you would expect to acquire through file sharing. \_\_\_\_\_

## Basic Information

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77. What is our age? \_\_\_\_\_
78. What is your gender? \_\_\_\_\_ Female \_\_\_\_\_ Male
79. What is your academic status?  
\_\_\_\_\_ Freshman \_\_\_\_\_ Sophomore \_\_\_\_\_ Junior  
\_\_\_\_\_ Senior \_\_\_\_\_ Graduate \_\_\_\_\_ Other

80. What is your major? \_\_\_\_\_
41. What is your student status? \_\_\_\_ FT \_\_\_\_ PT
42. What is your job status? \_\_\_\_ FT \_\_\_\_ PT \_\_\_\_ Not Working
43. Do you have access to a personal computer that you control? Y/N
44. Can you install software on this computer? Y/N
45. Have you ever purchased music from an online source such as iTunes or Amazon? Y/N
46. Have you ever acquired music for free from an online source such as LimeWire or eMule? Y/N
47. Have you ever created slideshows, presentations, or home videos in which you included material from video or audio files? Y/N
48. Have you ever remixed (e.g. cut, rearrange, fade, etc.) music or video tracks in any way? Y/N
49. Have you ever incorporated music or video files into a Facebook or Myspace page, or any other type of website? Y/N
50. What operating system do you use?  
\_\_\_\_ Mac OS X \_\_\_\_ Windows 95 \_\_\_\_ Windows XP \_\_\_\_ Windows Vista \_\_\_\_ Linux  
\_\_\_\_ Other. Please list. \_\_\_\_\_

### Optional Questions

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These next two questions are used to anonymously match your responses to this questionnaire with any responses to a possible follow-up questionnaire. Please respond to these last two questions if you would be willing to participate in a short online follow-up survey.

51. What are the last four digits of your cell phone number? \_\_\_\_\_
52. What day of the month you were born? \_\_\_\_\_  
If, for example, you were born on the fifth, enter '05'.

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