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Purchasing Behavior for Pirated Products

A Structural Equation Modeling Approach on Bangladeshi Consumers

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Abstract

The purpose of this study is to explore the factors influencing the Bangladeshi consumers' perception toward purchasing pirated products. To explore these factors, this study had conducted a survey among the Bangladeshi consumers'. The data analysis was conducted through exploratory factor analysis, confirmatory factor analysis and structural equation modeling to test the hypotheses. Among the four variables, individual personalities and economic conditions are the most significant followed by social influences and pricing of pirated products. The outcome of this research showed a comprehensively integrated framework for policy maker and business enterprise to understand the dynamic relationships among dimensions of social influence, pricing, economy, and personality to understand the consumers' perception toward purchasing pirated products. Further research is needed to examine these factors with additional samples before generalization can be made.

Keywords: Pirated products, social influence, purchasing behavior

INTRODUCTION

Past empirical studies on software piracy were primarily undertaken in the western world. It remains unclear whether the factors responsible for software piracy generalize across different geographical settings. The empirical factors are: Marketing factors of original software; situational factors; and Individual factors (Lau, 2006). Personality characteristics are also relevant in studying counterfeit-buying behavior. These include value-consciousness, integrity, and need for personal gratification. By investigating these different factors underlying consumers' penchant for counterfeits, useful insights can be gleaned for antipiracy organizations regarding how best to discourage such behavior (Ang, Cheng, Lim and Tambyah, 2001). The advent of industrialization, technological advances and a growing affluent society has given rise to imports of US manufactured goods and franchises and entertainment. Therefore, the trouble has begun for Bangladesh to follow suit with other larger Asian nations to rectify its standards to suit the US standard requirement that of not allowing pirated products. The growth of digital piracy, in the wake of the technological revolution during the last few decades, is as inevitable as night following day. Lau (2006) suggested that the cost of original software was extremely important in software piracy. Respondents commented that excessive price of original software was the key factor pushing them to commit piracy. Wilson, Kambil, Schwartz, Levin, Pisano and Bevilacqua (2008) illustrated the dilemma of a CEO whose company has become the target of hackers. Atallah, O'Rourke, Mason and Wade (2008) had seen a clear demarcation line between good and bad guys on the issue of piracy,

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but a point that comes across constantly is the fact that it's a difficult battle to fight and much pragmatism is required in deciding when and how to target the pirates. Flowers (2008) in his research condemns the hackers and his suggestions that not only do we have to learn to live with them, but also we can sometimes learn from them. It makes for interesting reading, especially in exploring the links between mainstream and outlaw innovation. So, the current study aims to provide more insight into the factors determinants purchasing behavior of piracy products under the perspective of social influence, personality or believe pricing and the economy. Although piracy is crucial for most of the firms, but it has received very little attention from researchers under the Bangladeshi environment.

LITERATURE REVIEW

Individual Personality

Logsdon, Thompson, and Reid (1994) applied Kohlberg's theory of moral states to determine if higher levels of morality resulted in less software piracy. They examined undergraduate and graduate students in the USA, expecting that the graduate students, because of their greater maturity, would be operating at a higher moral level and using less pirated software. The result showed that the graduate students used more pirated software than the undergraduates. At the organizational level, moral standards influence policies and regulations concerning the ethical use of software. Unfortunately, traditional morality cannot characterize the piracy problem with any clarity (Johnson, 1995; Moor, 1985). Wang, Zhang Zang and Ouyang, (2005) found four personal and social factors important in influencing Chinese consumers' attitude toward software piracy, including value consciousness, normality susceptibility, novelty seeking, and collectivism. Matos, Ituassu and Rossi (2007) found that consumer intentions to buy counterfeited products are dependent on the attitudes they have toward counterfeits, which in turn are more influenced by perceived risk, whether consumers have bought a counterfeit before, subjective norm, integrity, price-quality inference and personal gratification. Counterfeiting is a significant and growing problem worldwide, occurring both in less and well developed countries. In the USA economy, the cost of counterfeiting is estimated to be up to $200 billion per year (Chaudhry, Cordell and Zimmerman, 2005). Considering the countries worldwide, almost 5 percent of all products are counterfeit, according to the International Anti counterfeiting Coalition (IACC, 2005) and the International Intellectual Property Institute (IIPI, 2003).

As the two main differences consumers perceive between a counterfeit and an original product are the lower prices and the poorer guaranties, price and risk constructs are likely to be important factors related to attitude toward counterfeits (Huang, Lee and Ho, 2004). As proposed also by Huang et al. (2004), considering that counterfeits are usually sold at lower prices, the greater the relationship price-quality for the consumer, the lower his/her perception of quality for the counterfeits. Consumer purchase of a counterfeit is not a criminal act, but as consumer participation in a counterfeit transaction supports illegal activity (i.e. counterfeit selling), consumer's respect for lawfulness might explain how much engagement he/she will have in buying counterfeits. Indeed, research shows that consumers' willingness to purchase counterfeit products is negatively related to attitudes toward lawfulness (Cordell, Wongtada and Kieschnick, 1996). In this sense, those consumers who have lower ethical standards are expected to feel less guilty when buying a counterfeit (Ang et al., 2001). Value consciousness is defined as a concern for paying lower prices, subject to some quality constraint (Lichtenstein, Netemeyer and Burton, 1990). It has been observed that consumers engage in illicit purchase behaviors when there are price pressures. Dodge, Edwards and Fullerton (1996) reported that economic consequences influence the tolerance of questionable behavior by consumers. As counterfeits provide tremendous cost savings to consumers, although with some compromise in quality, its perceived value is high. So the above

literature can come up with the following hypotheses.

> ***H1:*** *Individual personalities of a consumer affect positively the purchase behavior of pirated products.*

Social Influence

Simpson, Banerjee and Simpson (1994) used the stimulus to act and socio-cultural, legal, situational, and personal factors as antecedents to ethical decision-making, which is followed by behavior. Sims, Cheng and Teegen (1996) profiled student would-be software pirates, and used gender (males pirated more), age (no difference), and PC familiarity (the greater it was, the stronger the pirating tendencies) as explanatory variables. The most important reasons for pirating software were its cost, wanting to try it first, and its affordability (Cheng, Sims and Teegen, 1997). Swinyard, Rinne and Kau (1990) found that Asians adopted a more casual attitude to software piracy than Americans, which they attributed to cultural differences.

Husted's (2000) study documented that per capita GNP, income inequality, and individualism were correlated with software piracy. Of these two cross-cultural studies, only individualism, usually a country-level construct (Hofstede, 1980), could be used as an individual-level variable to profile pirates. On the other hand Bearden, Netemeyer and Teel, (1989) mentioned consumer susceptibility which means "the need to identify with or enhance one's image in the opinion of significant others through acquisition and use of products and brands, the willingness to conform to the expectations of others regarding purchase decisions, and the tendency to learn about products by observing others or seeking information from others." Bearden et al. (1989) proposed consumers may be informational susceptible, where products are bought based on the expert opinions of others. The above literature can come up with the following hypotheses.

> ***H2:*** *Social influences of a consumer affect positively the purchase behavior of pirated products.*

Country's Economic Condition

The phenomenon of piracy and counterfeit, products distributed via informal or black markets, poses a significant threat to the profitability of copyright dependent industries such as music recordings, software, video games, motion pictures and books. Estimates of trade losses in the USA alone total some $9.4 billion (IIPA, 2002). Thailand and India are termed as leading violators of US copyright patents and gave China until November of that year to show significant improvements in copyright protection. After that date, it threatened to impose tariffs of up to 100 percent on specified Chinese exports. In June 1991, following three days of talks with Beijing over Chinese violations of US copyright, patents and other intellectual property, the Assistant US Trade representative expressed pessimism regarding improvements in infringements by pirates (SCMP, 1991). Later, in March 1993, talks between Taiwan and the United States on copyright protection ended without agreement and with the threat of placing Taiwan on a list of unfair traders (SCMP, 1993); a move that would result in the US levying trade sanctions.

It would appear that corporations and governments alike will have to be prepared for the long haul in the fight against piracy and that at this stage it would be more realistic to think in terms of controlled, or contained piracy, rather than any immediate prospect of eradicating the practice. In spite of the resolve of negotiators at international trade talks and the combined efforts of individual companies and law enforcement agencies, the issue of product piracy seems to remain a permanent feature of the marketplace. Piracy, when products have been copied and sold without the permission of the rightful manufacturer, is a vast global business and one where successes in curbing it on one front have to be weighed against continued losses on another (McDonald and Roberts, 1994). The following hypotheses need to test quantitatively for further clarification.

> ***H3:*** *Country's economic conditions affect positively the purchase behavior of pirated products.*

Original Pricing and Effect on Piracy

In Singapore, Swee, Cheng, Lim and Tambyah (2001) found that members of lower income groups there had more favorable attitudes towards pirated CDs. However, for products, which are consumed privately, especially in a household setting, one could assert that family income is more relevant than personal income, and higher income households will spend more. DVD piracy is a growing problem (Miles and Kanellos, 1999).

The enormous potentiality of the Internet and the development of the communication technology also make the distribution of pirated product (such as, software, music, movie, etc.) much easier (Altinkemer and Guan, 2003). In fact digital development has opened the door for the people to access the copyrighted works through file-sharing programs and has allowed many users almost unlimited access to recorded music and other types of entertainment in digital form (Horn, Maxwell and Crawford, 2004). The Recording Industry Association of America estimated that arrests, indictments, guilty pleas, and sight seizures increased by 100 percent or more from 2000 to 2001; yet sales of pirated recordings still exceeded $4.0 billion in 2001 (Mariano, 2002) and surfers downloaded 150 billion songs in 2003, an increase from 55 billion in 2002 (Ha'aretz, 2004). Estimated illegal software copies accounted for 25 percent in the US, 70 percent in Eastern Europe, and 60 percent in Latin America (Smith, 2003). Unfortunately, the negative economic effects go far beyond forfeited sales of legal products. A Global Software Piracy Report (cited in Smith, 2003) estimated that illegal software copying led to 109,000 lost jobs, $4.5 billion in lost wages, and $1.0 billion in lost taxes in the US alone. Given the problem's magnitude, more research on it is warranted. The above literature can come up with the following hypotheses.

> ***H4:*** *Original pricing of a product can affect consumers purchase behavior of pirated products.*

CONCEPTUAL FRAMEWORK

Based on the literature review; this research concentrates on conceptual framework of Bangladeshi consumers' purchasing behavior of pirated products. This framework emphasizes those variables like Individual personalities (IP), Social influences (SE), Economic conditions (EC) and Pricing (P). These independent variables are positively related to the consumers purchase

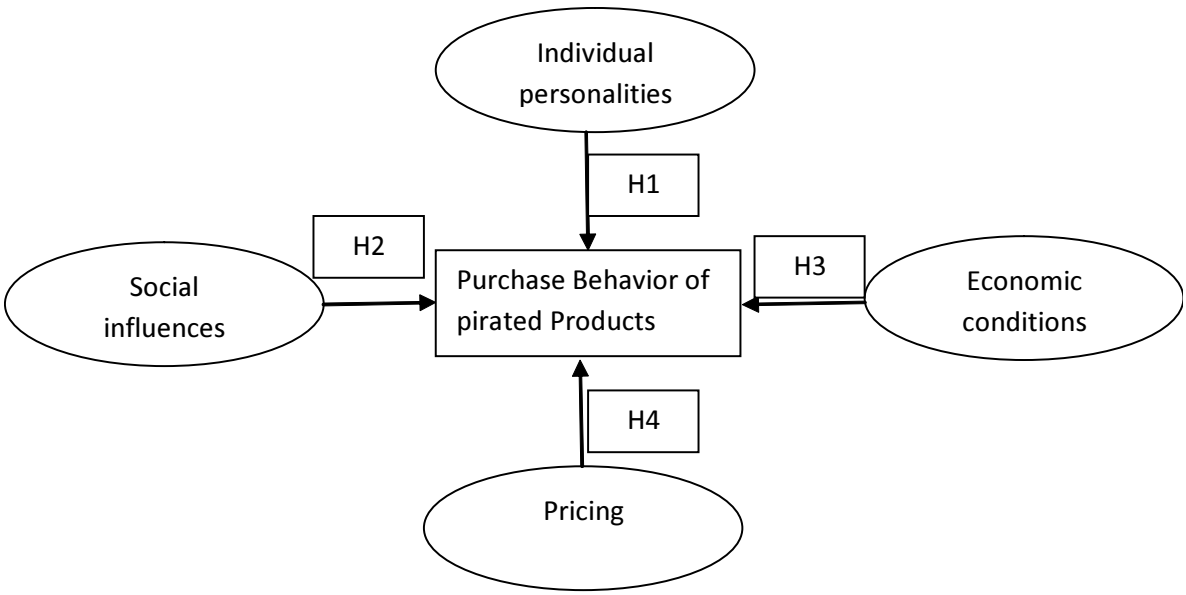

Figure 1: Proposed Framework for the Study

Behavior of pirated Products (PPP) in Bangladesh. The detailed diagram framework is given below.

METHODOLOGY

The primary aim of this research is to explore consumers' perception toward piracy. Two approaches of collection of data are available for the researchers these are Secondary Data Passive Approach (SDPA) and Primary Data Active Approach (PDAA) for any study (Davis and Cosenza, 1988). For this research, PDAA is used to measures perception of Bangladeshi consumers' in Dhaka city towards piracy. PDAA is used in this study because it will be possible to measure all the dimensions (subjective as well as objective) developed to measure the phenomenon of e-commerce adoption (Davis and Cosenza, 1988). The primary data are collected through self administered questionnaire in the Dhaka city. A convenience sampling method was used to collect data mainly from the consumers' who used to buy the pirated products from various shopping malls. A total of 450 sample-size was found to be adequate for this study, of which 400 questionnaires were received back. After the screening process was carried out, only 350 responses were considered complete and valid for data analysis. The responses of this measurement were scored using a 7- point rating scale. The measurement items of those variables were both drawn from existing theories and self-created questions based on literature and discussions with the marketing professors having expertise in this sector, and statistics professors. The first stage of the data analysis conducted an exploratory factor analysis (EFA) to identify the factor structure for measuring the operators' services and the customer perception toward them and the important factor for choosing an operator elaborated and the validity and reliability of the scale checked. The second part of the data analysis employed a confirmatory factor analysis (CFA) to confirm the factor structure for measuring the operator's services and the customer perception towards those operators regarding in choosing an operator's service, and check the validity and reliability of the measuring scale. In this study, the goodness of fit testing was conducted by using several criteria, including chi-square test, root mean square error of approximation (RMSEA), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), normed fit index (NFI), and comparative fit index (CFI) etc. SEM (Structural Equation Modeling) is considered to be an appropriate data analysis technique for this kind of study where multiple dependent relationships proposed in the models; which combines both exploratory and confirmatory stands in the main model. However, to test hypothesis one to hypothesis four, the third part of the data analysis was carried through Structural Equation Modeling (SEM). This path analysis technique enables estimating simultaneously multiple regression equations in a single framework. All direct and indirect relationships in the model were estimated simultaneously. Thus, the method allows all the interrelationships among the variables to be assessed in the same decision context.

RESULTS AND DISCUSSIONS

Factor Analysis

Factor analysis was employed to explore the underlying factors associated with 16 items by using principal component analysis (PCA). Generally, KMO is used to assess which variables need to drop from the model due to multicollinearity. The value of KMO varies from 0 to 1 and KMO overall should be 60 or higher to perform factor analysis. If not then it is necessary to drop the variables with lowest anti image value until KMO overall rise above 60. Result for the Bartlett's test of sphericity and the KMO reveal that both were highly significant and concluded that this variable was suitable for the factor analysis (Table 1).

Table 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.843
Bartlett's Test of Sphericity:		
	Approx. Chi-Square	1679.527
	Df	120
	Sig.	.000

The process of factor analysis involved factor extraction to make an initial decision on the number of factors underlying asset of measured variables of interest and factor rotation for easy interpretability of factor extraction result and for making final decision about the underlying factors. The underlying structure of 16 items was analyzed using principal component analysis followed by varimax rotation. The factor analyses revealed four dimensions underlying consumer perception toward purchasing of pirated products. They are: (F1) price; (F2) social influence; (F3) economy; (F4) individual personality. The total variance explained by factors is indicated in Table 2, which suggests that all four factors account for 64% of the total variance. The values of the reliability and factor loading highlighted on Table 2 indicate the affiliation of the items to each factor. The reliability coefficients for the four factors: pricing; social influence; economy; individual personality were .8124, .8349, .8983, .8412. Generally, the factor is the natural affinity of an item for a group. The higher loading (factor) indicates the stronger affiliation of an item to a specific factor. The findings of this study indicated that each of the dimensions (pricing; social influence; economy; individual personality) was homogeneously loaded to the different factors. That means each of the dimensions that loaded into four different factors, all has proven as significantly related to the Bangladeshi consumers' purchase behavior towards purchasing of pirated products.

Table 2: Reliability Analysis and Factor Loading

Items	Mean	Std. Deviation	Factor Loading
Price (Alpha = .8124)			
Cheap and affordable cost of pirated products	3.21	1.153	.791
Price does have impact before making purchasing decision	3.19	1.164	.825
Owning Products are desirable than price	3.18	1.125	.828
Price plays vital role before making purchasing decision	3.19	1.150	.848
Social Influence (Alpha = .8349)			
Encouraged by friends	3.18	1.052	.721
Lack of Knowledge on piracy	3.18	1.062	.679
Purchasing pirated goods accepted by society	3.28	1.051	.728
Feelings criminal offence	3.18	1.029	.816
Economy (Alpha = .8983)			
Being citizen of underdeveloped nation	3.24	1.126	.712
Fixing selling price as alternative	3.21	1.147	.688
Consider not to consume more money	3.23	1.158	.587
Poor economic Consequences	3.21	1.113	.665
Personality (Alpha = .8412)			
Internal influence to purchase pirated product	3.19	1.189	.696
Morally accepted	3.29	1.161	.683
Good quality of pirated products	3.22	1.190	.584
Perception about pirated product	3.21	1.165	.658

Table 4: Estimate Table for CFA and SEM

Factor Indicators	X^2	df	GFI	AGFI	CFI	RMSEA
Pricing (P)	4.557	2	.910	.901	.994	.036
Social Influence (SI)	3.781	2	.925	.913	.999	.013
Economy (Ec)	3.712	2	.942	.932	1.00	.004
Personality (P)	3.383	2	.925	.912	.999	.012

Confirmatory Factor Analysis (CFA)

In exploratory factor analysis, this research preceded as have no hypothesis about the number of latent factors and the relations between the latent factors and the observed variables. In contrast the path diagram can be utilized that can represents a clear hypothesis about the factor structure. Models of this kind are called restricted or Confirmatory factor analysis (CFA) models. Although this research have done EFA for verifying grouping and loading pattern of measuring scale items, this study further attempted to screen EFA examination by conducting CFA among all the exogenous variables (religiosity and ethnocentrism) with measuring items retained by EFA. The SEM program AMOS was used throughout the study to conduct the analyses. Empirical evidence in CFA (and SEM in general) is generally assessed using criteria such as the comparative fit index (CFI), the root-mean square of approximation (RMSEA), the significance of parameter estimates and the amount of explained variance. Table 4 summarizes the results of these tests.

CFI: This index compares a proposed model with the null measures. CFI values close to 1 are generally accepted as being indications of well-fitting models (Raykov and Marcoulides, 2000). A CFI value greater than 0.90 indicates an acceptable fit to the data (Bentler, 1992). The CFI values for the CFAs are displayed in Table 4. An analysis of the Table revealed that all the CFI values are very high ranging from 0.99 to 1, which suggests very good model fits. RMSEA: The RMSEA is an index used to assess the residuals. It adjusts the parsimony in the model and is relatively insensitive to sample size. According to Hu and Bentler (1999), RMSEA must be equal to or less than 0.08 for an adequate model fit. Table 4 shows that all the RMSEA values are below 0.05 and indicate adequate model fits. GFI: The goodness of fit index, tells you what proportion of the variance in the sample variance-covariance matrix is accounted for by the model. This should exceed 0.9 for a good model. The result of this study showed all the models are fit because all the GFI values exceed 0.9. AGFI: Adjusted GFI is an alternate GFI index in which the value of the index is adjusted for the number of parameters in the model.

Statistical Significance of Parameter Estimates

The test statistic here is the critical ratio (CR), which represents the parameter estimate divided by its standard error, as such, it operates as a z-statistic in testing that the estimate is statistically different from zero. Based on a probability level 0.05, then, the test statistic needs to be $>\pm 1.96$ before the hypothesis (that estimates equals 0.0) can be rejected. Nonsignificant parameters, with the exception of error variances, can be considered unimportant to the model; in the interest of scientific parsimony, albeit given an adequate sample size, they should be deleted from the model. On the other hand, it is important to note that nonsignificant parameters can be indicative of a sample size that is too small (Byrne, 2001).

Table 5: Standard Estimation of the Main Model

Standardized Regression Weight	Estimate	C.R.	P value
Purchase Behavior of Pirated Products (PPP)			
H1: Individual personalities (IP)	0.431	3.736	0.001
H2: Social influences (SE)	0.387	4.591	0.000
H3: Economic conditions (EC)	0.427	3.769	0.000
H4: Pricing (P)	0.397	4.769	0.000

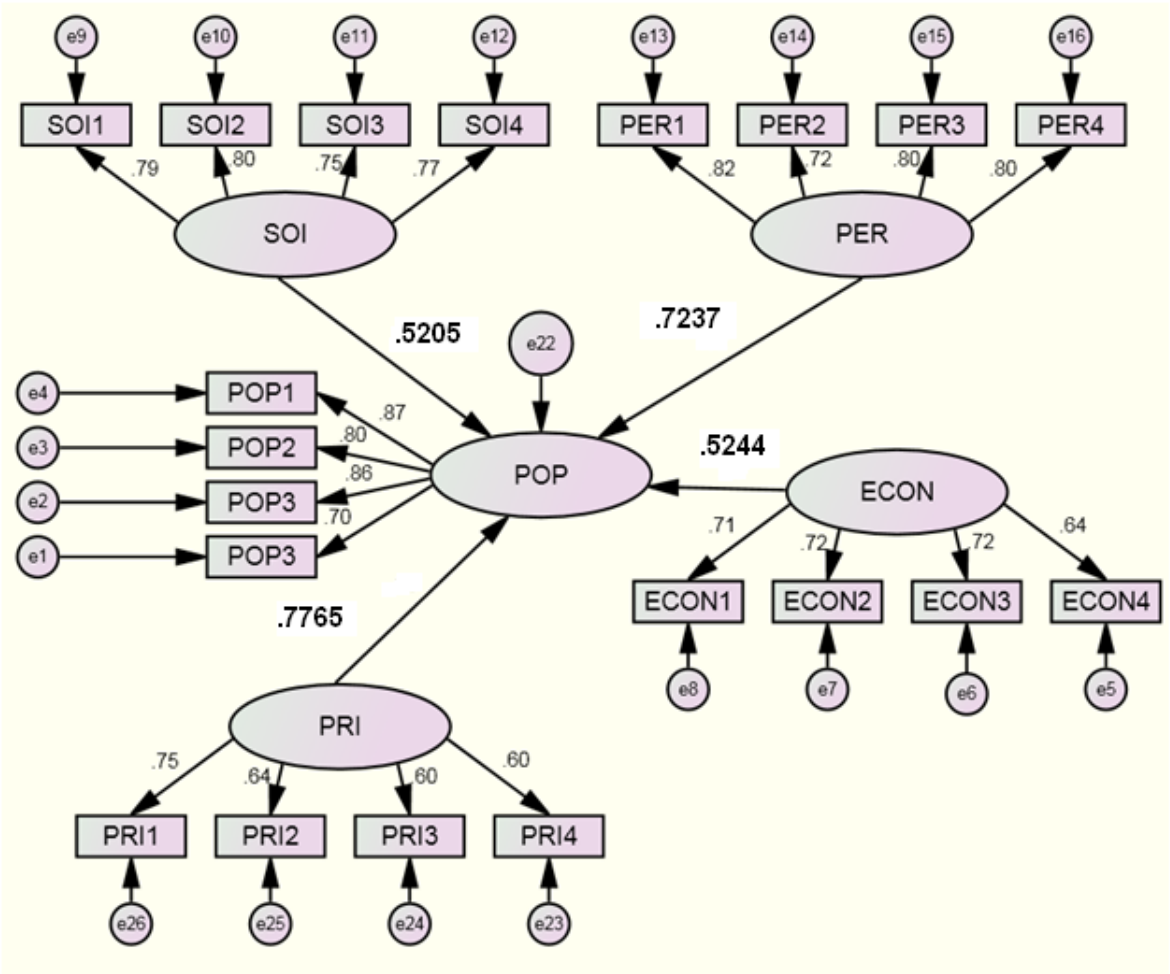

Figure 1: Degree of Relationship between Pricing (PRI); Social Influence (SOI); Economy (ECON), Personality (PER) toward Purchasing of Pirated Products

HYPOTHESES TESTING

The structural equation model was examined to test the relationship among constructs. Goodness-of-fit indicates for this model were chi-square/df = (199.465 /72) = 2.77, GFI = 0.848, AGFI = 0.779, CFI = 0.847, NFI = 0.784, RMSEA= 0.05. Figure one depicts the full model. Of the three paths hypothesized in the model, all the paths were significant at $p < 0.05$. From Table 5 it is revealed

that all the hypotheses accepted at 0.5 level of significance $p > 0.000$. Among all the significant variables, from the statistical result, Individual personalities; Economic conditions ; are the most significant important among our respondents followed compared with Social influences ; and pricing for the intention of purchasing pirated products.

CONCLUSION AND IMPLEMENTATION

There is no ending to the word "piracy", understanding and being aware of why, how, where, and when consumers purchase pirated goods will help reduce this menace. In this study researchers mainly discussed on social influence, personality, pricing and the economy. Structural equation modeling technique was utilized for social influence, individual's personality; pricing and the economy showed that the null hypothesis are accepted concluding that there is relationship between these variables toward the dependent variable, which is consumers' perception of purchasing pirated products. It is recommended that most of managers and original producers, creators of original products must come to understand these factors and strive to make originals goods more affordable with lowest price and transmit promotional campaign within the view of the end consumers' perception. In fact Bangladeshi government is also aware of this situation and working towards reducing this problem through various public and private companies.

DIRECTION TO FUTURE RESEARCH

The outcome of this research showed a comprehensively integrated framework for the government and private companies to understand the dynamic relationships among dimensions of social influence, pricing, economy, and personality to understand the consumers' perception toward purchasing of pirated products. However, further research is needed to examine these factors for a specific product with using mediating and moderating variables with larger sample before generalization can be made.

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