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Digital Piracy: Factors on Using Software Piracy in Islamic Higher Education

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Abstract

This research was conducted to identify and analyze the factors that lead to the use of pirated software among lecturers at UIN Ar-Raniry Banda Aceh and to determine the impact of using pirated software. The research method used is of quantitative type with factor analysis techniques. The study sample was 114 people. The sampling technique used is convenience sampling. The data was obtained through the distribution of questionnaires to respondents, which were further analyzed using the factor analysis method. The Kaiser Meyer Olkin Measure of Sampling test results were 0.801, and the Bartlett test was equal to 153. The next stage applies the principal component analysis method to obtain four new formation factors. They are named the motivation factor consisting of 9 variables; the attitude factor consisting of 4 variables; the legal factor consisting of 2 variables; and the quality & price factor consisting of 3 variables. The results achieved can be a reference and consideration for the campus in digital transformation using original software. The research implications contribute to a paradigm shift for lecturers to use licensed software. Socially, compliance with the regulation of the use of licensed software creates a favorable academic environment and has an impact on increasing lecturer productivity.

Keywords: *Pirated software, educators, digital piracy, factor analysis*

1. Introduction

Digitalization in all work and activity areas is the current era's main character. This character presents a disruption of previous technology in activities and changes it with digital technology. Competence in using this new technology is essential in facing the 4.0 revolution era[1]. One of the determinants of lecturer productivity through education is the implementation of technology. The problem faced is the use of pirated software. It is one of the important issues that are occur in this age. It is one of the factors that influence digital piracy. This has made the copying and distribution of digital information easier and more affordable without any cost [2]–[4]. From the formal aspect, this issue could be a criminal offence. When someone purchases a computer for the first time, sometimes the operating system and applications for Microsoft products, such as Windows 10 and Microsoft Office, are installed on the computer as pirated versions by the seller. Actually, the person who bought the laptop purchased only the hardware. Meanwhile, we should have paid an extra amount to get the original software. Computers or laptops that use original software are more costly than computers without them. In this case, the

buyer should be more careful in buying it. Some may need to realize that the computer they got contained pirated software.

Software piracy has long been a phenomenon in this country and a problematic issue for several decades [5]. Most of the software spread across Indonesia is pirated, and buying or downloading it has become a common issue. Products from Microsoft dominates the Indonesian software market around 97.3%, but 86% are pirated software. These actions are carried out not only from the user's impulse, but the program's conditions are also involved. In addition to the problem of the high price, it takes work to get it. Choosing software piracy could be an alternative for users. The cost of pirated software is meagre in the market [6], [7].

In addition, it is related to the lack of user awareness and knowledge about copyright laws. The need for more awareness from the public regarding intellectual property rights from software can also be another cause. It has become common in Indonesia, and does it without guilt [8]–[10]. Furthermore, various piracy on campus against intellectual property rights such as software piracy, books, articles and journals [11] and it is being a big impact for whole society [12]. It tends to be carried out by those who are less religious [13]. As an initial observation at UIN Ar-Raniry, researchers found that some lecturers had used pirated software on their laptops. Others use it because they do not know about pirated software. Some lecturers use it and already know that the software on their laptops is pirated. As a lecturer who knows well in religion, this action should not have happened. Religious institutions need to emphasize that downloading pirated software is an act of taking someone else's property that does not follow religious teachings [14]. They can certainly afford to buy a license to use it legally.

Nevertheless, software piracy still occurs on the Islamic campus. It is illegal and included in the ethical issues in the academic and professional environment [15]. Even though ethics is one of the attitudes that must be possessed by academics [16]. The rights or property belonging to other people should not be taken without permission. Digital piracy has no end either in Indonesia or in the world. It is not easy to prevent because it is a crime or theft that is not easily detected and resolved like other criminal behaviour. However, the behaviour of downloading pirated versions of digital products is more common in parts of the world among users, specifically among teenagers and students. It is used illegally in various areas [17], [18].

Copying software illegally, commonly known as pirated software, is considered one of the ethical issues in the digital world. It is widely reported that individuals engage in unauthorized copying of software, as digital content is much more challenging to manage and control than physical assets [19], [20]. Microsoft Office, Windows, and Adobe are some software that institutions, companies, and economic practitioners often use. However, the relatively high price of the licensed software and the lack of public knowledge about this has caused several companies, private institutions and economic practitioners to use pirated software [21].

Software piracy is an unauthorized copying of software or download it that violates copyright without pay any fee, either for personal or commercial use [22]–[24]. It could happen by multiplying software without obtaining permission from the owner, thereby violating the Copyright Law & the agreement with the license. Some models of software piracy include Hard disk loading, Counterfeiting, Internet Piracy and Retail Piracy. The violation model related to this license is software theft by duplicating software that has a license without permission to do so [25]. It also can be done by developing applications that reuse source code illegally from other people's work and create like the original version [26]. It was done quickly, especially since no one was physically hurt. The internet also supports this action by doing online piracy, providing convenience in accessing pirated software and other unauthorized use of copyrighted, download and distribute it [17], [27], [28].

Software piracy activities are carried out without the perpetrators feeling afraid and are considered a common practice [29]. Consumers motivated to buy counterfeit or pirated products no longer pay attention to the risk involved in buying them and instead trust the seller [30]. Several factors can lead to piracy: psychological, economic, ethical, lack of regulation, or cultural. In addition, the intention to pirate digital versions often depends on several factors,

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such as attitude, knowledge, social impact, and technical capabilities [18]. People who intend to pirate may not be able to pirate because of the environment they are in. For example, suppose you pay attention to employees and students who face daily situations where the responsibility lies with them to act ethically or unethically. In that case, leaders and academics need to know what factors influence them in making these decisions [31].

The attitude was also found to be the most significant factor that can influence behavioural intention. A recent software piracy study found that attitude strongly influenced the intention to pirate software. Additionally, the found that 24% of the difference in attitudes toward software piracy was due to software penalties and costs. Attitude mediates the effects of certainty of punishment, the severity of punishment and the cost of software on piracy intentions [32].

Previous research [8] found that attitudinal factors and motivational factors influence the use of pirated software in the student environment, with the percentage that can be explained, as 30.189% and 18.416%, respectively. Research related to factor analysis was also conducted [33] to analyse the factors that influence lecturers in continuing their S-3 studies using principal component analysis (PCA). The results obtained from the study were that there were three factors, namely, cost factors, ease of graduation factors and university factors.

Previous research [34] shows educators' perceptions of pirated software. The results showed that lecturers who could explain the concept of pirated software were 66.67%, and those who could not explain were 21.05%. In the campus environment, educators who use the Windows operating system are 89.47% and those who use Microsoft Office applications 94.47%. Both are commercial software. Almost all lecturers on the UIN Ar-Raniry use the windows operating system, which needs a valid commercial licence to run it. Initial observations, some lecturers already know that their laptop uses a pirated operating system and consider it no big deal to use. Even though this action is a big mistake in taking other people's property without permission. Moreover, related research among lecturers still needs to be done. So, this research needs to be carried out to determine the causes of pirated software use among lecturers at UIN Ar-Raniry.

Moreover, the campus is one of the State Islamic Religious Colleges (PTKIN). The use of pirated software or illegal software should not occur. By finding the factors that cause the use of pirated software, it is hoped that the campus can anticipate or reduce the circulation of pirated software among lecturers. In addition, the campus can digitally transform using all legal software. Studying the factors that cause educators to use illegal software in more detail is exciting. This research was conducted to determine what factors influence lecturers' use of pirated software. The novelty in this research was carried out, especially in using pirated software among lecturers.

2. Method

This study is quantitative research using a factor analysis technique. The location to construct this study is UIN Ar-Raniry Banda Aceh. The sampling technique used convenience data with the Slovin formula to obtain 114 respondents from 606 lectures on this campus. It is primary data collected directly from Likert-scale questionnaires distributed to respondents. The description of these respondents based on gender consists of 47.37% male and 52.63% female. Respondents with a functional position of expert assistant are 60.53%, assistant professors are 35.09%, and associate professors are only 4.39%. Based on the education level, respondents with postgraduate (master's degree) qualifications 88.60%, and the remaining 11.40% have doctoral degree levels. The data processing method uses factor analysis techniques. The process of the factor analysis method (Rahmi, 2016) is as follows:

a. Determine the variables to be analysed (x1 to x21), they are x1 (awarenes), x2 (priority), x3 (long term), x4 (high price), x5 (necessity), x6 (follow others), x7 (not afraid), x8 (piracy is good), x9 (piracy is legal), x10 (piracy is ethical), x11 (piracy is wise), x12 (useful), x13 (interesting), x14 (take the rights of others), x15 (copyright violation), x16

(quality), x17 (dangerous), x18 (stop to use), x19 (migration), x20 (don't know), and x21 (can't afford)

b. Perform testing of the variables that have been determined in the previous step.

c. Extracting one or more variables that have passed the previous stage is called factoring.

d. Perform interpretation of the factors formed

e. Validation of the results of the factors formed

This study uses a research instrument consisting of several questions related to pirated software and several validated question items from previous studies. It mostly adopted items from [35], [36]. They are x3 to x13 and x20

3. Result And Discussion

Result

The validity test with Pearson's Product Moment Correlation formula revealed that all items met the requirement of rxy > rtable (Table 1). All items are declared valid after testing with rtable = 0.155.

Table 1. Validity Test

Question	r_{xy}	Description	Question	r_{xy}	Description	Question	r_{xy}	Description
x1	0.503	Valid	x7	0.564	Valid	x13	0.621	Valid
x2	0.635	Valid	x8	0.533	Valid	x14	0.239	Valid
x3	0.472	Valid	x9	0.543	Valid	x15	0.226	Valid
x4	0.428	Valid	x10	0.551	Valid	x16	0.377	Valid
x5	0.707	Valid	x11	0.607	Valid	x20	0.355	Valid
x6	0.607	Valid	x12	0.689	Valid	x21	0.531	Valid

The provisions in the reliability test (table 2) using Cronbach's Alpha are if Cronbach's Alpha > 0.6, then the question items are consistent (reliable). Conversely, if Cronbach's Alpha < 0.6, the question items are inconsistent (reliable). Based on the results of the Cronbach's Alpha test to test reliability, information was obtained that the questions in this study were reliable or consistent because the value of Cronbach's Alpha = 0.845 was more significant than 0.6

Tabel 2. Reliability Statistic

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.845	0.852	18

The Kaiser Meyer Olkin Measure of Sampling (KMO) value is considered sufficient if it is more than 0.5. Based on the research results, the KMO value is 0.801. so that the KMO requirements meet the requirements because it has a value above 0.5. Meanwhile, the Bartlett Test of Sphericity is 153 with a significance of 0.000. Thus, the Bartlett Test of Sphericity meets the requirements because the significance is below 0.05. The test results show, a high relationship between variables to continue in the next stage. The test in the next stage is Measures of Sampling Adequacy (MSA). This stage analyzes all variables to determine which variables can be continued and which variables must be excluded. Based on the MSA value obtained, of the 18 variables, there is no Anti Image Correlation less than 0.4. So that all variables meet the assumptions and nothing needs to be excluded.

Tabel 3. KMO & Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.801
Bartlett's Test of Sphericity	Approx. Chi-Square	1019.618
	df	153
	Sig.	.000

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The next stage is to conduct an analysis of communalities to be able to explain the amount of variance by the factors obtained. The value of communalities will significantly influence the relationship of variables related to existing factors. The greater the value, the closer the relationship with the factors formed. The data in table 4 shows that each variable can be explained by the factors formed.

Tabel 4. Communalities

	Initial	Extraction		Initial	Extraction		Initial	Extraction
X1	1	0.332	X7	1	0.486	X13	1	0.74
X2	1	0.709	X8	1	0.534	X14	1	0.904
X3	1	0.416	X9	1	0.754	X15	1	0.893
X4	1	0.403	X10	1	0.714	X16	1	0.579
X5	1	0.739	X11	1	0.769	X20	1	0.697
X6	1	0.456	X12	1	0.703	X21	1	0.589

Extraction Method: Principal Component Analysis

Based on table 5, it can be seen how many factors are formed. In the "Component" column, the data shows that there are 18 components that can represent the variable, and in the "Initial Eigenvalues" column, the value is determined as 1 (one). The magnitude of the variance of all the factors formed and which are able to explain is 63.417%. While the number of factors formed, there are four factors.

Tabel 5. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.055	33.638	33.638	6.055	33.638	33.638	4.408	24.488	24.488
2	2.043	11.347	44.985	2.043	11.347	44.985	3.550	19.724	44.213
3	1.851	10.283	55.268	1.851	10.283	55.268	1.949	10.826	55.039
4	1.467	8.149	63.417	1.467	8.149	63.417	1.508	8.378	63.417
5	.985	5.471	68.888						
6	.958	5.321	74.209						
7	.763	4.236	78.446						
8	.576	3.200	81.646						
9	.575	3.195	84.841						
10	.532	2.956	87.797						
11	.456	2.533	90.330						
12	.382	2.119	92.449						
13	.336	1.867	94.316						
14	.284	1.577	95.893						
15	.246	1.368	97.261						
16	.234	1.299	98.561						
17	.144	.797	99.358						
18	.116	.642	100.000						

Extraction Method: Principal Component Analysis.

In the previous stage, it was known that four factors were formed, and then it was continued with the rotation stage to find out the distribution of the 18 variables to the four factors that were formed. Determination of the variables in grouping into which factors can be determined by looking at the most significant correlation value. The detail of them shows in table 6. The next step is to label the four factors formed from the reduction of 18 variables. All factors formed are named based on each factor's variables.

Tabel 6. Rotated Component Matrix[a]

	Component					Component			
	1	**2**	**3**	**4**		**1**	**2**	**3**	**4**
X5	0.826	0.154	-0.031	0.178	X9	0.067	0.864	-0.008	0.061
X2	0.823	0.114	-0.131	0.018	X10	0.108	0.833	-0.018	0.087
X13	0.675	0.449	-0.125	-0.26	X11	0.266	0.826	-0.096	-0.079
X7	0.651	0.232	-0.006	-0.091	X8	0.164	0.698	0.009	0.142
X12	0.611	0.539	-0.077	-0.182	X14	-0.011	-0.083	0.947	0.035
X3	0.599	0.113	-0.196	-0.075	X15	-0.031	-0.003	0.943	-0.051
X4	0.579	-0.169	0.148	0.133	X20	0.19	0.182	0.01	0.792
X6	0.577	0.246	0.064	0.243	X16	0.381	0.32	-0.022	-0.575
X1	0.506	0.144	0.197	0.129	X21	0.465	0.306	-0.101	0.518

There are no special rules or provisions in naming these factors. The naming of these factors is as follows:

1. Motivational factors consisting of 9 highly correlated variables, namely X5, X2, X13, X7, X12, X3, X4, X6 and X1
2. The attitude factor consists of 4 highly correlated variables, namely X9, X10, X11 and X8
3. Legal factors consisting of 2 highly correlated variables, namely X15 and X14
4. Quality & price factors consisting of 3 highly correlated variables, namely X20, X16 and X21

Interpretation can be made by comparing the factor loading values obtained with the factor loading values of the factor-forming variables. Factor loading is a number that expresses the high relationship between variables and the factors that are formed. The greater the value, the greater the correlation with the factors. Factors that have been interpreted can be seen in Table 7. Analysis of the data contained in table 7 shows that of the four factors that cause the use of pirated software hierarchically, they are (1) quality and price with a value of 63.412%, (2) law with a value of 55.27%, (3) attitude with a value of 44.97% and (4) motivation with a value of 33.64%. The quality and price factors show that pirated software has almost the same quality as licensed software. Hence, users are more likely to use pirated software because they cannot buy the original version. Another thing that causes the use of pirated software is the ignorance of having to get a software license where the software is. Legal factors show that the use of pirated software is a violation of copyright. In addition, this action is taking the rights of others without permission. The attitude factor shows that the lecturer knows software piracy is not legal, ethical, excellent and unwise. However, this does not hinder pirated software piracy.

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Table 7. Variable Interpretation Results

No.	Variabel	Factor	Eigen Values	Factor Loading	% of Variance	Cumulative %
1	X5 (Necessity)	**Motivation**	6.055	0,826	33.638	33.638
2	X2 (Priority)			0,823		
3	X13 (Interesting)			0,675		
4	X7 (Not afraid)			0,651		
5	X12 (Useful)			0,611		
6	X3 (Long term)			0,599		
7	X4 (High price)			0,579		
8	X6 (Follow others)			0,577		
9	X1 (Awareness)			0,506		
10	X9 (Piracy is legal)	**Attitude**	2.043	0,864	11.347	44.985
11	X10 (Piracy is ethical)			0,833		
12	X11 (Piracy is wise)			0,826		
13	X8 (Piracy is good)			0,698		
14	X14 (Take the rights of others)	**Law**	1.851	0,947	10.283	55.268
15	X15 (Copyright violation)			0,943		
16	X20 (Don't know)	**Quality & Price**	1.467	0,792	8.149	63.417
17	X16 (Quality)			0,575		
18	X21 (Can't afford)			0,518		

The motivational factor has several items that indicate the motivation for causing software piracy among lecturers. Regarding needs, lecturers need to use the software to support their careers. Some lecturers prioritize pirated software over original ones. Some lecturers stated that using pirated software was exciting, and they were not afraid of punishment if caught. Regarding benefits, lecturers think that pirated software benefits career advancement, primarily since it can be used for a long time. The lecturer also stated that the original software price was too high, so they preferred pirated software. This software is also caused by ignorance or not being aware that the computer they are using contains illegal software, and some join others in using pirated software. This result is also supported by Hossain et al. [37], who claim that awareness is the most influential factor in using pirated software. The user must be made aware of the laws and threats of using pirated software. They believe that there are no potential ethical issues with using pirated software. Financial status and payment methods can also affect the use of pirated software.

Discussion

Analysis of the data contained in Table 7 shows that of the four factors that cause the use of pirated software hierarchically, they are (1) quality and price with a value of 63.412%, (2) law with a value of 55.27%, (3) attitude with a value of 44.97% and (4) motivation with a value of 33.64%. The quality factor show that pirated software has almost the same quality as licensed software, and the price is too high. The perspective on the current price of digital

products being too high is the same as the research done [38]. Hence users prefer pirated software because they cannot buy the original version. It has also been supported by Xiong et al. [39] that the price factor is the main reason for choosing pirated software. Another thing that causes the use of pirated software is the ignorance of having to get a software license where the software is. In addition, the attitude factor is another cause of software piracy [40]. It is the same as the results found by Fitriasih et al. [41] which states that attitudes significantly influence intentions to pirate products. Legal factors show that the use of pirated software is a violation of copyright. In addition, this action is taking the rights of others without permission. Legal is dominantly one of the perspectives influencing the desire to commit digital piracy. Ethics and awareness of the legal consequences of pirated software can be one way to reduce this activity by someone[20]. The attitude factor shows that the lecturer knows software piracy is not legal, ethical, reasonable, and unwise. However, this does not hinder the occurrence of software piracy activity.

The motivational factor has several items that indicate the motivation for causing software piracy among lecturers. Regarding needs, lecturers need to use the software to support their careers. Some lecturers prioritize pirated software over original ones. Some lecturers stated that using pirated software was exciting, and they were not afraid of being punished if arrested. Regarding benefits, lecturers think that pirated software benefits their career advancement, primarily since it can be used for a long time. The lecturer also stated that the price of the original software was too high, so they preferred to use pirated software. The use of this software is also caused by ignorance or the need to be made aware that the computer they are using contains illegal software. Some of them are following other people in using pirated software. Pirated software should not occur among lecturers, especially in an Islamic university. It is similar to a previous study [13], [42],which stated that users who understand religion are less able to accept acts of piracy. The more they understand religion, the more likely they can control their actions to pirate digital products. Software piracy still exists in state Islamic campuses. It could be an exciting follow-up research study to be done.

4. Conclusion

The application of the factor analysis method to the triggering factors that influence the use of pirated software among educators results in 4 factors: motivational factors, attitude factors, legal factors and quality & price factors. Hierarchically, the highest factor for using pirated software is influenced by quality & price. This study, researchers only discuss related factors that influence the use of pirated software among educators. The following research phase can be carried out using the method of linear regression analysis, discriminant analysis or other analysis.

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