A Confirmatory Factor Analysis of Information Ethics for Primary School Administrators Under the Office of Basic Education Commission, Thailand

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Abstract

The purposes of this study were:1) to investigate components and indicators of Information Ethics for Primary School Administrators under the Office of the Basic Education Commission, Thailand; and 2) to verify congruence between a structural relationship model and the empirical data. The samples were 840 administrators and teachers in primary schools under the Office of the Basic Education Commission, obtained through multistage random sampling. The instrument was a questionnaire of 5 rating scale with 0.888 reliability. The data were analyzed by using basic statistics and confirmatory factor analysis to verify the correlation of the model indicating Information Ethics of Primary School Administrators under the Office of the Basic Education Commission with the empirical data. The data were calculated with a computer statistic package using SPSS program version 28.0 and M PLUS version 7.0. The results of the study revealed that: 1) the Information Ethics of Primary School Administrators under the Office of the Basic Education Commission Thailand consisted of 5 components as follows: (1) Information Privacy with three indicators (2) Information Accuracy with three indicators (3) Information Property with three indicators (4) Access to information with three indicators, and (5) Information Security with four indicators. 2) The model indicating Information Ethics of Primary School Administrators under the Office of the Basic Education Commission Thailand was consistent with the empirical data with $\chi 2 = 47.221$, Df = 33, $\chi2/ Df = 1.430$, P-Value = 0.0518, RMSEA = 0.023, SRMR = 0.016, CFI = 0.999, TLI = 0.996.

Keywords: Information Ethics, Primary School Administrators, Confirmatory Factor Analysis

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Introduction

The outbreak of the coronavirus disease (COVID-19) has occurred and changed to a new normal under new standards that are unfamiliar. As a result, the demand for internet and information usage has increased exponentially. Even educational institutions need to be adjusted by modifying many forms of teaching and learning especially using online teaching as the main channel. When educational institutions have more demand for information use, they could possibly be the target of information threats both in terms of the system and use of users' information. This information threat problem is a key issue of threats in the digital age. It covers both hardware, software and data threats that affect the safety of people's lives and property. All threats are focused on attacking corporate information systems where large amounts of information are stored including personal, financial, etc. to take advantage of that information in the wrong way, such as trading or hacking the financial system. This causes serious damage to the individual. In many cases, threats arise from human errors/failures in downloading pirated programs that disguise threats.

In Thailand, there is a governmental organization, Saraburi Provincial Hospital, which was attacked by ransomware that looks like encrypting or locking files. Whether they were document files, pictures, or videos, users were not be able to open any files. Attackers (Hacker) could get many personal data files that were hospital customers. According to a report by the Thai National Intelligence Agency, there have been attempts to attack the Ministry of Education's information systems with the aim of personal information storage. It was believed to have entered the lock code using ransomware and warned schools to be careful and urgently improve school information systems since the school is a place to collect a lot of personal information such as personal history, address, financial status, relationship with family members, etc. In addition, it can be concluded there were three factors causing the information risks. The first one was uer error. It was found that using the information system in the website wasat risk. The second one was the use of pirated programs by installing pirated programs that covered viruses (Malware) and threats. The third one was data destruction. It was found that educational institutions did not destroy data documents. It was found that they sometimes choose to reuse and rerell various information documents for recycling causing personal information to leak outside the educational institution. These document were easily used by outsiders and criminals. Therefore, ethics in the use of information must be accelerated for administrators, teachers and related people to realize the importance of data storage, use, and destruction of data as well as protecting personal information to be more secure.

According to document and related research, it was found that the concept of information ethics, Ricard O Mason (1986), who proposed the concept of information ethics to prevent such problems at the individual and organizational levels. The purpose was to protect the privacy of information, intellectual property rights to access information, data control and protection, and information security and intellectual freedom. Michael J. Quinn (2017), Dennis Ocholla (2017), O'Brien (2018), and Dan L. Burk. (2008) discussed the concept of executive ethics called, "business standards". It's an ethics set up to be used as a guideline for creating or using data and information of people in society, respect for etiquette in using information, intellectual property rights to access information, and data control and protection. Data security and intellectual freedom as well as organizations must also have control over the dissemination of their data and information.

The researcher is therefore interested in studying the components and indicators of information ethics of primary school administrators under the Office of the Basic Education Commission. The objective was to examine the consistency of the information ethics indicator model of primary school administrators under the Office of the Basic Education Commission with empirical data, which obtained information, factor loading of elements and indicators of information ethics that could be used as a conceptual framework for creating information ethics development models of the management team in managing the school in the future.

Review of Literature and Related Research

From the review of literature and research related to information ethics of school administrators. The researcher analyzed the components of information ethics based on the concepts of Becky Simon. (2017) and (2002), Dan L. Burk. (2008), Dennis Ocholla (2017), Jacob A Young (2020), Kozloski, K., C. (2006), Kuhlthau, Carol Collier. (2009), Katherine O'Keefe, Daragh O Brien (2018), Luciano Floridi. (2013), Mason, R. O. (1986), Michael j. Quinn. (2017),Mojgan A, Kamariah; & Foo Say Fooi. (2006), Namtip Wipawin. (2014), O'Brien (1999). Jame A. O'Brien. (2008) Sucheeva Pichaikul. (2019) Valenzuela, Carlos R. (1992) and W. Michael Hoffman and Dawn-Marie Driscoll (2020) (criteria 70 percent or more), which made it possible to obtain the information ethics components of school administrators. There were 5 elements in total as follows:
1. Information privacy consists of protection of personal data, data collection, and data use and disclosure.
2. Information accuracy of the information consists of correctness verifying, updating information process, and information reliability.
3. Information property includes plagiarism, copyright information, and software licenses.
4. Access to information consists of level of access, User Access Control, and Logging and Monitoring.
5. Information security consists of information technology security policy, information system environment control, assessing information security threats, and maintenance of information technology security systems. The hypothesis model is as follows:
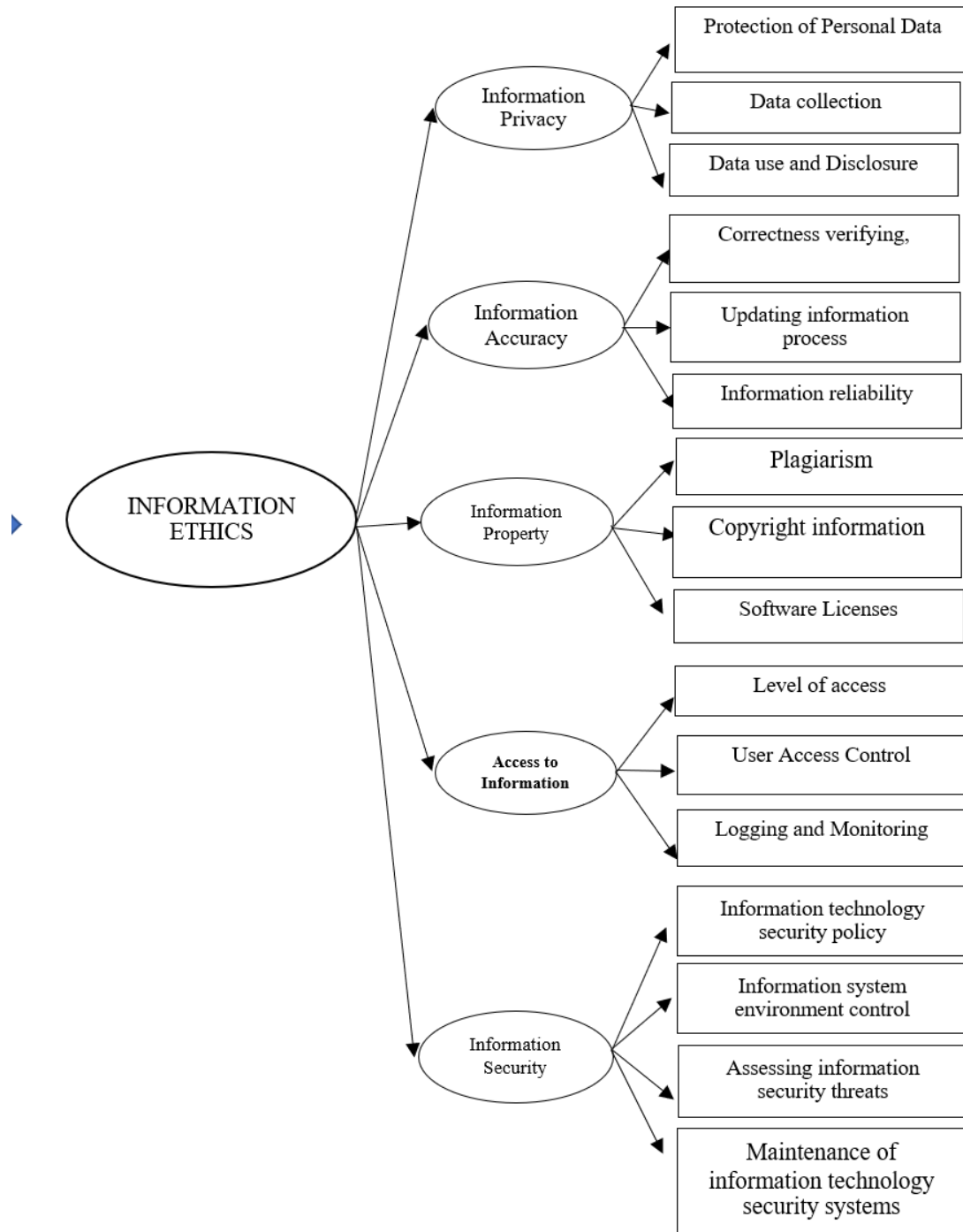
Figure 1: information ethics hypothesis model for Primary School Administrators Under The Office of Basic Education Commission, Thailand

Research methodology

This research was a descriptive research. It was conducted in 2 phases as follows:

The first phase: Was to study the components and indicators of information ethics of primary school administrators under the Office of the Basic Education Commission by analyzing documents (Document Study) and interviewing 7 experts to confirm the components and indicators of information ethics of primary school administrators.

The second phase: Examined the consistency of the information ethics indicator model of primary school administrators under the Office of the Basic Education Commission with the following empirical data:

Population and sample: The population was primary schools under the Office of Primary Educational Service Area. There were 21 parameters in this research by using the ratio of sampling unit with parameter or variances in factor analysis. According to the concept of Hair et al. (2006), the researcher therefore defined the sample group in the research as 20:1, resulting in a sample of 420 schools. The informants consisted of 1 administrator and 1 teacher. The acquisition of 840 subjects by multi-stage sampling. In the first step, stratified random sampling was used by type: 1. Region, 2. Primary educational service area, and 3. The size of school. The second step was to use Sample Random Sampling for each class by drawing lots to obtain a representative sample. The size of the sub-sample was proportional to the school sample as shown in the table.

Table 1: Table of samples came from multi-stage sampling

First Random		Second Random	Third Random				Total (person)
Region	Province	Area	Small	Medium	Large	Extra Large	
North	1. Chiang Mai	1,4	12	12	4	4	64
	2. Chiang Rai	2,3	12	12	4	4	64
	3. Lamphun	1,2	12	12	4	4	64
Central	4. Nakhon Sawan	2,3	12	12	4	4	64
	5. Lopburi	1,2	12	12	4	4	64
	6. Nakhon Pathom	1,2	12	12	4	4	64
Northeast	7. Kalasin	1,2	12	12	4	4	64
	8. Khon Kaen	3,5	12	12	5	5	68
	9. Nakhon Ratchasima	4,6	12	12	5	5	68
	10.Maha Sarakham	1,3	12	12	4	4	64
South	11. Phatthalung	1,2	12	12	4	4	64
	12. Songkhla	2,3	12	12	4	4	64
	13. Nakhon Si Thammarat	3,4	12	12	4	4	64
Total	13	26	156	156	54	54	840

The variables used in the study were: 1. Information privacy 2. Information accuracy 3. Information property 4. Access to information 5. Information security

Tools: Rating Scale Questionnaire with 0.961. Try Out efficiency.

Data collection: Was done by sending questionnaires to the sample group in the school online via google form and requesting a response within 4 weeks. Then the researcher checked the accuracy and sufficiency of the data for statistical analysis.

Data analysis: Descriptive statistics was used with frequency distribution and percentage determination for respondent status analysis. Reference statistics was used to check the consistency of the research model with empirical data by using the criteria of Prakitiya Taksino (2016), which were: 1) chi-square value ($x2$) had no statistical significance or p=value was greater than 0.05, 2) chi-square value per degree of freedom (x^2/df) was less than 2.00, 3) the Comparative Fit Index (CFI) was greater than 0.95, 4) Tucker-Lewis Index: (TLI) was greater than 0.95, 5) Parametric Error Estimation (RMSEA) was less than 0.05, and 6) Root Mean Squared Index (SRMR) was less than or equal to 0.08.

Research results

The results of the development of information ethics indicators of primary school administrators under the Basic Education Commission

From the results of the analysis, the researcher developed information ethics indicators of primary school administrators under the Basic Education Commission. For overall pictures, there were 5 aspects: 1. Information privacy, 2. Information accuracy, 3. Information property, 4. Access to information, and 5. Information security. The researcher used the criteria of Suthithat Konkarn (2004) to consider the mean ($\overline{X}$) equal to or greater than 3.00 and the coefficient of distribution (C.V.) equal to or less than 20% for selection in order to set out in measurement models for confirmatory component analysis. The analysis results are shown in Table 2.

Table 2: Mean ($\overline{X}$), standard deviation (S.D.) and coefficient of distribution (C.V.) of information ethics indicators of primary school administrators.

Symbol	Information ethics indicators of primary school administrators under the Basic Education Commission	Level of Practice			
		$\overline{X}$	S.D.	C.V.	Result
pri	**1.Information Privacy**				
pri1	1.1 Protection of personal data	4.51	0.30	0.09	suitable
pri2	1.2 Data collection	4.51	0.29	0.09	suitable
pri3	1.3 Data use and disclosure	4.51	0.29	0.09	suitable
	Total	**4.51**	**0.29**	**0.09**	**suitable**
Acc	**2. Information accuracy**				
acc1	2.1 Correctness verifying	4.49	0.29	0.08	suitable
acc2	2.2 Updating information process	4.50	0.29	0.08	suitable
acc3	2.3 Information reliability	4.49	0.29	0.08	suitable
	Total	**4.49**	**0.29**	**0.08**	**suitable**
Prob	**3. Information property**				
prob1	3.1 Plagiarism	4.49	0.28	0.08	suitable
prob2	3.2 Copyright information	4.51	0.29	0.08	suitable
prob3	3.3 Software licenses	4.49	0.29	0.09	suitable
	Total	**4.49**	**0.29**	**0.08**	**suitable**
Acs	**4. Access to information**				
acs1	4.1 Level of access	4.19	0.38	0.15	suitable
acs2	4.2 User Access Control	4.20	0.37	0.14	suitable
acs3	4.3 Logging and Monitoring	4.23	0.38	0.14	suitable
	Total	**4.20**	**0.38**	**0.14**	**suitable**

Symbol	Information ethics indicators of primary school administrators under the Basic Education Commission	Level of Practice			
		$\overline{X}$	S.D.	C.V.	Result
Sec	**5. Information security**				
sec1	5.1 Information technology security policy	4.00	0.28	0.08	suitable
sec2	5.2 Information system environment control	4.01	0.30	0.09	suitable
sec3	5.3 Assessing information security threats	4.00	0.29	0.08	suitable
sec4	5.4 Maintenance of information technology security system	4.00	0.29	0.08	suitable
	Total	**4.00**	**0.29**	**0.08**	**suitable**
	Summary	**4.33**	**0.30**	**0.09**	**suitable**
	Total	**4.51**	**0.29**	**0.09**	**suitable**

From Table 2, it was found that the results of the basic statistical analysis on the suitability of the information ethics indicators of primary school administrators under the Basic Education Commission. Overall, it was at a high level ($\overline{X}$= 4.33). It was found that the main components with the highest mean were: 1. Information privacy ($\overline{X}$= 4.51), followed by 2. Information accuracy, and 3. Information property ($\overline{X}$= 4.49). The lowest was 5. Information security ($\overline{X}$= 4.00). The variance of the data was 0.30. The data distribution was between 0.08- 0.14. The information ethics of primary school administrators under the Basic Education Commission met the specified criteria and could be used to analyze the correlation coefficients between the variables of information ethics of elementary school administrators under the Basic Education Commission.

An analysis of the correlation coefficient (r) among the variables of information ethics of primary school administrators under the Basic Education Commission by finding Pearson's Correlation Coefficient. The results of data analysis are in Table 3.

Table 3: Correlation coefficient (r) of information ethics indicators of primary school administrators under the Basic Education Commission

	pri1	pri2	pri3	acc 1	acc 2	acc 3	prob 1	prob 2	prob 3	acs1	acs2	acs3	sec1	sec2	sec3	sec4
pri1	1															
pri2	.650 **	1														
pri3	.670 **	.747 **	1													
acc 1	.674 **	.738 **	.725 **	1												
Acc 2	.647 **	681 **	.681 **	.760 **	1											
acc 3	.697 **	.680 **	.625 **	.740 **	.773 **	1										
Prob1	.456 **	.623 **	.528 **	.496 **	.496 **	.494 **	1									
pro b2	.559 **	.665 **	.539 **	.638 **	.641 **	.649 **	.626 **	1								

	pri1	pri2	pri3	acc 1	acc 2	acc 3	prob 1	prob 2	prob 3	acs1	acs2	acs3	sec1	sec2	sec3	sec4
pro b3	.588 **	.647 **	.535 **	.608 **	.647 **	.661 **	.620 **	.699 **	1							
acs 1	.452 **	.426 **	.451 **	.410 **	.375 **	.368 **	.340 **	.379 **	.580 **	1						
acs 2	.385 **	.524 **	.588 **	.540 **	.502 **	.414 **	.355 **	.416 **	.589 **	.582 **	1					
acs 3	.455 **	.471 **	.532 **	.488 **	.474 **	.485 **	.328 **	.445 **	.633 **	.579 **	.831 **	1				
sec1	.524 **	.607 **	.553 **	.614 **	.556 **	.542 **	.527 **	.634 **	.666 **	.531 **	.688 **	.745 **	1			
sec2	.563 **	.670 **	.518 **	.598 **	.507 **	.578 **	.612 **	.619 **	.713 **	.519 **	.473 **	.572 **	.805 **	1		
sec3	.531 **	.539 **	.453 **	.426 **	.426 **	.451 **	.459 **	.486 **	.633 **	.526 **	.516 **	.636 **	.775 **	.820 **	1	
sec4	.503 **	.504 **	.486 **	.469 **	.455 **	.390 **	.435 **	.469 **	.665 **	.506 **	.639 **	.712 **	.793 **	.724 **	.873 **	1

* * Correlation is significant at the 0.01 level (2-tailed).

From Table 3, it was found that there were five aspects of the information ethics components of primary school administrators under the Basic Education Commission. All pairs were related in a positive direction with statistical significance at 0.01. The correlation coefficient was between 0.340 - 0.873 according to the criteria of Nonglak Wiratchai (2005). The first pair with the highest correlation coefficient was assessing information security threats, and maintenance of information technology security system (r = 0.873), followed by User Access Control of people who came into contact with the system (r = 0.805). Contrastingly, the pair with the lowest correlation coefficient was protection of personal data with User Access Control (r = 0.385).

The results of verifying the consistency of the information ethics indicator model of primary school administrators under the Basic Education Commission with empirical data
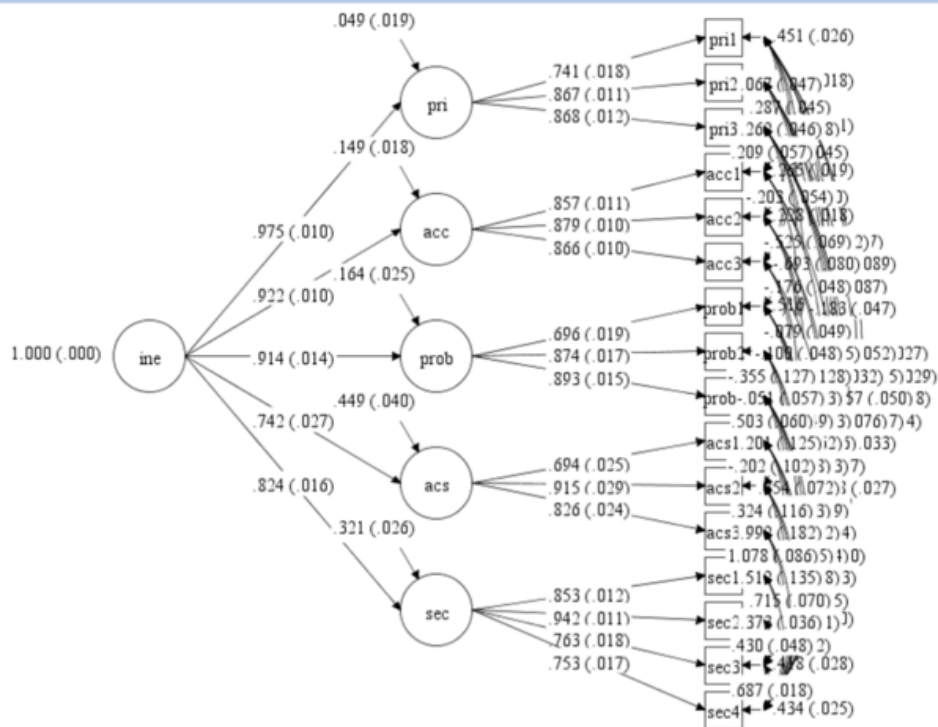
Was shown in Figure 2 and Table 4.

Figure 2: Information ethics indicator model of primary school administrators
under the Basic Education Commission with empirical data (M-Plus7.0)

Table 4: the consistency index of the information ethics indicator model of primary school
administrators under the Basic Education Commission with empirical data.

Tucker-Lewis Index: (TLI)	Criteria	Analysis results	Consideration results
χ^2	P > 0.05	$\chi 2 = 47.221$, Df = 33, P-Value = 0.0518	accepted
χ^2/DF	< 2.00	1.430	accepted
RMSEA	< 0.07	0.023	accepted
SRMR	< 0.08	0.016	accepted
CFI	> 0.95	0.999	accepted
TLI	> 0.95	0.996	accepted

The results of the analysis of information ethics indicator model components of primary school administrators under the Basic Education Commission.

Was shown in Table 5 and Table 6.

Table 5: the results of the analysis of information ethics components of primary
school administrators under the Basic Education Commission.

component	Factor Loading			R-Squared (R²)
	β	S.E.	t	
1) Information privacy	0.975	0.010	97.783	0.671
2) Information accuracy	0.922	0.010	92.664	0.667
3) Information property	0.914	0.024	41.221	0.962
4) Access to information	0.742	0.027	31.481	0.781
5) Information security	0.824	0.016	54.361	0.507

From Table 5 presents the results of the confirmatory factor analysis on information ethics principles of elementary school administrators under the Basic Education Commission. It was found that the factor loading was in the range of 0.742 – 0.975. The components in the form of standard scores with the highest component weight were as follows. Information privacy ($\beta = 0.975$) had a R-Squared (R^2) of 0.671, followed by information accuracy ($\beta = 0.922$), which had a R-Squared (R^2) equal to 0.667. Information property ($\beta = 0.914$) had a R-Squared (R^2) equal to 0.962. Information security ($\beta = 0.824$) had a R-Squared (R^2) equal to 0.781. The components in the form of standard scores with the lowest component weight was access to information ($\beta = 0.742$), which had a R-Squared (R^2) of 0.507.

Table 6: Factor Loading, Standard Error (S.E.) and Test Statistical Values (t-value) used to verify model consistency with empirical data.

Subcomponents	Factor loading			R-Squared (R^2)	Coefficient of score components (FS)
	β	S.E.	t		
1. Information privacy					
1.1 Protection of personal data	0.741	0.018	41.166	0.612	0.113
1.2 Data collection	0.867	0.011	79.929	0.768	0.254
1.3 Data use and disclosure	0.868	0.012	75.503	0.695	0.279
2. Information accuracy					
2.1 Correctness verifying	0.857	0.011	78.919	0.764	0.161
2.2 Updating information process	0.879	0.010	88.794	0.765	0.181
2.3 Information reliability	0.866	0.010	87.893	0.768	0.102
3. Information property					
3.1 Plagiarism	0.696	0.019	54.792	0.623	0.292
3.2 Copyright information	0.874	0.017	53.144	0.678	0.175
3.3 Software licenses	0.893	0.015	60.016	0.745	0.087
4. Access to information					
4.1 Level of access	0.694	0.025	28.761	0.601	0.381
4.2 User Access Control	0.915	0.029	33.551	0.822	0.103
4.3 Logging and Monitoring	0.826	0.024	36.438	0.731	0.270
5. Information security					
5.1 Information technology security policy	0.853	0.012	71.451	0.786	0.066
5.2 Information system environment control	0.942	0.011	86.565	0.935	0.590
5.3 assessing information security threats	0.763	0.018	44.388	0.811	0.264
5.4 Maintenance of information technology security systems	0.753	0.017	43.294	0.796	0.448

From Table 6 were as follows:

1) Information privacy. It was found that the weight factor coefficient of every element was statistically significant at the .01 level. The variable with the highest factor loading was data use and disclosure ($\beta = 0.868$). It had a R-Squared (R^2) of 0.695, followed by data collection

(β = 0.867), which had a R-Squared (R^2) of 0.768, and protection of personal data (β = 0.741) had a R-Squared (R^2) of 0.612, respectively.

2) Information accuracy. It was found that the weight factor coefficient of every component was statistically significant at the .01 level. The variable with the highest factor loading was updating information process (β = 0.879). It had a R-Squared (R^2) of 0.765, followed by information reliability (β = 0.866), which had a R-Squared (R^2) of 0.768, and correctness verifying (β = 0.857) had a R-Squared (R^2) of 0.764, respectively.

3) Information property. It was found that the weight factor coefficient of all components was statistically significant at the .01 level. The variable with the highest factor loading was software licenses (β = 0.893). It had a R-Squared (R^2) of 0.745, followed by copyright information (β = 0.874), which had a R-Squared (R^2) of 0.678, and plagiarism (β = 0.696) had a R-Squared (R^2) of 0.623, respectively. (β = 0.857) had a R-Squared (R^2) of 0.764, respectively.

4) Access to information. It was found that the factor weight coefficient of all components was statistically significant at the .01 level. The variable with the highest factor loading was User Access Control (β = 0.915). It had a R-Squared (R^2) of 0.822, followed by Logging and Monitoring (β = 0.826), which had a R-Squared (R^2) of 0.731, and level of access (β = 0.694) had a R-Squared (R^2) of 0.601, respectively.

5) Information security. It was found that the factor weight coefficient of every component was statistically significant at the .01 level. The variable with the highest factor loading was information system environment control (β = 0.942). It had a R-Squared (R^2) of 0.935, followed by information technology security policy (β = 0.853) with a R-Squared (R^2) equal to 0.786, assessing information security threats (β = 0.763) with a R-Squared (R^2) equal to 0.811, and maintenance of information technology security system (β = 0.753) had a R-Squared (R^2) of 0.796, respectively.

It can be concluded that the information ethics components of primary school administrators under the Basic Education Commission consisted of 5 main components. 1) Information privacy consisted of 3 indicators and 19 indicating behaviors. 2) Information accuracy consisted of 3 indicators 3 indicating behaviors. 3) Information property consisted of 3 indicators and 7 indicating behaviors, 4) Access to information consisted of 3 indicators and 5 indicator behaviors. 5) Information security consisted of 4 indicators and 9 indicating. To sum up, information ethics of elementary school administrators under the Basic Education Commission consisted of 5 main components, 16 sub-components, and 43 indicators.

The results of verifying consistency of the model were x^2 = 47.221, Df = 33, x^2/ Df = 1.430, P-value. = 0.0518, RMSEA = 0.023, SRMR = 0.016, CFI = 0.999, TLI = 0.996. This passed the test criteria showing that the information ethics model of primary school administrators under the Basic Education Commission was consistent with empirical data.

Conclusion

According to the results of the analysis of the information ethics indicator model of primary school administrators under the Office of the Basic Education Commission, it was found that the model created by the researcher was consistent with the empirical data showing that the main components of information ethics of primary school administrators under the Office of

the Basic Education Commission consisted of 1. Information privacy, 2. Information accuracy, 3. Information property, 4. Access to information, and 5. Information security. Importantly, they were crucial elements. This was because the researcher conducted a study of components and indicators from the concepts of a variety of scholars. There was an in-depth literature review including studying related research that was acceptable in the academic community, interviews with experts to confirm the composition, and indicators derived from synthesis.

1) Information privacy. It was found that the variable with the highest factor loading was data use and disclosure. It corresponded with Richard O Mason (1986) who opined that privacy was paramount to giving individuals the freedom to use information systems as they wish. There was no limit as to what is not illegal. Organizations must provide freedom to users of information systems. In addition, data subjects had the right to have their personal data not to be disclosed unnecessarily and allowed individuals to become private in the information world.

2) Information accuracy. It was found that the indicators with the highest factor loading was updating information process. It was consistent with Dennis Ocholla (2017) who commented that updating information process would be fast and up to date (Update). Good information needed to be updated to always be up-to-date. Data retention needed to be kept up to date with user needs, up-to-date and current events. The information would be immediately available, or it was the most effective when information users could use the information they need quickly and accurately.

3) Information property. It was found that the indicators with the highest factor loading was software licenses. It corresponded with Luciano Floridi (2013) who commented that the use of software created by others required permission from the creator. A license was a contract between the creator and the user of the software. In addition, the license gave the user the right to use the software without being considered an infringement of copyright. As a result, the license acts like a promise that the creator would not sue users for the use of the software, which was the exclusive right of the creator. It did not infringe copyright, which was important in the use of various software.

4) Access to information. It was found that the indicators with the highest factor loading was authentication (User Access Control) which was consistent with Michael J. Quinn (2017) who opined that using authentication would prove the identity of that person who accessed the internet network as well as verifying the rights of users of your internet network for how long and how fast they could upload or download. The system would cut the user out of the service as soon as the time expires. It could also set the time and speed as appropriate. After that, it would record the usage of internet network system. The main purpose of this process was to report the use of the internet network and confirm the record of the use of the Internet network in detail. It was able to produce summary reports and various statistics on demand.

5) Information security. It was found that the indicators with the highest factor loading was information system environment control is consistent with Namthip Wiphawin (2014) who commented that information system environment control was a policy and method for controlling information systems. It provided safety protection against damage or reduce system damage in order to ensure that the overall information system of the organization was stable and well-managed and was a part that would contribute to integrity.

According to the results of the analysis of the information ethics indicator model of primary school administrators under the Basic Education Commission, it was found that the model created by the researcher was consistent with the empirical data since the researcher had conducted a study of components and indicators from the concepts of a variety of scholars. There was an in-depth literature review including studying related research that was acceptable in the academic community and interviewing with experts to confirm the composition and indicators derived from synthesis. This enabled the researcher to create quality tools that could be measured to meet the objectives of the research. The samples were randomly drawn from all regions. Therefore, it was reliable and representative of the population and corresponds to primary education institutions under the Basic Education Commission. Therefore, the model created by the researcher was consistent with the empirical data and suitable for the context in which the researcher was interested in studying. This was in line with the idea of Steven (2009) stating that elemental analysis confirmation was a data analysis with a clear conceptual framework. There was strong theory or strong empirical evidence behind it. The number of elements was predetermined. The relationship between the constituents and the observed variables was predetermined. Analyzes and observed variables were only associated with some factors.

References

Becky Simon. (2017). Information Management Strategies: From Punch Cards to Data Warehouses, and Looking to the Future with Big Data and AI. Middleton, Michael.

Becky Simon. (2002). Information Management: A Consolidation of Operation, Analysis and Strategy. Wagga, NSW: Charles Sturt University, Centre for Information Studies.

Dan L. Burk. (2008). Information ethics and the law of data representations. Ethics and Information Technology 10 (2-3):135-147.

Dennis Ocholla (2017). Information Ethics in Africa. Proceedings of 14th Annual IS Conference. University of Zululand. South Africa.

Jacob A Young (2020), Confronting Information Ethics in the New Millennium.LA. Fomside.

Kozloski, K., C. (2006). Principal leadership for technology integration: A study of principal technology leadership. Doctoral dissertation, Drexel University.

Kuhlthau, Carol Collier. (2009). The Information Seeking Process (ISP): A Search for Meaning Rather than Answers. Retrieved on April 30, 2021, from http://comminfo.rutgers.edu/~kuhlthau/information_search@process.htm

Katherine O'Keefe, Daragh O Brien (2018). Ethical Data and Information Management: Concepts, Tools and Methods. London. Kogan Page Ltd. p.344.

Luciano Floridi. (2013). Information Ethics: An Environmental Approach to the Digital Divide. Philosophy in the Contemporary World 9 (1):39–45 (2002).

Mason, R. O. (1986). Four ethical issues of the information age. MIS Quarterly, 10(1), 5-12Taylor, R.S. (1991). Information use environments. In B. Dervin (Ed.) Progress in Communication Sciences, v. 10 (pp. 217-225).

Michael j. Quinn. (2017). Ethics for information age.7 th edition.Seattle University.Pearson Education, Inc.

Mojgan A, Kamariah; & Foo Say Fooi. (2006). School leadership and information communication technology. The Turkish Online Journal of Educational Technology.

Namtip Wipawin. (2014). Information Ethics. TLA Research J. Vol.7. 106-112.

O'Brien (1999). Jame A. O'Brien. (2008). Management Information Systems. Eighth Edition.McGrawHill Irwin.

Sucheeva Pichaikul. (2019). Information Ethics for use. Bangkok. Pranakron inc.

Valenzuela, Carlos R. (1992). Remote sensing and geographical information systems for resource management in developing countries. Dordrecht : Kluwer Academic.

W. Michael Hoffman and Dawn-Marie Driscoll (2020). Business Ethics in the New Millennium: Will the Patient Survive? Vol. 10, No. 1, Globalization and the Ethics of Business.