Modeling of the Acceptance of E-Books among

School Teachers in Terengganu, Malaysia

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Abstract

The purpose of this study is to identify and modeling the level of acceptance and their relationship of e-books among primary school teachers in Terengganu State. To fulfill the objective of this study, a study sample consists of 79 teachers was collected using questionnaire forms as the instrument and analysed using median mean and non parametric statistics method. As a whole, the findings show that e-book acceptance level is categorised as medium. There are two major factors that contributed to the level of acceptance of ebooks. They are listed as personal information, knowledge for handling ebook -and frequency of using ebook. In this study, we proposed and utilizing a multilevel structural equation modeling technique in determining the level of e-book acceptance among school teachers. The gained results from this study can also move forward to the decision-making and quality improvement of e-book performance.

Keywords: Reliability, e-book, Correlation Structural Equation Modeling

INTRODUCTION TO E-BOOK

The application of borderless, information technology is becoming more widespread in this country. Various sophisticated systems and gadgets are introduced and utilised to simplify daily works. Also undergoing the same changes is in the field of education. The ever growing utilisation of technology in learning processes has helped students to understand and master the subjects taught to them in classrooms. The importance of information and communication technology in schools cannot be refuted in the country's education system at present. The growth of information technology in our country has started as early as 1960 under the Examination Board, at the Ministry of Education. In 1997 Elhammi stated that the usage of information technology can dissipate information to users with no limits (Amir et al., 2013; Amir et al., 2010). In 1980, The Ministry of Education has started its move to encourage schools in Malaysia to provide computer exposure to students through the creations of school computer classes. The first computer club was set up at La Salle Secondary School, Petaling Jaya in 1981. To know the level of effectiveness of computer clubs in providing basic knowledge to students, several researches have been conducted. This research was pioneered by Yusof in 1988 and the research continued in 1998. The results obtained showed a positive finding where computer club members demonstrated an accomplished level of knowledge capacity. In the study conducted by Nafisah in 1997, her findings show that there exist as well constraints throughout the running of computer clubs such as insufficient number of computers and inadequate number of experienced teachers. The rising exposure of information technology enables a person's mind to develop better, where such development encompasses obtaining and assessing information, managing and maintaining information using computers (Rozinah, 2000). Computer-aided teaching and learning has been applied in the education system in schools with an aim to facilitate teaching and learning processes. Various software was developed to facilitate and support teachers in their teaching activities. The government also has encouraged and taken initiative in devising measures for developing more efficient technology to realise electronic learning in schools in line with the development of technology in education (Amir et al., 2013). Projects such as Smart Schools which was one of seven major applications of MSC. This concept has led to full democratisation of education by using computer technology as a catalyst to develop intelligent and knowledgeable students and expected to be able to compete when facing the challenges of the nation's vision in the future. The crucial element in the implementation of smart schools is the utilisation of information technology for a smooth teaching and learning exercise (Salina, 2001). Realizing the importance of ICT mastery in the education arena, the Terengganu state government has taken the initiative by introducing e-books for primary school children. Each e-book is equipped with primary school textbook software and also additional features including al-Qur'an, muslim prayers (doa), etc. for students.

As a first step, a total of 10,438 standard 5 students from 127 schools in this state started learning using the e-books distributed through the District Education Departments. Apart from students, 3,800 standard 5 teachers were

also provided with the same facility to enable them to handle the teaching sessions and to monitor online exercises even though they are outside school hours. The e-book program was launched by the Chief Minister, YAB Dato Ahmad Said on 26 May 2009. It was a paradigm shift as preparation of the public to face a global and borderless load of information (Amir et al., 2010; Amir et al., 2013). As this project was only introduced recently, many inquiries had arisen among the public on the effectiveness of e-books. Through this research, the problems faced in implementing e-book utilisation can be identified and improvements can be proposed to enhance the effectiveness of this program. It is hoped the findings from this study can help the Terengganu state government to produce a knowledgeable and visionary generation in line with the government's aspiration to "democratise" education.

Research Proposition
This research will answer the following propositions:
1. Are school teachers aware and understand the government's aspiration to improve the teaching system through the usage of e-books in schools?
2. Is the same difficulty being faced by the teachers who are aware of the government's aspiration and the ones who are unaware?
3. What is the best model that can represent the acceptance level of ebook amongst school teacher?

Research Objectives
The research objective is as follows:
i. To study the level of e-book usage in teaching and learning processes in schools.
ii. To compare the problem between the school teachers who are aware and the ones who are unaware with the government's agendaregarding the implementation of e-books in schools.
iii. To model the level of ebook acceptance among school teacher using structural equation modeling.

Sample Size Calculation
Single proportion
The calculation is done using a single proportion formula with anticipated population proportion (*p*) = 0.97 , level of significance 5% and absolute precision (Δ) = 5% (Dupont dan Plummer, 1997, Mugusi et al., 2009, Nyi Nyi Naing, 2003).

$$n = \left(\frac{1.96}{0.05}\right)^2 p(1-p)$$

with*p* is expected proportion of individuals in the sample with the characteristic of interest at the $100(1-\alpha)\%$ confidence interval.

Table 1.1 Sample Size Calculation

Previous research	Anticipated proportion p	Absolute precision (Δ)	level of significance	Sample Size
E-books level of acceptance (Aziz et al., 2010)	0.97	5%	5%	45 respondents
Calculation	$n = \left(\dfrac{1.96}{0.05}\right)^2 0.97(1-0.97) = 44.7 \approx 45$ respondents			

*determined by expert opinion

From Table 1.1 we can see that the sample size needed is 45 respondents. After adding 25% for data collection stage. Therefore, the sample needed to be collected is $45 + (45 \times 0.25) = 56$ respondents

RESEARCH METHODOLOGY

This research utilises a survey technique involving data gathering from respondents using a set of questionnaire, apart from observation and face-to-face interviews. Through this technique, it could ease the researchers to collect, analyse and interpret the data obtained. This research is carried out on Standard 5 teachers in the state of Terengganu. The number of respondents is 60 teachers involved in using e-books in their teachings (the sample calculation is based on a single proportion formula. Random sampling is used in the data gathering process. The questionnaire forms distributed to the teachers are divided to 4 main parts:

i.   Part A consists of items on respondents personal details.

Code	Explaination
as1	Age
as2	Gender
as3	Race
as4	Marital Status
as5	Highest education level
as7	Teaching Experience

ii.   Part b consists of items on the background of book utilisation.

Code	Explaination
bs1	Experience of computer utilization
bs2	Do you indicate e-book utilization as a positive initiative?
bs3	Do you clear on the state government vision regarding the E-Book utilization in school?
bs4	Frequency of e-book utilization in a day
bs51	Providing material for teaching
bs52	Build test questions
bs53	Searching information through internet
bs54	Sending email for the purpose learning
bs55	Download learning materials
bs56	Collecting and storing student data
bs57	For personal purpose (Chatting, friendster, facebook)
bs58	Computer games
bs59	Print learning materials

iii. Part c consists of items that examine the level of acceptance of e-book usage.

Code	Explaination
cs1	Students have troubles learning via E-Book
cs2	E-Book utilization is not suitable with the education syllabus
cs3	Training/course in services made me adept in using e-book
cs4	School administration do encourage towards increase the e-book utilization
cs5	School administration and teachers regularly discuss problems related to the e-book utilization
cs6	More time spent on syllabus due to e-book utilization
cs7	E-book utilization enhance my teaching and learning process
cs8	A variety of teaching activities can be carried out easily through the e-book utilization
cs9	There are sufficient e-book hardware for teachers
cs10	My quality of work improved by e-book utilization
cs11	E-book utilization gives me an exposure to the latest technology in teaching and learning
cs12	I am not burden by e-book utilization
cs13	I am more interested in teaching and learning via e-book compare to the traditional methods
cs14	E-book utilization should continue in the future
cs15	E-book utilization may enhance students performance
cs16	On the whole I am satisfied with e-book utilization

iv. Part D is the item that examines the problems that arose in using e-books.

Code	Explaination
ds1	There are no training provided on e-book
Ds2	Internet connection is not good
Ds3	Student misusing e-book provided to them
Ds4	E-book is easily break
Ds5	Virus attack on e-book
Ds6	Lack of e-book's maintenance
Ds7	Short of administration commitment

Research Location

Secondary schools in Terengganu have been chosen as location to conduct the study as it was the Terengganu state government that took the initiative by introducing the usage of e-books among primary school teachers and students. The schools chosen are Sekolah Jenis Kebangsaan (Cina) Chukai, Sekolah Jenis Kebangsaan (Cina) Chung Hwa Wei Sin, Sekolah Kebangsaan Bukit Mentok, Sekolah Kebangsaan Bukit Kuang, Sekolah Kebangsaan Bukit Perah, Sekolah Kebangsaan Cheneh Baru, Sekolah Kebangsaan Kampung Nangka, Sekolah Kebangsaan Baharu Besut, Sekolah Kebangsaan Kampung Tengah, Sekolah Kebangsaan Kijal, Sekolah Kebangsaan Kompleks Gong Badak, Sekolah Kebangsaan Kuala Besut, Sekolah Kebangsaan Kuala Telemung, Sekolah Kebangsaan Matang, Sekolah Kebangsaan Padang Luas, Sekolah Kebangsaan Padang Setar, Sekolah Kebangsaan Pusat Jertih, Sekolah Kebangsaan Seri Nilam dan Sekolah Kebangsaan Seberang Takir. All in all, 19 schools were chosen from all over terengganu.

Population and Research Sample

The research population consists of teachers in duty at national schools throughout Terengganu. A total of 73 teachers from 19 schools in Pasir Gudang, Johor which consists of 92 Guidance and Counselling teachers from 33 schools.

Data Analysis Technique

Quantitative data was collected using questionnaires and further analysed using SPSS. The descriptive data analysis approach encompasses frequency, percentage and mean ranking were used as well. Besides that, analyses which show the demography of the research sample which includes age, gender and race are presented too. The inferential statistical analysis is started with a cross-Table analysis, instrument reliability analysis, chi-square correlation and analysis to see whether are there a relation between the dependent variable involved in the study.

RESEARCH FINDINGS

a. Level of research reliability

Table. 1.2 Index of the Item According to the Section

Questionnaire section	Reliability indexlevel
Section A	0.576
Section B	0.815
Section C	0.645
Section D	0.572

Table 1.2 shows the values of reliability for each item according to each part. In general, the Cronbach Alpha test shows a decent reliability level. The findings from the study show that all four parts record an index level that is generally pretty well. In part B, the reliability value recorded is 0.815 which is the highest index and followed by part C which is 0.645. the index in part A and D each show a pretty well level of reliability which are 0.576 and 0.572 respectively.

b. Background of e-book usage

Table1.2Experience of teachersusing computers

	Percentage
Less than a year	5.5%
1-3 year	6.8%
4-6 year	20.5%
7-9 year	20.5%
More than 10 years	46.6%
Total	100.0%

Table 1.2 shows the percentage of experience using computers among teachers based on 4 main categories. The first category is teachers who have experience using computers less than a year, which is 5.5%. Meanwhile, teachers with experience using computers between one to three years is 6.8%. A descriptive analysis shows that there are no differences between teachers who have experience using computers for 4-6 years and 7-9 years. The percentage records as much as 46.6%. This shows that most teachers have experience using a computer. Only a small number of teachers have less than 1 year experience using computers.

Table1.4Frequency ofuse of e-books by category

Num. Item	Never Used	Sometimes	Frequently	Very Frequently
1) Providing material for Teaching	27.1%	50%	18.6%	4.3%
2) Build test questions	51.4%	25.7%	21.4%	1.4%
3) Searching information through internet	28.2%	28.2%	32.4%	11.3%
4) Sending email for the purpose Learning	47.8%	37.7%	13.0%	1.4%
5) Download learning materials	31.0%	31.0%	29.6%	8.5%
6) Collecting and storing student Data	30.0%	21.4%	34.3%	14.3%
7) For personal purpose (Chatting, friendster, facebook)	70.1%	20.9%	7.5%	1.5%
8) Computer games	66.7%	27.5%	5.8%	-
9) Print learning materials	31.4%	25.7%	31.4%	11.4%

From Table 1.4, the data in grey shows the score for frequency level attained based on each item in the study. The findings show that 70.1% of teachers do not use e-books for personal reasons such as chatting, friendster, facebook, etc. Apart from that, the research findings show that 66.7% teachers do not misuse e-books for computer games. Findings on item 6 show that teachers use e-books frequently for gathering and keeping student data, followed by internet browsing and printing educational material.

c. **Relation between the awareness of teachers on the state government's agenda with the problems of e-book usage in school**

Hypothesis
H_0: Teachers who are aware with the state government's agenda face the same problems with teachers who are not aware with the state government's agenda regarding e-book implementation in school
H_1: Teachers who are aware with the state government's agenda face different problems withteachers who are not aware with the state government's agenda regarding e-book implementation in school

Table 1.4 Statistical test for Chi-square test two

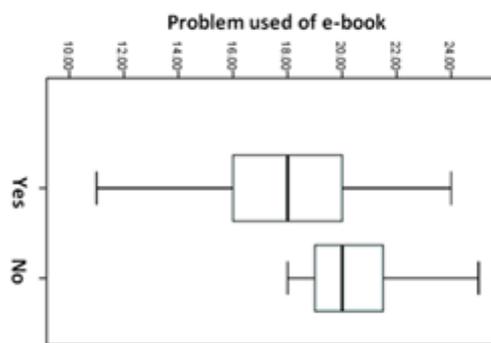|	Problem used of e-book
Mann-Whitney U Test	211.000
P value	0.002

Problem used of e-book

Figure 1.1 Teacher who are clear with the goal of the state government regarding on implementation of e-books in school

The results of the Mann-Whitney test shown above indicate that there is a difference on the problems faced by teachers who understand the state government's agenda on e-book implementation in schools with the teachers who don't. $U(n_1 = 54, n_1 = 16, p < 0.05)$. The median value for the group who is aware with the state government's agenda is lower than the group who isn't aware. This shows that the group who is aware of the state governments agenda and the benefits of using e-book for teaching and learning sessions do not face much problems compared to the other group. The boxplot graph clearly shows the median of the group who is not aware is higher than the group who is. The shape of the box=plot graph supports the Mann-Whitney test (Amir et al., 2013).

d. Modeling the level of ebook acceptance among school teacher using structural equation modeling.
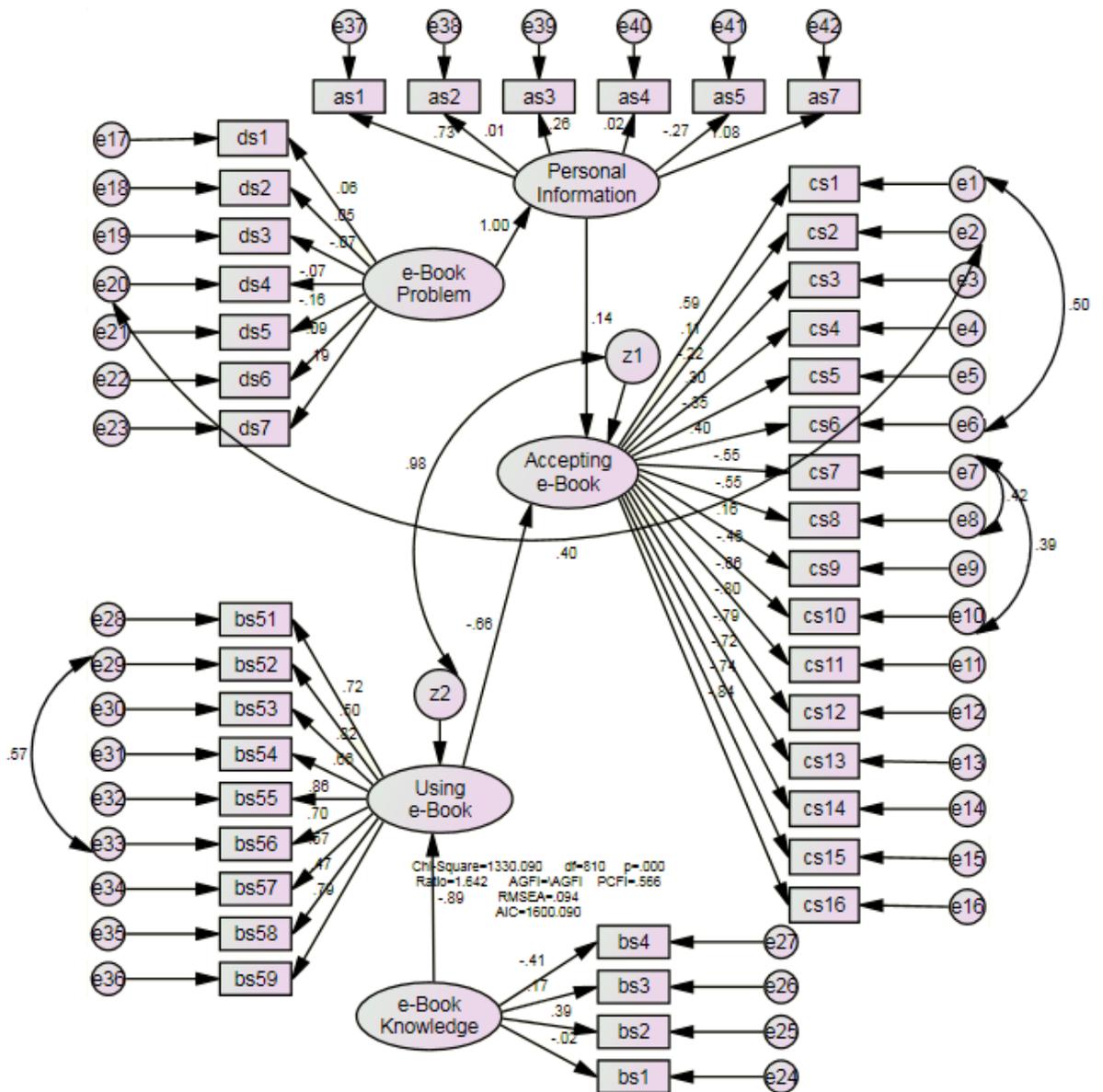

Figure 1.2 Modelling forebookacceptance among school teacher
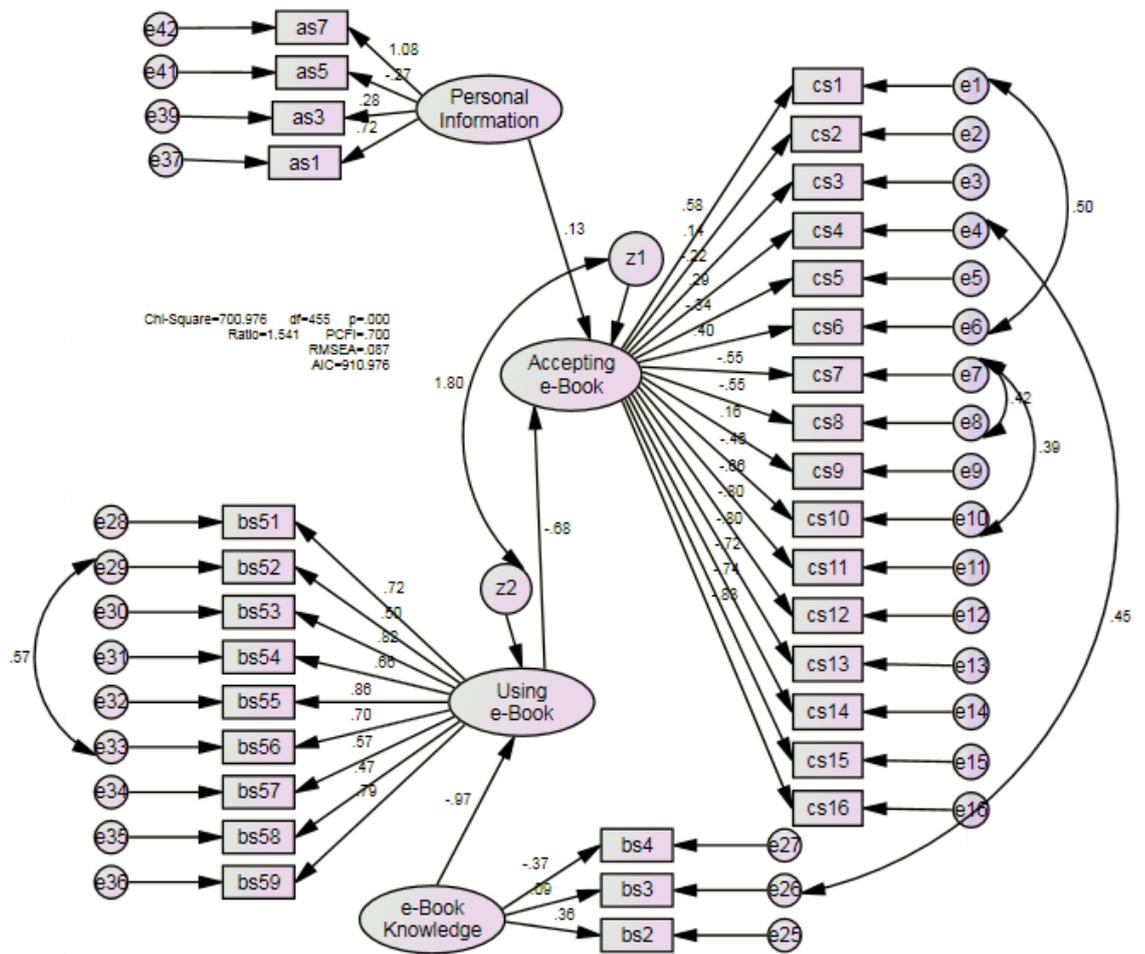
(proposed model)

Figure 1.3 Modification modelling for e-book acceptance among school teacher

Figure 1.3 gives us the whole scenario of the e-book acceptance among school teacher after some modification. Model was constructed based on the suggestion proposed by Amos. Several measures of goodness of fit were evaluated for the structural model. From the analysis we found that the value of chi-square is 700.976, chi-square/degree of freedom =1.54 (recommended good fit value is less than 2) and root mean square error of approximation (RMSEA) = 0.087 (this value is quite significance and the recommended good fit value is less than 0.08). The overall model is quite fit of the three values discussed above. To determine the suitable of the first model proposed, several items in the proposed model (which is not significant) were dropped, this is parallel to the criteria that

recommended by Hair (1998). After some modification from the proposed model, The role of e-book problem were dropped (ds1-ds7). For the role of personal information, three items were dropped as2, as4 and as6. In modification model some changes are also made through the correlation of the e1-e6, e4-e26, e7-e8, e7-e10, e29-e33 and z1-z2. Through some changes made, we can see clearly that the value of chi-square reducing from 1330.090 to 700.976 with probability 0.00. RMSEA values decrease from 0.094 to 0.087. This indicate that the modified model is much better fit than proposed model (Hair et al., 1998).

From the modified model we can see that, there are two major factors that contributing to the e-book acceptence, there are personal information and frequency of use of academic e-books. Under the factor of "using e-books" there are five items from nine items that contributed much to these dimension.This finding in line with the government target which is to encourage teacher to use technology in classroom. Accoding to Mutalib et al., (2012) it is important to have a standardize material teachers present in content areas, ensuring that classroom content is aligned to mandated curricula. This show that the activities have become digitally rich and the use of e-books is rapidly gaining ground in education. This proof that providing material for teaching$bs51$, $(\beta = 0.72, \ p = 0.001)$ is parallel the study result of Mutalib et al., (2012). Searching information through internet $bs53\,(\beta = 0.82, \ p = 0.001)$, Download learning materials$bs55$, $(\beta = 0.86, \ p = 0.001)$, Collecting and storing student data$bs56\,(\beta = 0.70, \ p = 0.001)$ and print learning materials$bs59$, $(\beta = 0.79, \ p = 0.001)$. According to Mutalib et al., (2012) 62.5 % of teacher agreed that e-book have replaced the usage of paper text book in the learning process. In their studies, they have found that more than a half of the teachers (53%)agreed that e-book have improved the student's academic performance. Personal information also play important role in contribution of accepting e-book amongst teachers. From all six listed items only three contribute to these dimension. They are list as age$as1$, $(\beta = 0.72, \ p = 0.001)$, race$as3$, $(\beta = 0.277, \ p = 0.010)$ and teaching experience$as7$, $(\beta = 1.085, \ p = 0.001)$. According to Mutalib et al., (2012) the old textbook is the only greatest driver of the classroom experience in schools and teachers and students engage with the information contained in textbooks as a key definer of the learning experience. It is become visible that teachers give a positive opinion on the use of e-book as a text book based on experience teaching. Indeed, the use of e-book will encourage students interest in learning even foster interest among school teachers.

From the analysis the role of e-book knowledge has shown the overall effect of $\beta = -0.97$ to the using e-book. Through the analysis we found that the frequencies of e-book utilization in a day are related to the e-book knowledge of

school teachers bs2 $(\beta = 0.36, \; p = 0.001)$. Teachers have a positive impressions point of view of e-book utilization, the results $(\beta = 0.36, \; p = 0.001)$ strengthen the relationship of the model. Generally, teacher have a clear view with the state government vision regarding to the e-book utilization in school. Frequency of e-book utilization in a day that is, bs4 $(\beta = 0.72, \; p = 0.001)$ also shows a positive feedback. This finding shows that the e-book knowledge amongst teacher has a correlation with school administration do encourage towards increase the e-book utilization $(\beta = 0.45)$. From the modified modeling, for the accepting e-book there is correlation between e1-e6, e7-e8 and e7-e10. For the using e-book there is correlation between e29-e33. Fort the using e-book factor, there is e29-e33.

DISCUSSION AND CONCLUSION

The level of reliability for Part A until Part D, in average is good. The research finding on the background of e-book usage shows that 46.6% of teachers have experience more than 10 years in using computer. Meanwhile, teachers with less than 1 year experience of using computers are 5.5%. This shows that teachers in Terengganu have quite a solid foundation in using computers. Next a detailed study was carried out to obtain the frequency of e-book usage per day. The results show that the level of usage is medium. On average, 64.3% teachers use e-books per day. Indirectly, this shows that e-book usage is at a medium level. Female teachers (55.7%) build the greater group of e-book users compare to male teachers (44.3%). The study on the frequency of e-book usage is further continued by following the usage categories. The results show that most teachers use e-books to collect and compile data (34.3%), internet browsing (32.4%) and to print education material (31.4%).

This shows that most problems arising are due to the teachers' inability to understand the state government's agenda on e-book implementation. Teacher's knowledge level is at medium. Indirectly, this shows that the level of e-book implementation among school teachers is medium. The role of teachers as educators is very crucial. Therefore, training is needed for teachers to improve their professionalism level. The party responsible must think of a strategy to improve the e-book contents (course material) to ensure that the e-book implementation can capture the interest of teachers to use it more effectively. The course material prepared must achieve the Education Ministry's standards encompassing several key aspects such as comprehensive, completeness, interactive, etc. Besides that, the Terengganu education department must take the initiative to increase the level of knowledge on the usage of e-books and to instil

positive attitudes in teachers such as by providing rewards for teachers who use e-books in the teaching system. The need to have a monitoring process for e-book usage among teachers by the state education department. This monitoring process must be conducted from time to time so the level of e-book usage and the problems faced can be overcome more effectively (Amir et al. , 2013). According to the structural equation modellingthere is two major factor that inluence the acceptance of e-book. In order to ensure the successful use of the ebook, government should take an aggressive effort to force school teacher in Terengganu state to use e-book with more intensive. To increase the knowledge amongst school teacher, government must strengthen the e-book in term of falilities of e-book itself.

Acknowledgements

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