HNUE JOURNAL OF SCIENCE DOI: 10.18173/2354-1067.2019-0130
Educaitional Sciences, 2019, Volume 64, Issue 12, pp. 35-49
This paper is available online at http://stdb.hnue.edu.vn

LECTURER'S MOTIVATIONS TO APPLY DIGITAL RESOURCES TO THEIR TEACHING PRACTICES AT NATIONAL ECONOMICS UNIVERSITY

Le Thi Thu Mai
Faculty of Foreign Languages, National Economics University

Abstract. Over the past few decades, much interest in academic research has been paid to lecturer motivation which has been confirmed to play a fundamental role in enhancing the quality of teaching, reforming educational approaches as well as fostering professional development. Abundant research has focused on determinants of lecturer motivation, the effects of lecturers' motivation on their teaching, the relationship between lecturers' motivation and students' motivation, lecturers' motivations as well as lecturers' motivation to do academic research. However, research is still silent on lecturers' intrinsic and extrinsic motivations to exploit digital resources into their teaching practices. To fill this gap, this study combines the Self-Determination Theory and the Technology Application Model to investigate lecturers' motivation to utilize digital resources into their teaching practices. Survey participants include 301 lecturers at National Economics University, Vietnam and SPSS technique is used to assess the model. Findings indicate that lecturers' intrinsic & extrinsic motivation have significant impacts on their intention to apply digital resources in their teaching. In particular, lecturers' extrinsic motivation has the most significant impact on their intention to apply digital resources. Perceived ease of use, perceived usefulness, and age were confirmed to moderate the relationship between lecturers' motivation and their intention to apply digital resources.

Keywords: Digital resources, TAM, lecturers' intrinsic motivation, lecturers' extrinsic motivation, lecturers' application of digital resources.

1. Introduction

Thanks to advanced technology, we are allowed to share information and communicate with each other via a variety of technological tools such as mobile phones, laptops, wireless network, e-mails, instant messaging, chat rooms, blogs and so on. Significant changes in almost every aspect of life owe rapid evolution of information communication technologies (ICTs) greatly. Especially, the application of ICT in teaching has made classroom environment more interactive and learner-centered than ever before. A wide range of learning management systems have been introduced in order to facilitate the teaching and learning of students. Over the past few decades, digital resources have become increasingly popular and are being widely accepted as an innovation in teaching in general. All over the world, educational institutions have turned to digital resources as a tool to support and enhance teaching and learning effectiveness.

Firstly, as defined by State Library of Victory, "digital resources can be defined as materials that have been conceived and created digitally or by converting analogue materials into a digital format" [1]. In other words, digital resources refer to a resource which require

Received November 2, 2019. Revised November 20, 2019. Accepted December 2, 2019.
Contact Le Thi Thu Mai, e-mail address: maile@neu.edu.vn

computer access or any electronic product that delivers data such as full text bases, image collections which can be delivered on CD ROM, via internet and so on.

Digital resources refer to all forms of electronically supported teaching and learning such as electronic journals, scholarly databases, electronic books, email and bulletin board, hybrid digital collections, internet gateways and search engines [2]. Lecturers worldwide have recognized and appreciated the essential role that digital resources play in disseminating knowledge in general and in teaching and learning in particular. According to this researcher, thanks to the Internet, digital resources allows lecturers to save numerous times by providing easy and instant access to information and data without having to print, bind and deliver. It may cost a lot at the beginning to develop and maintain the software applications, but in the longer term, huge savings can be made as access to training courses and materials only incur a fraction of the traditional classroom training costs. Furthermore, besides integrating different media including image, sound, video and so on, digital resources allows lecturers to gain access from anywhere at any time. Besides, using digital resources, both lecturers and learners do not have to be limited to printed books and materials [3]. As stated by [4], [5] and [6] Clarke, digital resources have been regarded as the best support to education. Digital resources are regarded as the most important components in the process of information communication as they are more up-to-date and can be accessed anywhere crossing all geographical boundaries. More specifically, since the emergence of the 4.0 Industry Revolution in Vietnam, technology development has greatly influenced the national education system by promoting learners' capacity, creativity and innovation. It is thus desirable to encourage lecturers to explore and apply these technological tools efficiently to improve the levels of benefits accruing from integrating digital resources into their teaching career. However, while some lecturers have confirmed the widely known benefits of applying digital resources to teaching practices, some are still a bit conservative and tend to continue with their traditional teaching approach with chalk and board. There seem to be various hindrances which might discourage lecturers from exploiting digital resources such as insufficient computer knowledge, time consuming and low reliability of web content and so on. The question that remains to be answered is how to motivate lecturers to make full use of digital resources in their teaching practices.

2. Content

2.1. Theoretical framework

2.1.1. Motivation

The concept of motivation has been defined and understood in a variety of ways. Some traditional understanding of motivation originates from theories which emphasize biological instincts or drives. Recently, newer approaches to defining motivation are derived from self-determination theory, achievement goal theory and expectancy-value theory. Thus, it can be seen that defining motivation is not a straightforward thing to do. However, different ways of defining motivation have one thing in common that motivation is the product of internal drives that compel a person to act in a certain way toward the satisfaction of their own needs. Simply, motivation is used to explain the reasons why a person conducts a specific action.

2.1.2. Self-determination Theory (SDT)

Research on lecturer motivation is essential, playing a significant role in research about teaching and teaching contexts. This research field has developed and expanded for decades and keeps attracting attention across numerous social cultural contexts. Numerous researches have proved the significant role that intrinsic and extrinsic motivations have on individuals' behavioral intention. SDT has been widely and successfully applied in extensive research fields

such as sports, wellbeing, medicine, coaching and education. The primary concepts in self-determination theory include extrinsic and intrinsic motivation which refers to reasons for conducting a certain activity [7]. According to the SDT, intrinsic motivation is self-determined. Intrinsic motivation involves engaging in an activity for the pleasure and satisfaction derived from it and may involve personal or intrinsic desires which would drive specific behaviors. This form of motivation is regarded as the most self-determined type of motivation. On the other hand, extrinsic motivation occurs when the behavior is engaged as a means to an end, rather than for its own sake [8]. It refers to other motivators external to the activity and tend to diminish intrinsic motivation when used to control or direct behaviors.

2.1.3. Technology Acceptance Model (TAM)

The topic of motivators for or barriers of applying new technologies has been the focus of researchers so far. Davis's Technological Acceptance Model (TAM) has been considered the most widely used to explore why the acceptance or rejection of technologies in the workplace is Davis's Technology Acceptance Model [9]. TAM aims at explaining how people decide to accept and use a technology. In the basic model, there are two main factors, perceived ease of use and perceived usefulness. Perceived ease of use is referred to as "the degree to which a person believes that using a particular system would be free from effort" while perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" [10; p. 448], [9], [11]; [12]. Previous research has found a relationship between this perceived ease of use, perceived usefulness and behavioral intention.

2.1.4. Lecturers' application of digital resources

The motivation to use technology or new technical tools in education is a complicated research topic. Measuring motivational aspects is not straightforward as it may involve various variables including teaching resources, teaching environment, lecturers' salary, polices and regulations, support for lecturers and some personal lecturer characteristics. Previous studies which have indicated several determinants for lecturers' application of technological tools may mention its perceived ease of use or perceived usefulness but does not start from lecturers' motivation. This is a research gap that the current research aims at filling to enrich existing literature.

Digital resources that can be explored and applied by lecturers can be divided into three main categories, namely communication technologies (Email/online chat/electronic bulletin boards system/video conferencing tools), social technologies (blogs/wikis/Facebook), and mobile technologies (mobile phones/tablet computer, etc.). The following table reveals the types of digital tools and resources used by lecturers and how they might be used for educational purposes.

Table 1. Types of digital tools and resources for teaching purposes

No.	Type	Usage
1	Powerpoint	Used in a traditional lecture setting Used as a combination with other digital tools Used to show pictures, less text
2	Videos (including YouTube)	Used to show animations (existing videos on the Internet) Used to show up to date video clips to explain phenomenon Used to activate students before/during/after the teaching
3	Recordings/Video	Used for distance learning

	production	Used to provide feedback on assignments Used to make short videos
4	Kahoot	Used to record lectures and used together with flipped classroom approach Used to activate students before/during/after the teaching
5	Prezi	Used for presentation
6	Fronter	Used as discussion forums Used to integrate forums and tests Used for multiple choice questions Used to embed You Tube videos
7	Facebook	Used as discussion forums Students can comment on each other's work
8	Flipped classroom	Used to activate student learning
9	Office sway	Used to record lectures and to conduct live lectures
10	E-books	Easily sharable and can be accessed almost anywhere allowing learners to stay in touch with a topic, at their convenience
11	Quizzes & games	Interactive quizzes are used to test learners' knowledge
12	Google classroom	Used as discussion forums and a platform for sharing materials & assignment
13	One note class notebook	Used as discussion forums and a platform for sharing materials & assignment
14	Flexiquiz	Used to create multiple-choice quizzes
15	Aimnoto	create high-quality videos in a short time and from any mobile device, inspiring students and helping improve academic lessons.
16	Projeqt	create multimedia presentations, with dynamic slides in which you can embed interactive maps, links, online quizzes, Twitter timelines, and videos
17	Socrative	create exercises or educational games which students can solve using mobile devices, whether smartphones, laptops, or tablets

(*Author's own collected summary*)

In general, the application of digital tools and resources can be categorized into four main purposes, namely preparing materials and designing lesson plans, varying methods of delivering knowledge, organizing discussion forums and conducting tests and assessments. First and foremost, as a matter of fact, teaching with board and chalk has now been a thing of the past. In order to get students more engaged in the lesson and understand that learning can be fun, lecturers had better shift to making full use of digital tools and resources to provide tech-savvy students with an interactive digital learning environment so that they can pay more attention and get inspired to learn effectively. Since the appearance of the Internet, education can get easily

outdated if lecturers do not get them updated with news and other subject-related topics to train students to become critical thinkers and problem solvers who must always be adaptable to any unexpected changes in the society. Besides the traditional approach of one-way communication, students may get bored or noisy, thus disinterested in the topic being lectured. Now, lecturers can benefit from digital tools which can help lecturers create online seminars, webinars, videos or multi-media presentations to help them find learning is a fun and can join two-way communication with their lecturers. This is also a platform where lecturers can give feedback to students and get them engaged in class discussions so that they could improve the understanding of the lesson themes. Last but not least, thanks to technological development, lecturers are now able to design online quizzes or assign assignments to students and can also grade them automatically in the most convenient way.

2.2. Research methodology

2.2.1. Research hypotheses development

Based on the above-mentioned discussion, the relationship between lecturers' motivations to apply digital resources into their teaching practices and their intention to apply these is explored. As suggested in the self-determination theory [8], a certain behavior can be motivated both extrinsically (instrumental motives) and intrinsically (pleasure and interest related motives). Therefore, we believe that intrinsic motivations of using digital resources in teaching may be antecedents of their intention to apply these. Intrinsically motivated, lecturers are more likely to tend to apply these digital resources in their teaching practices. Thus, the following hypothesis is proposed:

H1: Highly intrinsically motivated lecturers are likely to apply digital resources to their teaching practices.

Secondly, it is argued that extrinsic motivation to apply digital resources impacts the application intention through creating a learning orientation [13]. Understandably, extrinsic motivations may refer to external regulations or instruments, or the practical benefits brought by this application of digital resources. Therefore, these extrinsic motivations may enforce lecturers to learn more, make better assessments and judgements on the resources or tools [14]. However, when extrinsically motivated by external regulations or instruments, lecturers are less likely to exploit digital resources into their teaching practices. Therefore, I posit the following hypothesis:

H2: Highly extrinsically motivated lecturers are likely to apply digital resources to their teaching practices.

Age as a demographic characteristic may also play the moderating role in the relationship between independent and dependent variables in numerous existing studies. With regard to the application of digital resources, if lecturers are elderly, it is expected that they might not be familiar with all those technical issues related to this. In contrast, if lecturers are younger, they might have more experiences with using technology to prepare for lessons or might be more interested in these new technological developments to ease their teaching activities. Hence, the following hypotheses are proposed:

H3: Age negatively moderates the positive relationship between intrinsic Motivations to apply digital resources to teaching on Intention to apply digital resources.

H4: Age negatively moderates the positive relationship between Extrinsic Motivations to apply digital resources to teaching on Intention to apply digital resources

Furthermore, intention to apply digital resources can be considered to be the result of positive and effective use of digital resources in teaching. However, as suggested by Deci & Ryan [8], extrinsic and intrinsic motivation may not necessarily be translated into behavioral

intention. They also propose that external factors may appear and change the influence of motivation on behavioral intention. Furthermore, perceived ease of use and perceived usefulness may have a significant impact on behavioral intention as shown in previous literature. Thus, I propose that the relationship between lecturers' motivations to apply digital resources and their intention to apply these may be moderated by perceived ease of use and perceived usefulness. The hypotheses are as follows:

H5: Perceived ease of use may moderate the relationship between lecturers' intrinsic motivations to apply digital resources and their intention to apply.

H6: Perceived ease of use may moderate the relationship between lecturers' extrinsic motivations to apply digital resources and their intention to apply.

H7: Perceived usefulness may moderate the relationship between lecturers' intrinsic motivations to apply digital resources and their intention to apply.

H8: Perceived usefulness may moderate the relationship between lecturers' extrinsic motivations to apply digital resources and their intention to apply.

To sum up, the above hypotheses help formulate the research model of this current study as can be seen in Figure 1. Figure 1 depicts an overview of the hypotheses and highlights the conceptual model developed in this research. The model presented incorporates two essential factors as antecedents of intention to apply digital resources to their teaching practices: (1) extrinsic motivation, and (2) intrinsic motivation. Additionally, two moderators are included in the model; perceived ease of use and perceived usefulness, moderating the relationship between the two motivations (i.e. extrinsic and intrinsic) and intention to apply digital resources in teaching practices.

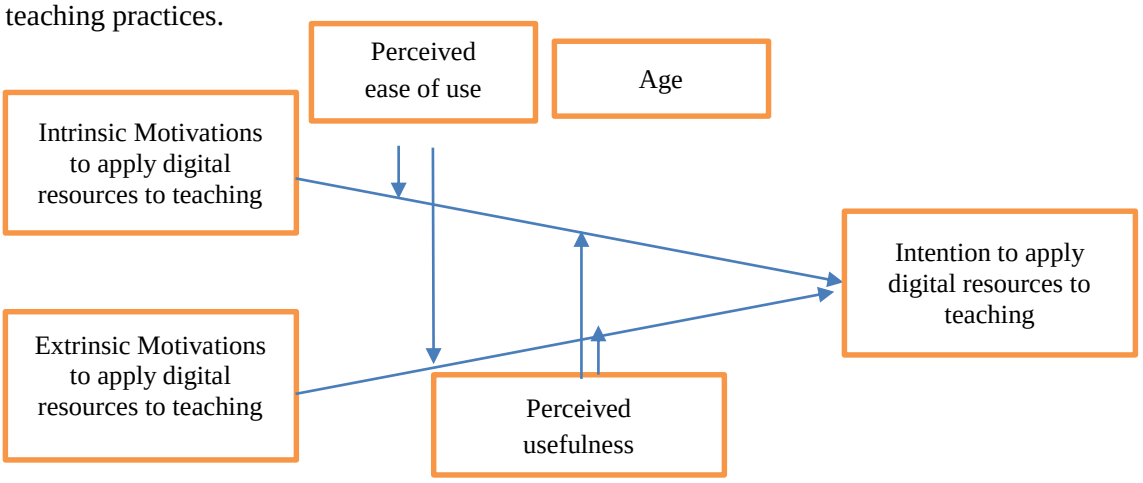

Figure 1. Suggested research model adapted from SDT & TAM

2.2.2. Measures

Measures to test the constructs in the research model are mainly adapted from the existing validated scales of popular theories [9], [8]. In order to fit the context of applying digital resources into teaching practices, several minor changes are made to the wordings. To be specifically, items for intrinsic and extrinsic motivations of lecturers were adapted from [8] while items for perceived ease of use, perceived usefulness were adapted from [9] while intentions to apply digital resources were adapted from [15]. All items were measured using a SEVEN-point Likert-type scale ranging from 5to one: 5 = Strongly Agree, 4 = Agree, 3= Neutral, 2 = Disagree, to 1 = Strongly Disagree. Respondents were instructed to select only one response for each item.

2.2.3. Participants

National Economics University (NEU) is a prestigious educational institution in Vietnam. It has been pioneering and leading the higher education industry by encouraging lecturers to apply digital resources as tools to support the process of teaching and learning in almost all subjects. Therefore, lecturers here have been integrating ICT tools into developing curriculum, conducting computer-based assessments, and delivering feedback to students' performance, etc.

The study was conducted among 301 lecturers at National Economics University (NEU). All of them voluntarily took part in the study and had a variety of teaching experiences and different classroom settings. The main data collection method used was a survey questionnaire which helped to explore how these lecturers think about integrating digital resources in teaching. Most lecturers are between 33 to 42 years old, accounting for nearly 66%, followed by those who are over 42 years old and between 22 and 32 years old. The vast majority of these lecturers have been teaching at NEU for more than ten years (78.1%). Certainly, they will have many to share regarding their experience of exploring and applying digital resources into teaching activities in their professional careers.

2.3. Data analysis IS

2.3.1. Measure reliability and validity

In order for the reliability and validity of the measures to be evaluated, the researcher carried out exploratory factor analysis (EFA) and determined Cronbach's alpha. To be specific, items for Intrinsic motivation to apply digital resources to teaching, Extrinsic motivation to apply digital resources to teaching, Perceived ease of use, Perceived usefulness and Intention to apply digital resources to teaching were subjected to EFA with principal component analysis and varimax rotation. All of these factors had acceptable Cronbach alphas (i.e., >0.7), with the lowest Cronbach's alpha of 0.822 (Intrinsic motivation to apply digital resources to teaching) and the highest Cronbach's alpha of 0.929 (Intention to apply digital resources to teaching) (see Table 2). Furthermore, the total correlations for all these factors are > 0.3. Therefore, all measures in the research framework have acceptable reliability and validity for exploratory factor analysis (EFA).

Table 2. Measure reliability and validity

Construct	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item – Total Correlation	Cronbach Alpha if Item Deleted
1. Intrinsic Motivations to apply digital resources to teaching: $\alpha = 0.822$				
IM1	8.55	2.975	.624	.811
IM2	8.33	2.954	.672	.761
IM3	8.11	2.865	.740	.693
2. Extrinsic Motivations to apply digital resources to teaching: $\alpha = 0.848$				
EM1	8.74	2.734	.656	.846
EM2	8.49	2.557	.763	.743
EM3	8.35	2.735	.734	.773

3.Perceived ease of use: α = 0.884				
PEU1	6.64	2.131	.820	.794
PEU2	6.72	2.335	.758	.850
PEU3	6.52	2.324	.748	.859
4.Perceived usefulness: α = 0.909				
PU1	8.58	2.638	.781	.906
PU2	8.61	2.392	.919	.780
PU3	8.69	3.208	.784	.907
5. Intention to apply digital resources to teaching: α = 0.929				
IA1	8.66	2.645	.846	.907
IA2	8.67	2.694	.897	.863
IA3	8.57	2.979	.828	.919

2.3.2. Exploratory Factor Analysis (EFA)

Exploratory factor analysis is a statistical method aiming at uncovering the underlying structure of a set of variables and identifying relationships between measured variables. Based on this analysis, groups of variables that are highly intercorrelated will be uncovered, representing an underlying common factor. From EFA, KMO = .796 and the Barlett's Test Sig. = 0.000 (< 0.05), it can be concluded that EFA is suitable for analysis (see Table 3).

Table 3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.796
Bartlett's Test of Sphericity	Approx. Chi-Square	3291.698
	df	105
	Sig.	0.000

Table 4. 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	5.858	39.056	39.056	5.858	39.056	39.056	2.624	17.495	17.495
2	2.336	15.575	54.630	2.336	15.575	54.630	2.574	17.157	34.652
3	1.741	11.605	66.235	1.741	11.605	66.235	2.485	16.565	51.217
4	1.357	9.047	75.282	1.357	9.047	75.282	2.335	15.570	66.787
5	1.004	6.694	81.975	1.004	6.694	81.975	2.278	15.189	81.975
6	.528	3.523	85.498						

Table 5. Rotated Component Matrix

Variables	Components				
	1	2	3	4	5
PU2	.949				
PU1	.885				
PU3	.878				
IA1		.868			
IA2		.852			
IA3		.821			
PEU1			.900		
PEU2			.875		
PEU3			.835		
EM2				.847	
EM1				.798	
EM3				.789	
IM1					.840
IM3					.838
IM2					.773

At the eigenvalue of 1.004, five factors are drawn from 15 indicators with a total variance extracted of 81.975% (> 50%) (See Table 3) and no new factor emerged compared to the initially proposed research model. Factor loadings of all these indicators are higher than 0.5. Hence, after EFA, these 15 indicators can be deemed as acceptable for studies with no items being eliminated (see Table 4).

2.3.3. Correlation analysis

In order to consider the correlation among variables before conducting linear regression, especially in the correlation between dependent variables and independent variables. Correlation analysis results are shown in Table 6. As can be seen from Table 6, the correlation between the dependent variable of Intention to apply digital resources to teaching (IA) and independent variables of (1) Intrinsic Motivations to apply digital resources to teaching (IM), (2) Extrinsic Motivations to apply digital resources to teaching (EM) is significant at 5% (sig. < 5%). Independent variables of IM and EM have positive correlation with the dependent variable of IA. Hence, these variables can be added to the model to explain the dependent variable of IA.

Table 6. Pearson Correlation Matrix

		IM	EM	PEU	PU	IA
IM	Pearson Correlation	1	.388**	.272**	.115*	.510**
	Sig. (2-tailed)		.000	.000	.047	.000
EM	Pearson Correlation	.388**	1	.350**	.250**	.573**
	Sig. (2-tailed)	.000		.000	.000	.000
PEU	Pearson Correlation	.272**	.350**	1	.271**	.352**

	Sig. (2-tailed)	.000	.000		.000	.000
PU	Pearson Correlation	.115*	.250**	.271**	1	.283**
	Sig. (2-tailed)	.047	.000	.000		.000
IA	Pearson Correlation	.510**	.573**	.352**	.283**	1
	Sig. (2-tailed)	.000	.000	.000	.000	

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

**. Correlation is significant at the 0.05 level (2-tailed).*

2.3.4. Moderated Multiple Regression Analysis

2.3.4.1. Assessing the fit of regression models

In this analysis, in order to assess the fit of regression models, R^2 or adjusted R^2 are looked into with summarized details in Table 7A & 7B:

Table 7A. Model Summary

Model	*R*	*R^2*	*Adjusted R^2*	*SE*	**Change Statistics**					*Durbin - Watson*
					R^2 Change	*F Change*	*df1*	*df2*	*Sig. F Change*	
1	.653[a]	.426	.422	.62201	.426	110.519	2	298	.000	
2	.676[b]	.457	.448	.60789	.031	5.671	3	295	.001	2.228
3	.722[c]	.521	.502	.57711	.064	6.384	6	289	.000	

Table 7B. Assessing the fit of regression models

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	85.520	2	42.760	110.519	.000
	Residual	115.297	298	.387		
	Total	200.817	300			
2	Regression	91.807	5	18.361	49.689	.000
	Residual	109.010	295	.370		
	Total	200.817	300			
3	Regression	104.564	11	9.506	28.541	.000
	Residual	96.253	289	.333		
	Total	200.817	300			

Model 1:

The set of independent variables in M1 include those affecting lecturers' intention to apply digital resources to teaching (IM & EM). R^2 = 0.422 with Sig. < 0.05. Therefore, 42.2% of change in Lecturers' intention to apply digital resources to teaching is explained by variance of (1) Intrinsic Motivations to apply digital resources to teaching (IM) and (2) Extrinsic Motivations to apply digital resources to teaching (EM). Both IM & EM have positive

relationships with IA, which means the more intrinsically and extrinsically motivated lecturers are, the more likely they are to apply digital resources to their teaching activities.

Model 2:

There are 5 independent variables in M2, including IM, EM, PEU (perceived ease of use), PU (perceived usefulness) and age. Besides the initial set of independent variables in M1, three other independent variables of PEU, PU and age are added to M2. Then, depending on the variance of R^2 and adjusted R^2, the effects of these five independent variables can be assessed in M2. As can be seen in Table 9A, R^2 and adjusted R^2 in this case have been higher with the sig. of F = .001 (< 5%). This change in R^2 and adjusted R^2 is statistically significant. In general, compared to M1, in M2 with the interaction of such moderators as PEU, PU and age, PU can change the model. Therefore, PU plays as an independent variable when added to the model while PEU and age do not.

Model 3:

M3 includes 11 variables (IM, EM, PEU, PU, age, c.PEU.IM, c.PEU.EM, c.PU.IM, c.PU.EM, c.IM.age, c.EM.age) with 5 variables from M2 and 6 interaction variables (between PEU, PU, age and independent variables). After that, based on changes in R^2 and adjusted R^2, the effects of 6 interaction variables can be assessed when they are added to M3. Regression results show that R^2 will increase from 0.457 to 0.521 and adjusted R^2 also increased from 0.448 to 0.502, with Sig. F of 0.000 (< 5%). Therefore, this change is statistically significant. To sum up, in M3, if 6 interaction variables are added, PEU, PU and age can be concluded to play the moderating role in the research model.

2.3.4.2. Results of MMR analysis

Table 8. MMR analysis results

No.	Independent variable	Model 1	Model 2	Model 3
		Beta	**Beta**	**Beta**
1	IM	**0.339****	**0.323****	**0.405****
2	EM	**0.441****	**0.377****	**0.425****
3	PEU		.076	.055
4	PU		**0.123***	**0.145***
5	age		.071	**0.172***
6	PU*IM			**0.217****
7	PU*EM			.023
8	PEU*IM			.012
9	PEU*EM			**0.129***
10	age*IM			**-0.119***
11	age*EM			-0.113
	R2	.426	.457	.521
	R2 adj	.422	.448	.502
	R2 change		0.0310	0.0640
	R2 adj change		0.0260	0.0540
	F or F change	110.519	5.671	6.384
	Sig. F change	.000	.001	.000

2.4. Hypothesis testing

2.4.1. Model 1

MMR analysis results show that independent variables of lecturers' intrinsic motivation and extrinsic motivation are important positive determinants of lecturers' intention to apply digital resources to their teaching (significant at 95% confidence level) as expected. Especially, extrinsic motivation has the biggest effect on lecturers' intention to apply digital resources to their teaching activities. Thus, H1 and H2 are supported.

2.4.2. Model 2

Analysis results show that lecturers' intrinsic motivation, extrinsic motivation and perceived usefulness have positive relationship with lecturers' intention to apply digital resources to teaching (significant at 95% confidence level). The variable of PEU (sig. = 0.126 >5%) and the variable of age (sig. = 0.120 > 5%) do not have statistical significance on the dependent variable of IA. Therefore, age and PEU are not independent variables.

2.4.3. Model 3

As can be seen from MMR analysis results of Model 3, independent variables of IM, EM, PU, age have positive effects on IA (Intention to apply digital resources to teaching) (significant at 95% confidence level) while PEU does not have statistical significance on IA (sig. = 0.245 > 5%). Therefore, H5 is rejected.

Such interaction variables as c.PEU.IM and c.PU.EM are not statistically significant (Sig. > 0.05); thus it cannot be concluded that they have effects on lecturers' intention to apply digital resources to teaching. Thus, H5 and H8 are rejected. Based on the confidence level of moderating variables of c.PU.IM (sig. = 0.000 < 5%) and c.PEU.EM (sig. = 0.007 < 5%), c.age.IM (sig. = 0.012 < 5%), PU plays the moderating role in the relationship between IM and IA, PEU plays the moderating role in the relationship between EM and IA and age plays the moderating role in the relationship between IM and IA.

It can also be clearly seen that the relationship between lecturers' intrinsic motivations to apply digital resources to teaching (IM) and lecturers' intention to apply digital resources to teaching (IA) is contingent on changes in lecturers' perceived usefulness (PU). In other words, lecturers' perceived usefulness strengthens the positive relationship between lecturers' intrinsic motivations to apply digital resources to teaching (IM) and lecturers' intention to apply digital resources to teaching (Figure 2).

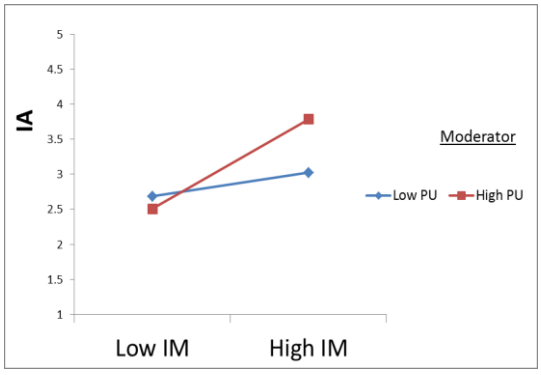

Figure 2: Effect of interaction between lecturers' perceived usefulness and lecturers' intrinsic motivations on their intention to apply digital resources to teaching

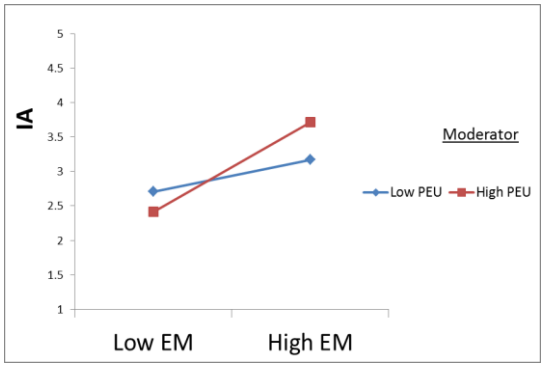

Figure 3. Effect of interaction between lecturers' perceived ease of use and lecturers' extrinsic motivations on their intention to apply digital resources to teaching

Therefore, H7 is supported. Similarly, lecturers' perceived ease of use strengthens the positive relationship between lecturers' extrinsic motivations to apply digital resources to teaching (EM) and their intention to apply digital resources (Figure 3).

Thus, H6 is accepted. However, the relationship between lecturers' intrinsic motivations to apply digital resources to teaching (IM) and their intention to apply digital resources to teaching is negatively contingent on changes in their age. Those who are over 33 years old are less likely to apply digital resources to their teaching practice than those who are under 33 years old. To sum up, age negatively moderates the positive relationship between lecturers' intrinsic motivation and their intention to apply digital resources to their teaching. (Figure 4). Thus, H3 and H4 are supported.

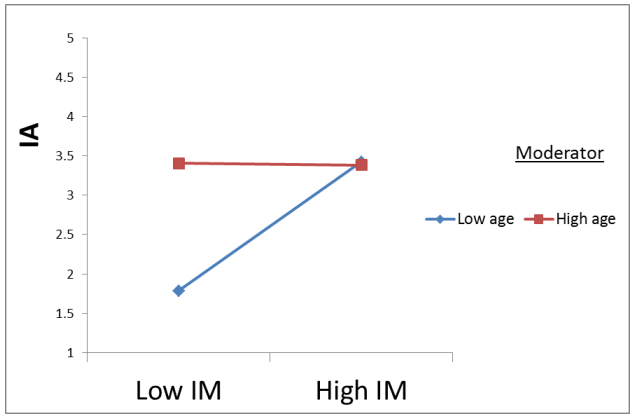

Figure 4. Effect of interaction between age and lecturers' intrinsic motivations on their intention to apply digital resources to teaching.

2.5. Discussion and implications

The above analysis has confirmed a number of relationships as expected. In particular, research findings support the conclusion that lecturers' intrinsic motivation, extrinsic motivation, perceived ease of use, perceived usefulness and age have significant impacts on their intention to apply digital resources in their teaching. In particular, lecturers' extrinsic motivation has the most significant impact on their intention to apply digital resources. This means that when lecturers have bigger extrinsic motivation than intrinsic motivation, their likelihood of applying these digital resources tends to be higher.

Research findings also indicate that perceived ease of use did not affect the relationship between lecturers' intrinsic motivation and intention to apply digital resources. If they find pleasure or seek curiosity and independence in applying digital resources for their teaching, whether it is easy or not is not so important for them. If this practice is not easy, they will be more motivated to overcome challenges encountered. However, the interaction between lecturers' extrinsic motivation and their intention to apply digital resources is actually contingent on perceived ease of use. This can be simply understandable. Being extrinsically motivated, lecturers are supposed to apply digital resources to their teaching activities because of university regulations or other purposes rather than the pleasure of the activity. In case they perceive this application can be easily done, they will be more motivated to do so. This result reflects similar findings of other existing studies regarding the indirect effect of perceived ease of use on behavioral intention [16], [17], [18]. In contrast, changes in lecturers' perceived usefulness has been concluded to result in changes in the interaction between lecturers' intrinsic motivation and their intention to apply digital resources. This highlights the importance of lecturers' perception of digital resources' usefulness. Being intrinsically motivated to apply

digital resources because of the pleasure or interest of the activity itself, lecturers tend to be more likely to apply them when they know that these activities are useful for their teaching career. However, lecturers' perceived usefulness of the application of digital resources does not change the relationship between lecturers' extrinsic motivation and their intention to apply these digital resources to their teaching practice. This may be explained that as lecturers are under pressure to apply digital resources, the positive relationship between their extrinsic motivation and their intention to conduct this application will not be dependent on the usefulness of these resources.

Theoretically, the present research findings make several contributions to the existing literature by filling in the current gap in literature regarding the exploration and application of digital resources to teaching by looking into lecturers' extrinsic motivation and extrinsic motivation. First, in addition to confirming the basic structure of TAM theory, besides being independent variables influencing the behavioral intention, perceived ease of use and perceived usefulness have been found to play moderating role in the relationship between lecturers' intrinsic and extrinsic motivations and their intentions to apply digital resources to their teaching practices. In addition, lecturers' extrinsic motivation was shown to have a more powerful influence on lecturers' intention to prepare for their lessons with the use of digital resources than intrinsic motivations. Besides, lecturers over 32 years old are found to be less likely to apply digital resources to their teaching than those who are younger.

Practically, this research has also provided several implications for designers and developers of educational digital resources as well as universities or other educational institutes. Although lecturers' extrinsic and intrinsic motivation may lead them to the intention of apply digital resources to their teaching, lecturers also need to feel that these resources are easy to use and useful for their teaching performance. This may be a hint for designers, developers and managers of digital resources to make their products easier to use and provide more benefits for lecturers' teaching performance. Furthermore, rather than building a traditionally formal and academic layout or interface of these digital resources, designers or developers should come up with some other design methods that can create entertaining, pleasant and straightforward impression of those resources in order to draw attention from lecturers and give the impression that using these resources is easy, useful and interesting. With regard to universities or educational institutes, they should invest in increasing lecturers' awareness of the pleasure as well as efficiency of applying these digital resources. Besides, technical training courses should be organized periodically to help lecturers be more familiar to approaches of exploring and applying these digital resources to their teaching. In conclusion, there should always be continuous technical support from universities and other educational institutes to help lecturers feel that it is easy and useful to explore and apply these digital resources to their teaching activities.

3. Conclusions and limitations

This research gives an extension to the combination of Self-Determination Theory and Technological Application Theory in the context of applying digital resources to teaching activities by lecturers. The present research contributes to existing literature by indicating the influence of each factor of lecturers' intrinsic motivation, extrinsic motivation, perceived ease of use, perceived usefulness and age on the intention of exploring and applying digital resources to teaching.

The study is not without limitation. In fact, our study shed light on a gap between motivation and behavioral intention of applying digital resources to teaching. However, other moderating variables can be explored close this gap. The data for this study was gathered from single sources.

In conclusion, this research provides an initial step towards investigating how designers and developers of digital resources as well as universities and other educational institutes officers can further encourage lecturers to explore and apply digital resources to their teaching activities. This study is the first to test and confirm some variables that may moderate the influence that lecturers' intrinsic and extrinsic motivations may have on their intention of applying digital resources to their teaching. This aspect also needs further research in the future.

Note: This research is sponsored by National Economics University, Vietnam.

REFERENCES

[1] State Library of Victory (nd.). Retrieved July 30th, 2019 from http://www.slv.vic.gov.au/sites/default/files/Digital%20resources%20CRDP.pdf).

[2] Ashikuzzaman, H., 2018. Impact of e-resources and services on higher education and research. *Library & Information Science Academic Blog*. Retrieved from http://www.lisbdnet.com/impact-of-e-resources/

[3] Holmes, B. & Gardner, J., 2006. *E-Learning: Concepts and Practice*. London: SAGE Publications.

[4] Clarke, A., 2008. *E-Learning Skills* (2nd Edition). Red Globe Press.

[5] Garrison, D. R., 2011. *E–Learning in the 21st century: A framework for research and practice* (2nd Edition). London: Routledge/Falmer.

[6] Weller, M., 2007. *Virtual learning environments: using, choosing and developing your VLE*. Abingdon: Routledge.

[7] Gagné, M. & Deci, E. L., 2005. Self-Determination Theory and Work Motivation. *Journal of Organizational Behavior*, 26, 331-362.

[8] Deci, E. L. & Ryan, R. M., 1985. I*ntrinsic Motivation and Self-Determination in Human Behavior*. Berlin: Springer Science & Business Media.

[9] Davis, 1989. Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319-340.

[10] Venkatesh, V., Morris, M.G.; Davis, G. B & Davis, F. D, 2003. User acceptance of information technology. *MIS Quarterly*, 27(3), 425-478

[11] Chin, W.C. & Todd, P.A., 1995. On the Use, Usefulness and Ease of Use of Structural Equation Modelling in MIS Research: A Note of Caution. *MIS Quarterly*, 19, 237-246.

[12] Chang, S. C. & Tung, F. C., 2008. An empirical investigation of students' behavioral intentions to use the online learning course websites. *British Journal of Educational Technology*, 39(1), 71-83.

[13] Overby, J. W. & Lee, E. J., 2006. The effects of utilitarian and hedonic online shopping value on consumer preference and intentions. *Journal of Business Research*, 59, 1160-1166

[14] To, P. L., Liao, C., & Lin, T. H., 2007. Shopping motivations on Internet: A study based on utilitarian and hedonic value. *Technovation*, 27(12), 774–787.

[15] Ajzen, I. & Fishbein, M., 1980. *Understanding attitudes and predicting social behavior: Attitudes, intentions, and perceived behavioral control*. Englewood Cliffs, NJ: Prentice Hall.

[16] Akour, H., 2009. *Determinants of mobile learning acceptance: an empirical investigation in higher education* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses database. (UMI No. AAT 3408682).

[17] Donaldson & Graham, 2011. *Teaching Scotland's Future.* Edinburgh: The Scottish Government.

[18] Huang, J., Lin, Y. & Chuang, S., 2007. Elucidating user behavior of mobile learning. *The Electronic Library*, 25(5), 585-598.