

Perceived Values and Their Effects on Intention to Adopt Online Learning

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Abstract— The concept of perceived value and its effect on technology adoption has received much attention in information systems literature. The value dimensions of theory of consumption value, however, has less focus among IS researchers. The study applies the theory's value dimensions—functional (quality and monetary values), emotional, social, epistemic, and conditional values—to understand their interrelationships and effects on students' intentions to adopt online learning. The structural equation modelling analysis technique is used to investigate the research model. The results show that conditional value plays an important role to influence students' intentions to adopt online learning through other values. Emotional and social values have direct effects on intention to adopt online learning. The study extends the knowledge on technology adoption and provides guidance for universities to improve their online learning services to be more valuable perceived by students. The paper discusses the study results, implications for theory and practice, limitations of the study, and direction for future studies.

Keywords— Perceived value; Online learning; Functional value; Emotional value; Social value; Epistemic value; Conditional value; Intention; Adoption decision.

I. INTRODUCTION

The concept of perceived value receives much attention in marketing literature as it effectively contributes to explain consumers' choice behavior including to buy or not to buy or to select one brand over another. Perceived value has been used in information systems (IS) literature in the last two decades to explain the usage intention and adoption decision of technology applications and information systems (e.g., [5][18][23][25]). There are several research streams to explain the concept of perceived value such as utilitarian versus hedonic value, extrinsic versus intrinsic value, self-oriented versus other-oriented value, active versus reactive value, and theory of consumption value [2][12][19][20]. Theory of consumption value (TCV) provides multi-dimensional forms of values that effectively contribute to understand actual consumer's choice situation and in various types of consumers' choice decisions [20]. TCV is, therefore, applicable to explain individual's decision on technology adoption. However, five value dimensions of TCV has limited appearance in IS literature and less focus among IS researchers.

TCV has five dimensions of value—functional value, emotional value, social value, epistemic value, and conditional value. Most of subsequent studies of the theory have focus mainly on functional, emotional, and social values and omit

epistemic and conditional values (e.g., [7][21]). However, epistemic and conditional values are crucial attributes to understand individual's use of a new online service and use in a specific situation, the main feature of online services where users can use the services in a particular location when needed [23][25]. In addition, subsequent studies further explain functional value of TCV and categorize the value into quality/performance and price/value for money and contend that five values of TCV might not be absolutely independent [21]. However, the interrelationships among value dimensions are questionable and their effects on technology adoption might be different based on a particular study context.

This study aims to understand the relationships among the value dimensions of TCV—functional (quality and monetary values), emotional, social, epistemic, and conditional values—and their effects on individual intention to adopt technology. Online learning is used as the domain of study as it is the contemporary technology trend in education that possesses all values of investigation. This study focuses on measuring perceived values of online learning prior to and shortly after adoption to understand students' choice of online learning.

The paper is organized as follows. The following section theoretical background of the study including the concept of perceived value associated with theory of consumption value and the background of online learning. The study's hypotheses and research methodology are then presented respectively. The paper continues with a discussion of the results and implications divided into theoretical and managerial implications. Finally, the limitations and directions for future study, and conclusions of the study are presented.

II. THEORETICAL BACKGROUND

Prior to the hypotheses development, a review of literature in relation to perceived value associated with theory of consumption value and the concept of online learning are presented.

A. Perceived Value and Theory of Consumption Value

Consumer choice of technology including technology devices, applications, and services has gained much attention among information systems (IS) researchers and service providers for many years. One of the most use factors to understand a consumer choice of a product in marketing literature is consumers' perceived value [18][19][21]. It has been acquired to explain user perception of the technology values and adoption of the technology in IS literature.

One of the various concepts of perceived value that has been widely used and further developed in marketing literature is the theory of consumption value (TCV). TCV provides multi-dimensional values that effectively contribute toward understanding of the actual consumer's choice situation [20]. It has been applied to many types of consumers' choice decisions such as a decision to buy or not to buy or to choose one brand over another and practitioners can develop actionable strategies to support the consumers' choice decisions. With its effective contribution and capability to explain the consumers' choice decisions, TCV has been borrowed to explain users' decisions of technology adoption. TCV's appearance within IS literature, however, is limited and non-focal. TCV has five dimensional forms of value: functional value (FV), emotional value (EV), social value (SV), epistemic value (EPV), and conditional value (CV) [20].

Functional value pertains to the product's ability to perform its functional, utilitarian, or physical purposes [20]. It may be based on any salient physical attribute such as price. Sweeney and Soutar [21] categorized functional value into two value attributes, quality/performance and price/value for money. Consumers will buy a product based on attributes of the consumable product and how well they fulfil their utilitarian needs. Emotional value pertains to the product's ability to arouse feelings or affective states [20]. The potential of a product to arouse emotions is believed to go with the use of the product. Emotional components, such as enjoyment, playfulness, fun, and pleasure, could promote technology usage (e.g., [23][24]). Social value pertains to the perceived utility of a product acquired from one or more specific social communities [20]. This value enhances a consumer's self-image among other individuals and is subjected to social approval [21]. The motive of buying products depends on how consumers want to be seen by others [20][21]. Epistemic value pertains to the product's ability to arouse curiosity of a consumer, provides novelty and/or satisfies a desire for knowledge [20]. It could refer to novelty value and the value from learning new ways of doing things. Conditional value pertains to perceived utility acquired by an alternative occurred at the specific situation or circumstance [20]. It depends on the context in which the value judgment occurs and exists only within a specific context [12].

The theory posits that the five values make different contributions in any choice situation and are independent [20]. However, other studies contend that these five values are not absolutely independent [21]. The interrelationships among the values affecting a consumer's choice decision are inconclusive and different across the study context. This study proposes a new model of causal relationships among the values to predict online learning adoption.

B. Online Learning

Online learning has been widely adopted by higher education institutions. The term of online learning is ill-defined and associated with e-learning and distance learning [17]. Some academics broadly describe online learning as an approach to access learning experience using technology media [3][5]. The report by Docebo explains e-learning as

self-paced learning in education where learners study at their own pace within a fixed overall completion timeframe, similar to other students enrolled in the same program [8]. Online learning can be used as a complete learning method for facilitating independent learning or as a supplementary learning method for supporting classroom teaching [11]. It can also be used with different learning systems such as a learning management system (LMS) and a course management system (CMS). In addition, many upper-class universities such as Yale, MIT, and UCLA make use of massive open online course (MOOC) to offer worldwide learners to study online for their credits, non-credits, certificates or online degrees.

III. HYPOTHESES DEVELOPMENT

Conditional value applies to products whose value is strongly tied to the usage of products in a specific situation. Online learning possesses ubiquitous ability especially useful in situations where time and space are critical. Accordingly, students perceived conditional value of online learning when they are able to study in specific environment (location and time). With the ubiquitous ability of online learning, students might consider online learning as the quality improvement of their learning, the new way of learning experience, and the interesting and exciting method of learning. The study therefore is expected to positively affect quality value, epistemic value, and emotional value. Even though the ubiquitous ability of online learning enables convenient time and space for students to study, students would study in their private setting and escape from social interaction. Conditional value therefore retreat social value of online learning.

H1a-d: Conditional value positively affects quality value, epistemic value, and emotional value, and negatively affects social value

Epistemic value can be perceived when people curious to try something new or learn a new way of doing thing. Students therefore perceive epistemic value of online learning when they perceive new experience of using this new learning method. As a new learning method, online learning is expected to have higher quality of learning and evoke students' curiosity to try this new method. In addition, online learning is new to many students. Students who study online courses/program would enhance their images among their friends. Accordingly, it is expected that epistemic value will have positive effects on quality value, social value, and emotional value.

H2a-c: Epistemic value positively affects quality value, social value, and emotional value

The quality and price relationship are the important factors for a marketing strategy. Most consumers perceive the quality of product in relation to its price. When students perceive online learning offers higher quality of learning than that of classroom learning, they will estimate a higher price of online learning. In addition, consumers' appraisal of product quality will lead to an emotional reaction [6]. The quality of online learning involving various activities (e.g., collaboration, interactivity and information sharing) provides students' enjoyment and satisfaction when studying online courses. The

higher the quality of online learning has, the better the students' favourable feeling toward online learning is. It is therefore expected that the quality of online learning associated with its price and students' emotional value.

H3a-b: Quality value positively affects monetary value and emotional value

Consumers may buy a product to support their social status. The price of a product provides value to buyers of the product in the society. People who can afford to buy an expensive product will have more respect from others in a society. Furthermore, the price of a product will affect consumers' intentions to buy the product. The higher the price of product is, the lower the consumer's intention to buy is. Students will have less intention to study online courses if they perceive the price of online learning is higher than the price of conventional learning.

H4a-b: Monetary value positively affects social value and negatively affects intention to adopt online learning

Social value enables an individual to express his or her self-image socially to others. As online learning is a contemporary trend of future learning, students studying online programs therefore can promote their self-images in a society. Products that create individuals' social self-images among others will arouse feelings and affective motives of individuals to buy or use the products. Similarly, students will enjoy and have positive feelings to study online courses or programs that can project their positive images among their friends or provide social value. In addition, social value has been proven its impact on usage and purchase intentions for mobile service and information systems (e.g. [14][26]). The study, therefore, expects that social value influences emotional value and students' intentions to study online courses.

H5a-b: Social value positively affects emotional value and intention to adopt online learning

Emotional value reflects users' enjoyment, interest, and satisfaction with the service. Previous studies have confirmed the effect of emotional value on the usage intention for mobile services (e.g. [15][16][22]). In this study, it is expected that students who find the online learning enjoyable and emotionally fulfillable are more likely to adopt online learning.

H6: Emotional value positively affects intention to adopt online learning

In summary, the hypothetical relationships between the constructs can be depicted in Fig. 1.

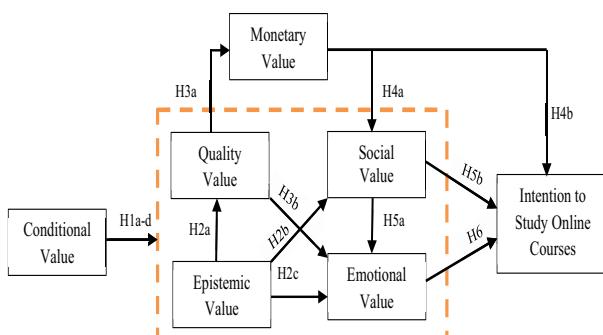


Fig. 1 Hypothesized model

IV. METHODOLOGY

The study employs a survey method to collect data from university students studying at a university offering online learning programs. A questionnaire as a research instrument was developed. The question statements addressing the study constructs were adapted from previous study. 335 students from several classes with the assistance of the class lecturers were participated in this study. They were asked to rank their opinions against each question statement using a five-point Likert scale (1= strongly disagree, 5= strongly agree) in the first part of questionnaire. After completing the first part, they were asked to provide some demographic data in the second part of questionnaire. After eliminating incomplete questionnaires, 285 questionnaires accounted for 85% of returned questionnaires were used for further analysis. The usable data, greater than the threshold of 200 for data analysis using the structure equation modelling technique [1], were analyzed by the structural equation modelling (SEM) technique using AMOS software. The sample shown in Table 1 consists of 57.2 % of male and 42.8 % of female. Majority of participants, 74.7 %, ages between 20 and 25 years old. 88.8 % of respondents study at the undergraduate level and about half of respondents (57.2 %) never study any online courses.

TABLE I
SAMPLE DEMOGRAPHIC

Demographic	Count	%
Gender		
Male	163	57.2
Female	122	42.8
Age (years)		
< 20	38	13.3
20-25	213	74.7
> 25	34	12.0
Education		
Undergrad	253	88.8
Postgrad	32	11.2
Experience		
No	163	57.2
Yes	122	42.8

A. Analysis Result of the Measurement Model

Prior to the analysis of research model, the confirmatory analysis was used to examine goodness-of-fit, construct reliability, and construct validity in the measurement model. The overall fit indices in Fig. 1 including the ratio of chi-square (χ^2) to degree-of-freedom (df), goodness of fit index (GFI), adjusted goodness of fit index (AGFI), normed fit index (NFI), incremental fit index (IFI), comparative fit index (CFI) and root mean square error of approximation (RMSEA) were greater than the recommended values [10]. This indicates a good fit of the measurement model.

Fit indices	χ^2/df	GFI	AGFI	NFI	IFI	CFI	RMSEA
Recommended value	≤ 3.0	≥ 0.9	≥ 0.8	≥ 0.9	≥ 0.9	≥ 0.9	≤ 0.8
Result value	1.991	0.908	0.871	0.911	0.954	0.953	0.059

Fig. 1 Goodness-of-fit indices of the measurement model

The composite reliability was analyzed to indicate the study's construct reliability. Fig. 2 indicates all composite reliabilities are greater than the threshold of 0.7 confirming the acceptable reliability of all constructs [10]. The validity of constructs was indicated by convergent validity and discriminant validity. The convergent validity was indicated by the average variance exacted (AVE). The AVE greater than 0.5 provides the acceptable convergent validity [9]. All AVEs in Fig.2 are between 0.55 and 0.71 confirming the convergent validity of all constructs. The discriminant validity was indicated by comparing the square root of AVEs to the correlations between the construct and all other constructs. The correlation values should be less than the square root of AVE to fulfill the discriminant validity [9]. All square roots of AVEs shown in Fig. 2 are greater than the correlations between the construct and other constructs indicating the acceptable discriminant validity of all constructs.

	CR	AVE	CV	QV	MV	EV	EPV	SV	INT
CV	0.84	0.63	0.79						
QV	0.71	0.55	0.46	0.74					
MV	0.82	0.60	0.36	0.73	0.78				
EV	0.88	0.71	0.51	0.70	0.56	0.84			
EPV	0.77	0.53	0.57	0.55	0.46	0.70	0.73		
SV	0.89	0.67	0.14	0.54	0.38	0.50	0.44	0.82	
INT	0.82	0.70	0.45	0.63	0.50	0.78	0.64	0.67	0.83

CR=composite reliability; AVE=Average variance exacted;

Square roots of AVEs are the diagonal elements;

Correlations are off-diagonal elements

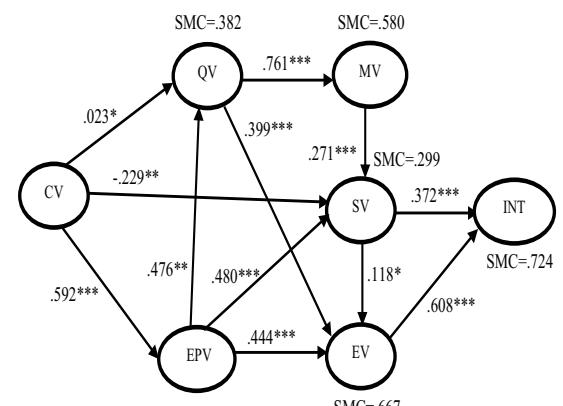
Fig. 2 Composite reliability, Average variance exacted, and Correlations

B. Analysis Result of the Structural Model

The research model was analyzed by the structural equation modelling technique using AMOS software. The overall goodness-of-fit indices shown in Fig. 3 are greater than the recommended values indicating the good model fit ($\chi^2/df=2.023$, GFI = .900, AGFI=.867, NFI=.904, IFI = .949, CFI=.949, RMSEA=.060). The path analysis model in Fig. 4 shows the parameter estimates derived from the structural equation modeling analysis. It provides the significant coefficients of the relationships and the square multiple correlations of the endogenous constructs.

Fit indices	χ^2/df	GFI	AGFI	NFI	IFI	CFI	RMSEA
Recommended value	≤ 3.0	≥ 0.9	≥ 0.8	≥ 0.9	≥ 0.9	≥ 0.9	≤ 0.8
Result value	2.023	.900	.867	.904	.949	.949	.060

Fig. 3 Goodness-of-fit-indices of the structural model



*p<.05; **p<.01; ***p<.001; SMC=Square Multiple Correlation

Fig. 4 Path analysis model

V. DISCUSSION AND IMPLICATIONS

The analysis results mostly confirm the relationships in the research model which support most hypotheses excepting H1c and H4b as shown in the Table 2. Conditional value of online learning refers to the ubiquity of online learning to provide students with the ability to study at anywhere and in convenient time. Students who perceive the conditional value think that online learning is a new method of learning and provide the improvement of learning quality (H1a,b). The ubiquitous ability, however, may disjoin students from others if they do not participate in the real-time classes (H1d). Students who curious to learn a new method of learning (i.e., online learning) tend to accept that online learning offers a good quality of learning, is an interesting method of learning, and promotes their images socially (H2a-c). Generally, the quality of learning comes with its cost (H3a). Students who perceive quality of online learning have positive feelings toward online learning and perceive that online learning can satisfy their needs (H3b). In addition, the cost of online learning has a positive effect on students' perceptions of social value. The higher the cost of online learning is, the higher the students can promote their statuses among other students (H4a). Students who believe online learning can enhance their social images will have positive feelings toward online learning and tend to study online courses (H5a,b). Finally, students who perceive online learning can respond to their needs tend to study online courses (H6).

TABLE II
ANALYSIS RESULTS OF HYPOTHESES

Hypo.	Relationship	Result
H1a	Conditional value positively affects quality value	Support
H1b	Conditional value positively affects epistemic value	Support
H1c	Conditional value positively affects emotional value	Not support

H1d	Conditional value negatively affects social value	Support
H2a	Epistemic value is positively affects quality value	Support
H2b	Epistemic value is positively affects social value	Support
H2c	Epistemic value is positively affects emotional value	Support
H3a	Quality value positively affects monetary value	Support
H3b	Quality value positively affects emotional value	Support
H4a	Monetary value positively affects social value	Support
H4b	Monetary value positively affects intention to adopt online learning	Not support
H5a	Social value positively affects emotional value	Support
H5b	Social value positively affects intention to adopt online learning	Support
H6	Emotional value positively affects intention to adopt online learning	Support

A. Theoretical Implications

This study provides three important theoretical implications. First, the study extends the knowledge of technology adoption and the predictions of consumption values in the context of online learning which is the contemporary and future trends of higher education. The value dimensions of theory of consumption values can be applied to understand online learning adoption; however, the effects of some value dimensions on online learning adoption are different from other technologies. It asserts that the perception of technology values varies across the study context. Second, the study argues theory of consumption values in that the five value dimensions are independent [20]. The results successfully test the interrelation effects among values. Third, previous studies argued that monetary value was an important factor for a consumer's purchase decision. Interestingly, the study does not support this argument. The result shows that the cost of online learning affects social value resulting in individual intention to study online courses. In other words, individuals use a high price product to enhance their social images and statuses leading to a purchase decision. It implies that some persons will buy products/services for social enhancement rather than low price consideration.

B. Managerial Implications

This study provides important guidance for universities offering online learning courses and programs. Firstly, conditional value plays an important role to influence other value dimensions leading to online learning adoption. The ubiquity of online learning is the central ability of online learning perceived by students. Universities should therefore ensure that their online learning systems are available and accessible by the students at anywhere and in any time when needed. For instance, universities might improve the system server's capacity and security, and train their staff skills to develop and maintain the system more efficiently. Secondly,

emotional value and social value have direct effects on students' intentions to adopt online learning and social value has a direct effect on emotional value. Universities should pay more attention to these two values, particularly social value, when developing their online learning systems. For instance, universities should provide virtual places (e.g., forum, blogs) and use social network services (e.g., Facebook, Line) where students can present their statuses and promote their ideas among others. Thirdly, epistemic value has a significant impact on emotional and social values (Table 2). Universities might enhance epistemic value to generate students' perceived emotional and social values. For instance, they might regularly update content of online courses and add new online courses/programs to encourage students' curiosity to try new things. Finally, the study found that the cost of online learning affects social value of online learning, but insignificantly affect intention to study online courses. In this light, universities should consider the cost of online learning study carefully as students, who afford to pay for online learning program, may use this cost to promote their monetary status among their friends. These students do not have significantly concern on cost of online learning, but rather concern on social value, to make their adoption decisions.

VI. LIMITATIONS AND FUTURE STUDIES

The study has some limitations. The study collects data from students in one university providing online learning programs. To enhance generalizability of the result, future studies might examine the study model across universities offering online learning programs. In addition, this study measures the perceived value prior to adoption of online learning to understand students' intentions to study online courses. After studying online learning courses, students' perceived values of online learning might be varied. To extend the study model and broaden the knowledge in technology adoption, it is worth to conduct a longitudinal study to track changes of the students' perceived values and investigate the values' effects on the usage of online learning.

VII. CONCLUSION

The study investigates the values of online learning perceived by students and proposes a new model to understand how the perceived values affect students' intentions to adopt online learning. The results derived from the structure equation modelling (SEM) analysis technique indicate that emotional value and epistemic value have direct effects on intention to adopt online learning. Emotional value is directly influenced by social value, quality value, and epistemic value and it's indirectly influenced by conditional value and monetary value. Epistemic value, on the other hand, is only influenced by conditional value. Conditional value with its ubiquitous ability plays an important role in students' decision on online learning adoption. The study extends the knowledge on technology adoption decision and provides guidance for universities to improve their online learning to be more valuable for their students and eventually increase a number of students of their online learning courses and

programs. To enhance validity and generalizability of the results, future studies are recommended to track changes of the students' perceived values of online learning and examine the study model across universities offering online learning programs.

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