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# Exploring Cloud-Based Bookstore Continuance from a Deconstructed Task–Technology Fit Perspective

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Received: 10 August 2019; Accepted: 27 October 2020; Published: 20 November 2020



**Abstract:** In an effort to help organizations understand consumers, our study deconstructs task–technology fit into two segments: ideal task–technology fit and individual use context–technology fit. Users’ continuous use of cloud-based bookstores is studied through survey methodology to collect consumer experience data related to the use of such cloud-based bookstores. In total, 185 samples were collected. Analytical results demonstrated that both ideal task–technology fit and individual use context–technology fit were significantly associated with the confirmation of users’ expectations as related to cloud-based bookstores. Expectation confirmation and ideal task–technology fit also have a significant link to users’ perceived usefulness and satisfaction, respectively. Furthermore, perceived usefulness significantly predicts satisfaction. Finally, perceived usefulness and satisfaction are also significantly associated with a users’ continuous use of cloud-based bookstores. As a result of this study’s findings, system administrators may foster suitable strategies for an improvement of users’ continuous use of cloud-based bookstores.

**Keywords:** cloud-based book store; continuous use; expectation confirmation theory; ideal task–technology fit; individual use context–technology fit; task–technology fit

## 1. Introduction

The early development of electronic books (e-books) technology dates back to the 1970s starting with Project Gutenberg and the Oxford Text Archive project. This practice became widespread in the early 1990s because many publishers realized the market potential of providing content in the form of electronic books/e-books [1]. In 2007, Amazon introduced their Kindle reader to widespread sales and acceptance. Following this success, e-books began to attract attention throughout the publishing market. Recently, the vast potential proliferation of e-books has driven the major growth of smartphones, tablets, and other mobile reading devices as platforms. Thus, the e-book market has significantly affected the publishing industry.

E-books are a digital form of traditionally printed books that is predominantly designed to be read digitally by using some form of e-book reader. Whenever they are compared with printed books, e-books are seen to have many obvious advantages [2]. First, one can download a title easily, quickly, and effectively from the Internet without the limitation of time and space and at a lower price point. Second, one can take along many “books”, even a whole e-library, using an e-book reader. Third, the disposal of used e-book content is both easy and costless, as this transaction is performed electronically within the e-reader. Thus, many readers have changed their reading habits from the

usage of traditionally printed books over to e-book readers so that e-book technology development is now widespread. Due to such advantages, e-book sales growth has been predicted to continue a substantial rise in sales. According to an e-books market estimation report [3], e-books revenue amounts to USD 11.862 billion in 2018 and with an annual growth rate of 3.3%. Furthermore, the e-book user-penetration rate (i.e., the number of active e-book users per 100 people) is set at 10.5% for 2018, and it is expected to reach 11.8% in 2022 [3].

Traditionally, school teachers have been considered to be among some of the most important contributors to the publishing industry. In any teaching and learning environment, one important task of the school teacher is to design better teaching activities that will improve students' learning performance. Rich teaching materials are needed to support this task and to assist in student growth and development. In fact, evidence confirmed that electronic resources are able to meet most academics' requirements [4]; however, many instructors do not know how to generally use technology efficiently in their teaching [5]. Likewise, they do not read e-books [6], even though cloud-based bookstores provide rich teaching resources that are fully able to assist school teachers obtain convenient teaching materials.

Previous literature focused on the motivators for users to read or continuously read e-books [1,7,8], or even to make the choice of e-books over printed books [9], which would surely advance our understanding of e-book-related topics. With the increasing availability of e-books, we argue that it is time to investigate how to better manage those e-books via cloud-based bookstores, which is a subject that few studies have yet to explore [10,11]. By means of cloud-based bookstores, users such as school teachers can better collect teaching materials or enrich the learning experience. Considering the plausible benefits, it seems that cloud-based bookstores may be a good source to fulfill teacher task-based teaching.

The relative success of cloud-based bookstores presents a number of challenges. The TTF (task–technology fit) and ECM (expectation confirmation theory) have received significant academic attention and gained traction for their explanatory and predictive industries. Although the TTF model proposes the importance of a fit between task and technology, a theoretical gap still exists since it does not provide an overall understanding of what constitutes a task environment and how such an environment influences adoption and continual use in a cloud-based bookstores context.

According to TTF theory, technology developments, use context, and sufficiency contents may all play essential roles in usability and results that influence the task performance constituting one's user experience. The decision of teachers' continual use of cloud-based bookstores is associated with (1) an initial acceptance decision and (2) any influence generated by the initial use experience. Regular use of cloud-based bookstores frequently forces both monetary and personal costs on teachers. Hence, teachers are most likely go through a decision process, similar to that in expectation confirmation theory (ECM), prior to making a decision affecting personal expenditure of time, finance, and effort.

Thus, our study aims to investigate how to motivate school teachers' continuous use of cloud-based bookstores. The research questions addressed in this study are: What are the significant factors underlying teachers' intention to continue using cloud-based bookstores after its initial acceptance; and, (2) how do these factors affect continuance intention in potential users? Understanding the continuance behavior of teachers will not only help them to efficiently prepare teaching materials, but it will also prove beneficial to publishing companies in attracting more customers, increasing revenue, and driving the development and growth of cloud-based bookstores everywhere. With the research, we contribute to an understanding of technological and cognitive aspects useful to create a novel model with a pragmatic approach. This may advance the TTF and ECM theories that will lead to a better understanding of the holistic user experience.

## 2. Literature Review

### 2.1. Cloud-Based Bookstores

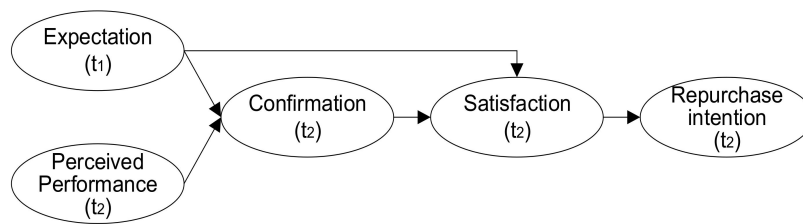
Cloud computing, a type of computing model aimed at providing end users with a reliable, customized, and dynamic computing environment [12], is a current trend that reveals the architecture of next-generation applications [13]. Cloud computing delivers computing resources as a service rather than as a product, so organizations can dynamically acquire and leverage required services via network connections [14]. Thus, cloud computing is regarded as the most promising business opportunity for the information technology industry after Web 2.0 [15]. Due to security and standardization issues remaining as big issues in the business environment coupled with a lack of consistently successful business models, many organizations have chosen not to adopt cloud computing at this time [13].

Despite most organizations taking a wait-and-see attitude about embracing cloud-computing technology, several organizations have already utilized cloud-computing technology to further the development of an online e-book environment. Some well-known cloud-based bookstores include Kindle eBooks (Amazon), iBooks Store (Apple), NOOK Store (Barnes & Noble), and Google Books (Google), which provide e-book transaction services to their consumers. One of the better known cloud-based bookstores is Raz-Kids. It is a teaching-aid product that provides comprehensive learning resources for both teachers and students alike. This platform offers hundreds of e-books at 29 different levels of reading acuity. Students can easily read content at an appropriate level determined by teacher-student agreement. Beyond cost savings, e-book users may use the cloud-based bookstores to collect and exhibit e-books, which offers them the benefits of movement, flexibility, and value-added functionality whenever they need to search and manipulate digital information [4]. A number of studies have found factors that encourage users to use e-books [1,16–18] or, they examine how users perceive e-books in general [19]. Most of these studies adopted various theoretical perspectives, such as innovation diffusion theory [18], task–technology fit [11,16,17], technology acceptance theory [1,17,20], or expectation confirmation theory [10], to undertake their respective studies. In [14], the authors deeply explored the diffusion of innovations theory that includes Rogers' Diffusion of Innovations curve to create innovation categories suitable for understanding e-book usage. In [11], the authors proposed that e-book usage remains dependent on how individuals perceive the fit of this technology tool to the tasks they undertake, determining what value-added functions are provided by the content information delivery technology used to enhance reader performance. In [20], the authors applied the technology acceptance model (TAM) to address the causal psychological mechanisms posited by the TAM, which found that perceived usefulness is more significant than perceived ease of use to satisfaction with e-books, and the greater satisfaction with e-book usage prompted the willingness to continue using e-books. However, few studies [7,10] further focused on how to motivate users' continuous usage of cloud-based bookstores or digital libraries. Furthermore, it may be supposed that there is a need to further the study of e-books from adoption/usage to how to better manage a large volume of e-books via cloud-based bookstores, which forms the basis of our study.

### 2.2. Continuous Use of Information Systems

In the field of marketing, Oliver [21] provides Expectation Disconfirmation Theory (EDT), which is used mostly for studying consumers' repeat-purchase behavior (see Figure 1). Based on EDT, Bhattacharjee [22] developed an Expectation Confirmation Model (ECM) to forecast individuals' continuous behaviors to use information systems (see Figure 2). EDT is based on the assumption that the expectation will change according to a consumer's experience, albeit perceived performance is not easy to measure [22]. To overcome these certain limitations, Bhattacharjee [22] incorporated perceived usefulness into the model to explain why an individual's perceived belief affects his/her repeated use of an IS (information system). Per ECM, users first record their original expectations (prior to use) before starting the use of an IS. After gaining usage experience, the users of an IS will be able to judge their own perceived usefulness of an IS. Meanwhile, users will evaluate their original expectations

to establish their perceived level of satisfaction regarding use of an IS. Finally, the extent of users' satisfaction (dissatisfaction) will drive them to continue (or, to discontinue) using such an IS.



Note: t1: pre-consumption variable; t2: post-consumption variable

Figure 1. Expectation confirmation theory. Source: [21].

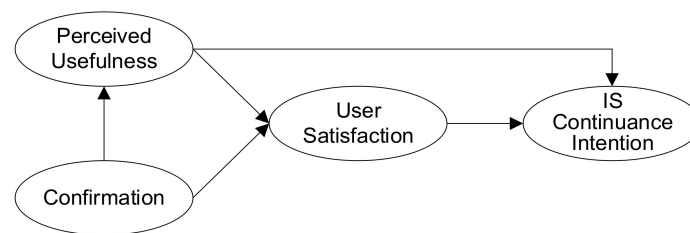


Figure 2. A Post-Acceptance Model of IS (information system) Continuance Source: [22].

Ever since Bhattacharjee [22] proposed the ECM, it has been used extensively to analyze the continuous use of an IS. However, prior research points out that the ECM has some limitations in explaining users' continuous use of an IS [23–26]. Evidence also finds that factors other than the confirmation of users' expectations serve as a significant predictor of continuous IS use [27]. The findings related to expectation confirmation may be insufficient for practitioners to undertake specific improvements of an IS. The findings of continuous studies that have utilized ECM may obtain further insights if some extensions are subsequently made to ECM, which is the other focus of our study.

### 2.3. Task–Technology Fit Theory

People often select a suitable technology to fit their task characteristics for the improvement of their task performance. In order to examine how a technology can influence task performance, it commonly adopts the task–technology fit theory (TTF) to explore whether any demonstrable relationship concerning task–technology fit and users' performance comes into effect (see Figure 3) [28]. Fit refers to the extent to how a technology tool can assist individuals as they complete their tasks. An individual is most often willing to adopt the technology if and only if the technology resembles the tasks to be implemented [29].

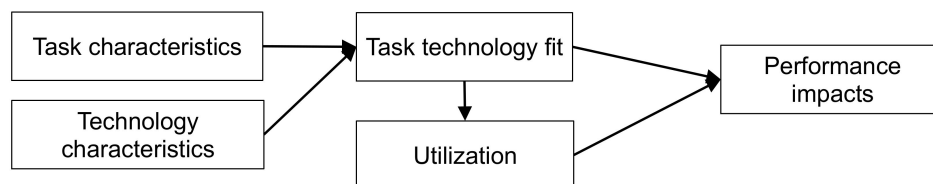


Figure 3. Reduced task–technology fit [28] (Goodhue and Thompson, 1995).

Several studies have used TTF to explore the performance impact among various contexts, and they have extended the model to provide a more comprehensive explanation in association with technology, task, task–technology, and technology utilization [20,29]. Furthermore, utilization is the behavior of an individual who uses the technology to complete his/her tasks. However, utilizing a technology

does not necessarily guarantee better performance. Goodhue and Thompson [28] realized that an individual's task performance mostly depends on TTF rather than on utilization.

#### 2.4. Deconstructed Task–Technology Fit Theory

Task–technology fit is reflected by the interaction among task complexity requirements, user abilities and information technology/information system functions [28]. For the decision-making tasks, [30] summarizes relevant task classifications that readily belong to one of Hackman's [31] four conceptualizations or definitions for a task: (1) task qua task, (2) task serving as a behavioral requirement, (3) it acts as a behavioral description, and (4) it involves ability requirements. However, [31] also declares that the task-qua-task approach emphasizes the actual materials to be used in a task being shown as part of the decision-making process; the behavior requirements of a task determine both what individuals have to complete to meet designated goals and how they should achieve those goals; and, the last two concepts are unlikely to advance research relative to decision-making tasks. [32] thinks that task complexity can be integrated into the last two tasks conceptualized by [31]: the task-qua-task approach and the task as behavioral requirements approach. Furthermore, this complexity lays stress on the task's characteristics as presented to the decision makers.

Based on the structural contingency theory, the definitions of fit have been identified according to three distinct approaches, including: (1) fit means internal consistency, (2) fit functions as interaction, and (3) fit is treated as congruency [33]. In [34], there is further extension of these three approaches into six fit perspectives: gestalts, profile deviation, covariation, moderation, mediation, and matching. [34] declared that the last three aspects are criterion-free; put another way, their applicability is not unique (i.e., universal), and it is not subject to any particular dependent variable (e.g., effectiveness). However, these three conceptualizations are not suitable to link task technology fit to an effective performance of decision making [35]. Furthermore, out of the six concepts, the first two are finite in terms of the number of variables, which are taken into consideration; precisely, they are commonly employed in assessing an association between a single predictor variable, a single moderating or intervening variable, and a single dependent variable [30], all of which are inappropriate for a consideration of task complexity. Following structural contingency theory, [30] proposes that the optimal definition for technology/task fit is an ideal profile with an internally congruent set of task contingencies and technology elements which impacts the performance of decision. [36] reported that higher level managers especially favor ample media for information processing and communication. This particular result may also imply that a task can be best supported when the right information technology is chosen.

With portable devices in abundance, the services of a cloud-based bookstore can be employed from any time and/or any place, by any user. Therefore, the use of cloud-based bookstore is removed from a non-mobile IS environment. [37] thinks there is a substantial difference between mobile and non-mobile IS results from the context relevant to the IS used. With consideration of the technological use contexts or business processes perspectives, the use context has its own role centering in the socio-technical approach to IS [38,39] regard the use context as a critical indicator between mobile and non-mobile IS. The ideal concept is one in which a mutual understanding may serve to create a bridge between people and the situated context where users act, thereby leading to a continuous fit of the IS with users' immediate needs, capabilities, and skills [40]. Meanwhile, it is important to understand the complexity of the interwoven factors at large. These factors are composed of the user, technology, and the environment that surrounds what is focused on. Furthermore, the study of [30] also demonstrated that information technology can provide users with the best support only when it is under the right use context.

In addition, a cloud-based system has been proven as a factor that provides end users with a reliable, customized, and dynamic computing environment, referring to the fact that cloud-based systems allow for individuals to access information resources anywhere. A suitable cloud-based system is frequently limited due to location, time criticality, functionality, etc. [39]. To account for these

limitations, it has been suggested to include the individual use context into the design of informational systems [37].

In a socio-technical system, the communication application environment often plays a central role in IS utilization. Thus, in cloud services, it is necessary to comprehensively understand the complex and dynamic network of interrelated factors in which user behaviors and available technology surround global factors [39]. For the overall technology evaluation that affects the technology usage and performance, [41] claim that the performance evaluation of technology should include user–context characteristics in addition to task and technology characteristics. [39] recommend that the task–technology fit can be further deconstructed to realize the effects of fit on the outcome of an IS. Thus, this study deconstructs the TTF into two segments: one is ideal task–technology fit, and the other is individual use context–technology fit, since “task–individual fit” does not consider the technology characteristics, which are consistent with the assertions of [39].

In [29], the authors argued that TTF is an important user evaluation concept in forecasting the utilization of a specific technology. Actually, TTF is a developing construct, and diverse forms of the TTF-based model currently subsist [16]. In their study of information system continuance, [27] found that perceived technological characteristics are insufficient to increase continuance intention. Thus, it is necessary to extend the TTF construct to information system continuance by integrating other concepts. Therefore, this study combines the TTF and ECM to propose a comprehensive explanation of cloud-based bookstore continuance.

### 3. Research Model and Hypotheses

#### 3.1. Conceptual Model Formulation

One important primary school teachers’ task requirement is to collect teaching materials and to design better teaching activities that will improve students’ overall learning performance. Substantive teaching materials are needed to support this task and to assist in student growth and cognitive development. However, many elementary school instructors use less e-book resources or do not know how to access technology efficiently as part of their teaching regimen. In other words, they seldom assign e-books even though cloud-based bookstores provide resources that are fully capable of assisting them to obtain convenient and practical teaching materials.

This study utilized ECM and TTF as theoretical underpinnings to investigate the repeated use of cloud-based bookstores. First, ECM posits that individuals’ continuance intention is mainly influenced by the degree of their satisfaction and their perception of the usefulness of IS utilization, and perceived usefulness, in its turn, can enhance users’ satisfaction. Further, through confirming their expectation from prior IS use, user satisfaction and the perceived usefulness of IS utilization are determined. Second, aside from the confirmed positive impacts on an individual’s performance and utilization of an IS [28], TTF has also been found to influence an individual’s confirmation regarding the actual performance of an IS [16]. In other words, TTF is able to enforce the confirmation of users’ expectations toward an IS.

As user expectations may change with time, [22] argues that post-consumption expectations should be considered in the continuance of IS usage. Although TTF and ECM may theoretically present wider constructs which cover additional beliefs such as ease-of-use, which is based on technology acceptance model (TAM-based) investigations, it is perceived usefulness that creates sufficient expectation in an IS continuance context. This is probable because it is the only belief that is proven to consistently influence the individual intention across each stage of IS use [22]. Hence, Bhattacharjee posits that ease-of-use has an inconsistent effect on attitude in the initial adoption and may in fact become insignificant in later stages. That is why the study does not include ease-of-use in the research model.

A number of studies agreed that all characteristics related to task, technology, and individuality have a significant influence on TTF and performance [4,41]. In [16], the authors argued that the task–technology fit actually captures task characteristics, technology characteristics, and individual

characteristics, as well as their interactions. Therefore, it is sufficient to include only the task–technology fit construct (ideal TTF and individual use context–TF in our model) and using this construct as an endogenous variable. Thus, our model does not include these three variables. Rather, our model further deconstructed TTF into “ideal task–technology fit” and “individual use context–technology fit” using [39]. Ideal task–technology fit refers to the level of correspondence between teachers’ task requirements and cloud-based bookstores. Individual use context–technology fit refers to the degree of teachers’ awareness of the correspondence between the anticipation of cloud-based bookstores usage and how it matches their work context. Our study advocates that both types of fits can affect a change in the confirmation of users’ expectation, perceived usefulness of, and satisfaction with cloud-based bookstores. Confirmation of users’ expectations refers to the degree to which teachers’ awareness exists of the correspondence between the anticipation of cloud-based bookstore usage and how it matches actual performance criteria. Perceived usefulness refers to the extent of school teachers’ perceptions regarding the expected benefits of cloud-based bookstore use. Satisfaction measures teachers’ emotions that reflect the teachers’ experience of using cloud-based bookstores to be as pleasurable as anticipated.

Furthermore, the confirmation of users’ expectations can influence their perceived usefulness of and satisfaction of cloud-based bookstores. The perceived usefulness of cloud-based bookstores can also influence users’ satisfaction of cloud-based bookstores. Finally, the perceived usefulness of and satisfaction of cloud-based bookstores can influence their continuous intention to use cloud-based bookstores. Continuous intention refers to the school teachers’ intentions to continue using cloud-based bookstores for their given tasks. The research model is proposed as shown in Figure 4, and the definitions of each construct are found in Table 1. The validation of this model, along with the investigative constructs and their given associations in our research model, is illustrated as follows.

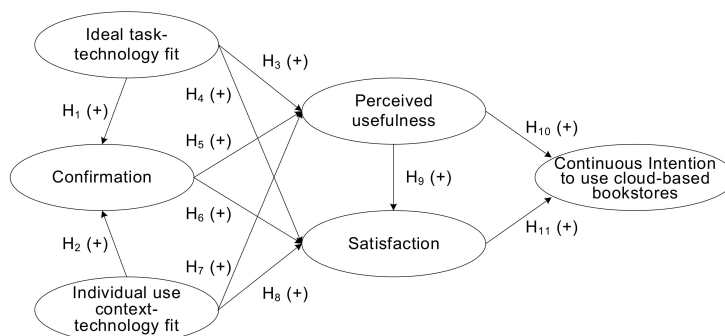


Figure 4. Research model.

Table 1. Construct definitions.

Construct	Operational Definitions
Ideal task–technology fit [39]	The degree of correspondence between teachers’ task requirements and cloud-based bookstores.
Individual use context–technology fit [39]	The degree of teachers’ awareness of the correspondence between the anticipation of cloud-based bookstores usage and how it matches their work context (stable/unstable user location).
Confirmation [22]	The teachers’ awareness exists of the correspondence between the anticipation of cloud-based bookstores usage and how it matches actual performance.
Perceived usefulness [22]	The extent of the teachers’ belief that using cloud-based bookstores would benefit their job performance.
Satisfaction [42]	Satisfaction is an evaluation of emotion that the teachers’ experience of using cloud-based bookstores was as pleasurable as expected.
Continuous intention to use cloud-based bookstores [42]	The teacher’s intention to continue using cloud-based bookstores.

### 3.2. The Influence of Ideal Task–Technology Fit and Individual Use Context–Technology Fit on Expectation Confirmation

Prior user expectations related to IS performance will influence their cognition of an IS's utilization [43]. More specifically, the confirmation of users' expectations is an important driver in changing an individual's behavior as it relates to an IS [23,24]. An IS fits with users if users are able to perceive an IS as being more useful than it actually is [44]. Evidence also proved that TTF can influence the confirmation of users' expectations related to the use of an IS [42]. In our study, the original TTF was deconstructed into the ideal task–technology fit and individual use context–technology fit. However, we asserted that ideal task–technology fit and individual use context–technology fit of cloud-based bookstores will still have some impact upon school teachers' confirmation of their expectations. Thus, two corresponding hypotheses are postulated:

**Hypothesis 1 (H1).** *Ideal task–technology fit will influence teachers' confirmation of their expectations related to cloud-based bookstores.*

**Hypothesis 2 (H2).** *Individual use context–technology fit will influence teachers' confirmation of their expectations related to cloud-based bookstores.*

### 3.3. The Influence of Ideal Task–Technology Fit and Individual Use Context–Technology Fit on Perceived Usefulness

TTF-related studies showed that TTF will affect the utilization of a technology [21], and it also improves the performance of users [4]. In other words, TTF can affect users in how they perceive the usefulness derived from the utilization of that technology [44]. The link between TTF and perceived usefulness of a technology has also been approved by prior research [16,17,45]. Based on previous discussions, we proposed that an ideal task–technology fit and individual use context–technology fit will have an influence on school teachers' perceived usefulness of cloud-based bookstores, respectively. Thus, the following hypotheses were proposed:

**Hypothesis 3 (H3).** *Ideal task–technology fit will influence teachers' perceived usefulness of cloud-based bookstores.*

**Hypothesis 4 (H4).** *Individual use context–technology fit will influence teachers' perceived usefulness of cloud-based bookstores.*

### 3.4. The Influence of Ideal Task–Technology Fit and Individual Use Context–Technology Fit on Satisfaction

Satisfaction refers to school teachers' affect with prior cloud-based bookstores use in our study. In the IS field, the relationship between TTF and satisfaction was found to be both significant and important by several studies. For example, [19] found that high task–technology fitness leads to a higher level of user satisfaction, and it was verified by a subsequent study [46] in a decision support context. Further, [42] reported that TTF and satisfaction have a positive association in a web-learning context. In the same vein, we argued that ideal task–technology fit and individual use context–technology fit will have an impact on teachers' satisfaction of cloud-based bookstores. Then, two hypotheses were postulated:

**Hypothesis 5 (H5).** *Ideal task–technology fit will influence the teachers' satisfaction with cloud-based bookstores.*

**Hypothesis 6 (H6).** *Individual use context–technology fit will influence the teachers' satisfaction with cloud-based bookstores.*



### 3.5. The Influence of Expectation Confirmation on Perceived Usefulness and Satisfaction

Since the proposition of ECM [22], ECM has been tested and supported by a number of studies. The expectation confirmation model was also proved to have significant associations with perceived usefulness and satisfaction, respectively, in a study of continuous use of an IS by users [45]. The learners' perceived usefulness and personal satisfaction level contribute to their sustained willingness of adopting e-learning systems [47]. Furthermore, [48] found that confirmation can improve students' perceived usefulness of and satisfaction of electronic textbooks. In our study context, if school teachers perceived that the performance of using cloud-based bookstores outweighs their expectations, they will surely feel that cloud-based bookstores are useful for and satisfy their academic task requirements. The evidence presented in the above section suggests:

**Hypothesis 7 (H7).** *Teachers' confirmation of their expectations will influence their perceived usefulness of cloud-based bookstores.*

**Hypothesis 8 (H8).** *Teachers' confirmation of their expectations will influence their satisfaction with cloud-based bookstores.*

### 3.6. The Influence of Perceived Usefulness on Satisfaction

Generally speaking, if a technology is expected to be useful for various users' tasks, they should have positive feelings related to that technology. Consequently, if school teachers expect that cloud-based bookstores are helpful for their academic work, they should favor the use of cloud-based bookstores. Previous research has reported an association between perceived usefulness and satisfaction in differing contexts. For example, [22] found that perceived usefulness of online banking systems leads to users' satisfaction. In [45], the authors identified that users' perceived usefulness of an IS leads to their satisfaction toward the use of an IS. In [47], the authors showed that increasing students' level of perceived usefulness of e-learning systems will improve their satisfaction of such systems. In [49], the authors also demonstrated that perceived usefulness improves university students' satisfaction with e-books positively and significantly. Together, these studies outline that school teachers' perceived usefulness of cloud-based bookstores should result in their satisfaction.

**Hypothesis 9 (H9).** *The teachers' perceived usefulness will influence their satisfaction with cloud-based bookstores.*

### 3.7. The Influence of Perceived Usefulness and Satisfaction on Continuous Intention

In [18], the authors pointed out that perceived usefulness meaningfully linked with how the individuals use the information technology, since users recognize that usage will support them to reach the desired targets or performance they may pursue. Although perceived usefulness was originally derived in an acceptance context, [22] utilized perceived usefulness to predict users' continuous intention of using a technology. Prior studies also reported that perceived usefulness significantly influences students' continuance use of e-books [7,48,49], continued adoption of e-learning systems [47], and the continuous use of an IS [45]. Thus far, the studies presented provide evidence that:

**Hypothesis 10 (H10).** *The teachers' perceived usefulness will influence their continuous intention to use a cloud-based bookstore.*

Satisfaction is an affect including a positive (satisfied), indifferent, or a negative (unsatisfied) feeling that an individual may hold [22,50]. A considerable amount of literature regarding the possible association between satisfaction and behavioral intention has been affirmed. For example, [51] identified that customer satisfaction improves member loyalty toward organizations in an e-market context. In the IS discipline, [52] reported that IS satisfaction positively predicts users' contributory behaviors such as with word-of-mouth expressions. In [22], the authors further adopted satisfaction to predict continuous behavioral intention. Latter studies [22,45,47-49] also provide support for the

satisfaction–continuance intention association. In view of all that has been discussed so far, we may suppose that:

**Hypothesis 11 (H11).** *Teachers’ satisfaction will influence their continuous intention to use cloud-based bookstores.*

#### 4. Methodology

##### 4.1. Instrument Development

Per the recommendations of [53] for questionnaire development, we adopted survey items from prior studies to evaluate each construct found in our research model. We invited five experts (one associate professor, two senior high school teachers, and two primary school teachers) to help us to modify the wordings of the questions to fit the cloud-based bookstore context; thus, they helped to improve the semantic clarity of our scales.

For the deconstructed TTF, the scales of ideal task–technology fit and individual use context–technology fit were developed from [39] with five and three items, respectively. The scales for expectation disconfirmation with three items and perceived usefulness with four items were based on [22]. The scale of satisfaction with six items and continuous intention of cloud-based bookstores use with seven items were modified from [42]. All the scales were designed with a five-point Likert scale. Table 2 presents our survey items.

Given the advice of [54], investigators should perform a pilot test before any official investigation. In fact, a pilot test was conducted on ten school teachers who possess experience in using cloud-based bookstores. According to the suggestion items, some additional modifications to words and phrases for further testing were made.

##### 4.2. Sample and Data Collection

Since qualified subjects were limited to those experienced with using cloud-based bookstores, we recruited teachers participating in the Educational Six Learning Networks (<http://net.yhsh.tn.edu.tw/~music/edu.htm>), which is sponsored by the Ministry of Education in Taiwan to help teachers to find their teaching materials, via snowball sampling. A total of 200 questionnaires were sent out to potential respondents. Totally, 185 effective questionnaires were collected in approximately two months’ time for use in subsequent analysis. This response rate is 92.5%.

**Table 2.** Survey items.

Dimensions	Items
Ideal task–technology fit [39]	As far as the reading support of e-books is concerned, I think the function of cloud-based bookstores is corresponding.
	As far as the trading activity of e-books is concerned, I think the function of cloud-based bookstores is corresponding.
	As far as the bookshelf management of e-books is concerned, I think the function of cloud-based bookstores is corresponding.
	As far as the support of coherent objects is concerned, I think the function of cloud-based bookstores is corresponding.
	As far as the support of time-efficient objects is concerned, I think the function of cloud-based bookstores is corresponding.
Individual use context–technology fit [39]	Upon the dynamic change of user location, I think the interaction ability of cloud-based bookstores is conforming to the demand.
	Upon the dynamic change of user location, I think the user interface of cloud-based bookstores is conforming to the demand
	Upon the dynamic change of user location, I think the adaptive capacity of cloud-based bookstores is conforming to the demand.

Table 2. Cont.

Dimensions	Items
Confirmation [22]	My experience of using cloud-based bookstores is better than what I expected. The service provided by cloud-based bookstores is better than what I expected. Generally speaking, most of my expectations to the cloud-based bookstores are confirmed.
Perceived usefulness [22]	The use of cloud-based bookstores improves my performance in searching for or reading e-books. The use of cloud-based bookstores enhances my convenience in e-book trading. The use of cloud-based bookstores promotes my benefit in searching or reading e-books. Generally speaking, cloud-based bookstores are useful.
Satisfaction [42]	I am very satisfied with the convenience of looking for e-books in cloud-based bookstores. I am very satisfied with the diversity of e-books in cloud-based bookstores. I am very satisfied with the trading mechanism of e-books in cloud-based bookstores. I am very satisfied with the customized service of cloud-based bookstores. I am very satisfied with structure of e-book arrangement in cloud-based bookstores. I am very satisfied with the knowledge communication in cloud-based bookstores.
Continuous intention to use cloud-based bookstores [42]	I prefer to use cloud-based bookstores to search for e-books continuously. I prefer to use cloud-based bookstores to create e-book booklists continuously. I prefer to use cloud-based bookstores for e-book trading continuously. In the future, I will utilize the e-book of cloud-based bookstores to prepare course/activity materials. I think the functions provided by cloud-based bookstores are suitable. I will recommend other persons to use cloud-based bookstores. Generally speaking, I prefer to use cloud-based bookstores continuously.

## 5. Results

### 5.1. Demographic Information

According to the demographic information (see Table 3), respondents to the survey were predominantly female (65.41%) and younger teachers (56.76% were aged under 35 years of age). Since the income of primary and senior high school teachers is of a certain level and stability in Taiwan, most of them receive a monthly income of NTD 40,001–60,000 (69.73%). Furthermore, since Taiwan’s involvement with cloud-based bookstores lags behind other countries, most respondents are still users at the stage of enlightenment, possessing less than one year (78.38%) of personal experience. Regarding the purpose of using cloud-based bookstores, most respondents stated that they use them for trial-reading purposes or for feeling the new reading experience, with most of them spending less than one hour reading via cloud-based bookstores (80.54%). Respondents are using cloud-based bookstores mainly for the free download and preview function of e-books, and the most attractive part of using cloud-based bookstores is that it is done without the limitations of space and time.

### 5.2. Exploratory Factor Analysis

We evaluated the Cronbach’s alpha ( $\alpha$ ) and principal components analysis (PCA) to measure the construct reliability and validity in our study. The results are shown in Table 3. The Cronbach’s alpha ( $\alpha$ ) values range from 0.88 to 0.93, indicating sufficient reliability [55]. The measure of Kaiser–Meyer–Olkin

verified the sampling adequacy with KMO = 0.94 [55]. Bartlett’s test of sphericity,  $\chi^2(351) = 4495.85$ ,  $p < 0.001$ , demonstrating correlations of items, is sufficient for purposes of PCA [55]. With Promax rotation, six factors with eigenvalues of at least one were extracted. When items load highly on their factors, convergent validity is confirmed. Discriminant validity can be proven if each item loads higher on its posited factors rather than on other factors [55]. Table 4 displays that all items have loadings  $> 0.5$  on their posited factors and load highly on the posited factors, rather than on other ones. Thus, reliability and construct validity are determined to be adequate in our study.

**Table 3.** Results of demographic analysis.

Characteristics	Frequency	%	Characteristics	Frequency	%
<i>Gender</i>			<i>Number of Years of Using Cloud-Based Bookstore</i>		
Male	64	34.59	≤1	145	78.38
Female	121	65.41	2–3	31	16.76
			≥4	9	4.86
<i>Age</i>			<i>Monthly income</i>		
≤30	48	25.95	NTD 30,001–40,000	18	9.73
31–35	57	30.81	NTD 40,001–50,000	66	35.68
36–40	30	16.22	NTD 50,001–60,000	63	34.05
41–45	28	15.14	NTD 60,001–70,000	20	10.81
46–50	12	6.48	≥NTD 70,001	18	9.73
≥51	10	5.40			
<i>Educational level</i>			<i>Hours spent in reading e-books per week</i>		
College degree	80	43.24	<1	149	80.54
Graduate degree	90	48.65	1–2	24	12.97
Doctor degree	15	8.11	3–4	5	2.70
			≥5	7	3.79
<i>What functions of cloud-based bookstores are used? (multiple choice)</i>			<i>Most attractive part of cloud-based bookstores? (multiple choice)</i>		
Purchase e-book	13		Powerful function	18	
Preview e-book	103		High interactivity	17	
Download free e-book	134		Rich e-book	47	
Search e-book	49		Without limitation of space and time	152	
			Other	5	

### 5.3. Measurement Model

The R statistics [56] with the Lavaan [57] package was used for structural equation modeling. The Lavaan package implement is a structural equation modeling (SEM) technique that provides use of the R language. Researchers are able to use this free open-source, commercial-quality package for latent variable modeling [57]. Lavaan may estimate a variety of multivariate statistical models, including path analysis, confirmatory factor analysis, structural equation modeling, etc.

Confirmatory factor analysis (CFA) was conducted to further ensure the item quality. Table 5 shows an examination of the results, and we state that all constructs are supposed to be reliable. For all the measures, the composite reliability (CR) and average variance extraction (AVE) were higher than the evaluation criteria of 0.7 and 0.5, respectively [48,49]. Furthermore, the CFA showed an acceptable fit, with an incremental fit index (IFI) of 0.94, a goodness-of-fit index (GFI) of 0.90, and a comparative fit index (CFI) of 0.94,  $\chi^2(309) = 572.61$ ,  $\chi^2/df = 1.85$ ; root mean square error approximation (RMSEA) = 0.07. The fit index of RMSEA was below 0.07, and indices of IFI, GFI, and CFI were above the

common standard of 0.9 [47]. Furthermore, a ratio of  $\chi^2/df$  less than 3 also indicates a good fit for the hypothesized model [47].

The construct’s correlation matrix, means, and standard deviations are shown in Table 6. Construct validity was usually assessed by examining discriminant and convergent validity [55]. Discriminant validity was first assessed by comparing the square root of AVE with the correlation between two constructs (see Table 6). Our results demonstrated that the square root of AVE was larger than the correlation between the two constructs, thus indicating adequate discriminant validity [58]. Further, all correlation coefficients among the constructs of interest were less than 0.85, which also points to acceptable discriminant validity [59]. Regarding convergent validity, the AVE of all the constructs was higher than 0.5 [58], demonstrating adequate convergent validity.

**Table 4.** Results of exploratory factor analysis.

	CIU	SAT	ITTF	PU	EC	IUCTF
CIU2	0.89	-0.02	0.05	0.09	-0.09	0.04
CIU5	0.84	-0.02	0.06	0.00	0.04	-0.01
CIU1	0.84	0.10	-0.10	0.28	-0.24	0.06
CIU3	0.79	0.11	0.05	-0.10	0.07	-0.06
CIU6	0.75	-0.08	0.09	0.03	0.21	-0.05
CIU4	0.75	0.14	-0.24	-0.02	0.02	0.17
SAT1	-0.06	0.80	-0.12	0.41	-0.21	0.06
SAT2	-0.12	0.75	0.01	0.23	0.03	0.05
SAT4	0.23	0.73	0.12	-0.26	0.16	-0.10
SAT3	0.09	0.70	0.00	-0.02	0.08	0.00
SAT6	0.09	0.67	0.04	0.10	0.06	-0.04
SAT5	0.10	0.65	0.10	0.06	0.13	-0.07
ITTF2	-0.21	0.09	0.88	0.08	-0.08	0.10
ITTF3	0.20	-0.23	0.86	0.05	0.06	-0.07
ITTF4	0.05	0.34	0.72	-0.26	-0.05	0.00
ITTF5	-0.11	0.19	0.68	0.13	-0.13	0.10
ITTF1	0.18	-0.17	0.63	0.28	-0.06	0.03
PU1	0.16	0.13	-0.04	0.73	-0.07	0.04
PU3	-0.02	0.05	0.10	0.71	0.23	-0.03
PU2	0.06	0.01	0.18	0.68	0.12	-0.12
PU4	0.05	0.10	0.02	0.59	0.31	-0.06
EC3	-0.06	0.06	-0.02	0.00	0.88	0.06
EC1	0.02	-0.01	-0.13	0.18	0.81	0.03
EC2	0.02	0.05	-0.04	0.15	0.77	0.07
IUCTF2	0.11	-0.01	-0.05	-0.01	0.00	0.93
IUCTF3	0.04	-0.01	0.09	-0.04	0.01	0.90
IUCTF1	-0.07	-0.04	0.18	-0.06	0.19	0.79
Eigenvalue	4.78	4.12	3.37	3.27	2.85	2.57
Variance Explained	0.18	0.15	0.13	0.12	0.11	0.10
Cronbach’s $\alpha$	0.94	0.92	0.88	0.91	0.90	0.93

Note: CIU denotes continuous intention to use, SAT means satisfaction, ITTF denotes ideal task–technology fit, PU means perceived usefulness, EC denotes confirmation, IUCTF means individual use context–technology fit.

#### 5.4. Structural Model

With sufficient reliability and validity of the measures, the next step was the evaluation of the hypotheses developed from consideration of the relevant literature.

The goodness-of-fit (GoF) value is 0.68. To test the model fit, the root mean square of the residuals (RMSR) of the average residuals for the correlation matrix are recommended to be less than 0.05 [60]. The fit index of root mean square error approximation (RMSEA) was determined to be below 0.07, and indices of incremental fit index (IFI), goodness-of-fit index (GFI), and comparative fit index (CFI) were all above the common standard of 0.9 [61]. In this study, the values were as follows: RMSR = 0.03, IFI = 0.94, GFI = 0.90, CFI = 0.94, respectively. The fit of the structural model was sufficient.

**Table 5.** Confirmatory factor analysis and scale reliability.

Constructs	Items	M	SD	Standardized Loading	CR	AVE
Continuous Intention to use cloud-based bookstores (CIU)	CIU1	3.46	0.90	0.87 ***	0.94	0.72
	CIU2	3.37	0.85	0.90 ***		
	CIU3	3.25	0.79	0.83 ***		
	CIU4	3.24	0.89	0.76 ***		
	CIU5	3.43	0.86	0.87 ***		
	CIU6	3.48	0.84	0.88 ***		
Perceived usefulness (PU)	PU1	3.46	0.77	0.82 ***	0.91	0.73
	PU2	3.57	0.81	0.83 ***		
	PU3	3.66	0.76	0.90 ***		
	PU4	3.72	0.78	0.86 ***		
Satisfaction (SAT)	SAT1	3.71	0.75	0.78 ***	0.92	0.66
	SAT2	3.70	0.73	0.82 ***		
	SAT3	3.43	0.70	0.76 ***		
	SAT4	3.43	0.75	0.81 ***		
	SAT5	3.45	0.71	0.87 ***		
	SAT6	3.56	0.74	0.82 ***		
Confirmation (EC)	EC1	3.34	0.79	0.84 ***	0.90	0.76
	EC2	3.37	0.80	0.94 ***		
	EC3	3.45	0.74	0.81 ***		
Ideal task-technology fit (ITTF)	ITTF1	3.64	0.69	0.75 ***	0.88	0.59
	ITTF2	3.55	0.68	0.82 ***		
	ITTF3	3.67	0.71	0.77 ***		
	ITTF4	3.44	0.74	0.75 ***		
	ITTF5	3.63	0.73	0.77 ***		
Individual use context-technology fit (IUCTF)	IUCTF1	3.39	0.77	0.85 ***	0.93	0.83
	IUCTF2	3.41	0.78	0.92 ***		
	IUCTF3	3.39	0.79	0.95 ***		

Note: M denotes mean, SD means standard deviation, CR denotes composite reliability, AVE means average variance extracted. \*\*\*  $p < 0.001$ .

**Table 6.** Discriminant validity for each pairwise of constructs.

	M	SD	CIU	PU	SAT	EC	ITTF	IUCTF
CIU	3.37	0.75	0.85					
PU	3.61	0.70	0.78	0.85				
SAT	3.55	0.62	0.81	0.83	0.81			
EC	3.39	0.71	0.75	0.79	0.76	0.87		
ITTF	3.59	0.58	0.65	0.69	0.73	0.53	0.77	
IUCTF	3.40	0.73	0.59	0.52	0.61	0.56	0.66	0.91

Note: CIU denotes continuance intention to use, SAT means satisfaction, ITTF denotes ideal task-technology fit, PU means perceived usefulness, EC denotes confirmation, IUCTF means individual use context-technology fit.

As shown in Figure 5, nine out of eleven hypotheses were strongly supported. Confirmation was positively influenced by ideal task-technology fit ( $\beta = 0.28, p < 0.01$ ) and individual use context-technology fit ( $\beta = 0.38, p < 0.001$ ), respectively. Hypotheses 1 and 2 were supported. Further, ideal task-technology significantly predicts perceived usefulness ( $\beta = 0.43, p < 0.001$ ) and satisfaction ( $\beta = 0.27, p < 0.01$ ) in the expected direction, respectively. Hypotheses 3 and 4 were also supported. Perceived usefulness ( $\beta = 0.63, p < 0.001$ ) and satisfaction ( $\beta = 0.29, p < 0.01$ ) were positively influenced by confirmation, supporting Hypotheses 5 and 6. However, we did not find sufficient evidence to support Hypotheses 7 and 8. That is, individual use context-technology fit was not a significant predictor of perceived usefulness and satisfaction. Regarding Hypotheses 9

and 10, perceived usefulness was confirmed to be a significant predictor of satisfaction ( $\beta = 0.36, p < 0.01$ ) and continuous intention to use cloud-based bookstores ( $\beta = 0.35, p < 0.01$ ), respectively, thus supporting Hypotheses 9 and 10. Finally, we confirmed that satisfaction positively contributed to continuous intention to use cloud-based bookstores ( $\beta = 0.54, p < 0.001$ ), thus supporting Hypothesis 11. In total, our model explained about 71.8% of the variance of e-bookstore continuance intention, 74.1% of perceived usefulness, 77.9% of satisfaction, and 35.4% of confirmation.

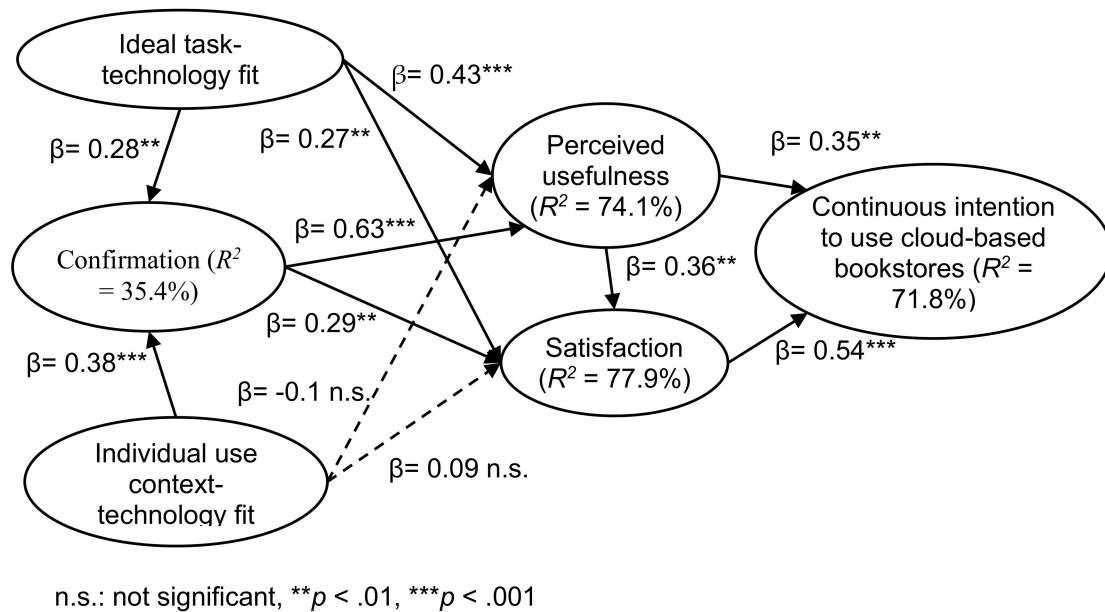


Figure 5. Structural model results.

## 6. Discussion

### 6.1. General Discussion

Compared with paper-based books, e-books have many obvious advantages [2], and school teachers can obtain various teaching materials they may require without the limit of time and space. Furthermore, with the advance of various smart mobile devices, the services of e-books have also become increasingly diversified; thus, bookstores based on cloud-computing technology will certainly play a key role in such service [62]. Based upon this understanding, our study aimed to investigate those factors that may motivate teachers to continuously use cloud-based bookstores.

The task–technology fit theory appears to cover important applications in the field of cloud-based bookstore design and customer performance. In an effort to apply and extend TTF to cloud-based bookstores in support of managerial tasks and to develop practical guidelines for cloud-based bookstores design and improvement of users’ continuous use of cloud-based bookstores, we have derived a number of hypotheses based on previous studies in the research disciplines of organizations, IT, and expectation confirmation theory.

The primary finding of our study is that deconstructed task–technology fit may become an important antecedent for school teachers’ confirmation of their expectations concerning cloud-based bookstores. With a better fit between teachers’ tasks, such as preparing teaching materials and using cloud-based bookstores in general, teachers may feel that the performance of cloud-based bookstores corresponds to, or delivers even better than, their expectations. Such confirmation, in its turn, influences teachers’ perceived usefulness of and satisfaction of cloud-based bookstores, and the perceived usefulness of cloud-based bookstores also contributes to their satisfaction of cloud-based bookstores. Finally, both perceived usefulness of and satisfaction of cloud-based bookstores can increase teachers’ possibility of continuously using cloud-based bookstores.

Corroborating with the proposition of the task–technology fit perspective [63] that a better task–technology fit leads to better performance, we find that our proposed deconstructed task–technology constructs significantly associate with teachers’ confirmation of their expectations. The influence of individual use context–technology fit ( $\beta = 0.38$ ) on whether the user’s expectation can be confirmed is greater than ideal task–technology fit ( $\beta = 0.28$ ); despite the fact that it cannot obviously and directly affect a user’s perceived usefulness and satisfaction, it can actually confirm the influence on the continuous use of cloud-based bookstore through expectation. This means that the application of information technology shall be considered along with a user’s situated context to generate the effect as far as cloud-based bookstore practitioners may be concerned.

Regarding the links between deconstructed task–technology fit constructs and perceived usefulness and satisfaction, we find teachers’ perceived usefulness and satisfaction can only be predicted by ideal task–technology fit but not individual technology use–context fit. The plausible reasons may be as follows: First, such results may indicate that respondents currently use cloud-based bookstores less to prepare teaching materials than for other reasons, as evidenced from the demographic information in Table 3. Second, the subjects may use an e-bookstore to foster teaching materials in fixed workplace locations, such as school or home offices. However, at the beginning of the questionnaire, items, “Upon the dynamic change of user location . . . ” may cause respondents to have uncertainty over experiencing the dynamic change situation described in the battery of questions. Therefore, this may be a reason why the results are not significant. Furthermore, our findings mirror those of previous studies that have examined the effects of the confirmation of users’ expectations on perceived usefulness and satisfaction [48].

Similar to past studies [22–24,40,48], our study finds that the influence of satisfaction ( $\beta = 0.54$ ) on the continuous intention to use a cloud-based bookstore is greater than perceived usefulness ( $\beta = 0.35$ ), which means determining how to enhance the user’s satisfaction remains the key to promoting user’s continuous use, and the determination of such a key depends on whether the user’s expectation can be truly confirmed.

Via deconstruction of task–technology fit [28] and integration with the expectation confirmation model [22], our model may provide important references for cloud-based bookstore practitioners to improve the services they offer. In addition, several academic and practical implications can be derived from the findings of our study given the obvious conclusions.

Although the expectation confirmation model has been confirmed to be an important and indirect predictor of continuous intentions [22], little of the current literature has further considered the antecedents existing prior to expectation confirmation. To advance the closure of this knowledge gap, our study extends the expectation confirmation model [22] by linking the decomposed task–technology construct with the confirmation of users’ expectation, which provides a different perspective for explaining individuals’ continuous intentions. With the inclusion of ideal task–technology fit and individual use context–technology fit, the explanation power of our proposed model is higher than with the original expectation confirmation model [22].

The traditional expectation confirmation model [22] argues that consumer’s continuous use of an IS depends on whether their expectations have been fulfilled or not. However, it will not be easy for practitioners to improve the services provided by cloud-based bookstores only based on the confirmation of consumers’ expectations, since their expectations are mostly too extensive to be clearly defined. The findings based on our proposed model demonstrate that practitioners should take users’ task requirements into consideration; by doing so, users’ expectation confirmation can be improved, which may further contribute to their perceived usefulness of and satisfaction of cloud-based bookstores. Most importantly of all, users will be more willing to continually use cloud-based bookstores.

## 6.2. Implications

The results provide guidance for practitioners to design more effective and more popular cloud-based bookstores for their customers. Specifically, confirmation variables play a central role in



this integrated model. Since users' expectations during continuous use may be changed according to their experience and task environment, it is predictable that confirmation variables may reconcile this variation and improve the stability of the prediction model.

The findings reveal important implications for educators and cloud-store management. For example, tasks are user actions causing system outcomes [1]. The specific tasks may closely affect value-laden tasks and affect user decision-making and continuous behaviors [1]. In this study, the significance of studying specific tasks (i.e., finding and organizing teaching materials) results from the fact that users focus more on the task at hand (e.g., tasks involving short-term and concrete goals to develop innovative pedagogy and new teaching materials) in order to enhance both the students' learning performance and comprehension.

Teachers have been increasingly effective at developing new teaching materials because of suitable site navigation, simple-to-find materials, and time-savings [4]. Therefore, the value-laden tasks (develop innovation pedagogy and generate new teaching materials) appear to be affected by a set of specific tasks (reading support, clear objectives, time-efficiency, and user interface design) that affect the cloud-based bookstore system's ability to accomplish teachers' desired tasks [64], resulting in a continuous intention to use cloud-based bookstores. The fit between characteristics of the task and the technology utilized appears to be key to work performance. A technology would be used well if the functions of the e-books can support teachers' needs to collect diverse resources and redesign teaching activities.

For cloud-based bookstore managers and administrators, this knowledge helps them to grasp the needs of individuals and to adjust the platform's services in a timely manner, so as to improve the degree of compatibility between individuals' tasks and cloud-based bookstore services (note: technology) and to help the cloud-based bookstore's long-term evolution. As administrative managers attempt to develop effective cloud-based bookstores, they are asked to distinguish from the system functions, individual use context, and enhanced investment of those tasks that offer an adequate fit with the continuous use of cloud-based bookstore. The technology would only be used if the system functions provide corresponding support (fit) to the tasks/activities of the individuals [65]. Managers would benefit by controlling cost and nurturing individuals to continuously use e-books and thus improve personal scholastic performance.

A well-designed cloud-based bookstore that delivers high performance comprises a variety of platform features, such as a reading support mechanism, a rich and helpful knowledge base for individuals' task requirement, a user-friendly interface, and a prompt feedback channel. This would greatly improve a user's perception of the quality and facility of a cloud-based bookstore to better explore and exploit reading experiences. One particularly interesting finding is that the present performance of cloud-based bookstore design may not satisfy individuals, since its design concentrates primarily on a general system function perspective, overlooking a fit with the specific tasks of individuals. This study provides a significant contribution available for practitioners to improve cloud-based bookstore design.

Our results suggest that any investment in improving the fit degree that forms the correspondence between teachers' task requirements and cloud-based bookstores, and teachers' current context and cloud-based bookstores should favorably impact teachers' usage awareness and lead to enhanced willingness to use. The results show positive and significant relations between the examined fit between technology and task, users' expectations, and behavioral intentions [64].

In addition, although the individual use context-technology fit does not significantly directly affect perceived usefulness and satisfaction, it can still indirectly change teachers' continuous intention to use cloud-based bookstores through the transformation of their confirmation variable. Teachers' task requirements often change with the educational policies exacted at different times; furthermore, each teacher's needs for the context of a requisite teaching task varies. While such a context of teaching tasks changes due to external forces (such as education policy), teachers could use the cloud-based bookstores' services to maintain a stabilizing quality in the performance of their teaching tasks.

In this study, we proposed a specific TTF model for cloud-based bookstores and described evidence of the success factors of the cloud-based bookstores, which are dependent on the extent to which it fits the task and the use context of individuals. In order to better understand the personal continuous behavior function, we integrated ECM into the cloud-based bookstore environment. This study contributes by applying simple TTF and ECM theory to a deconstruction of the TTF into ideal TTF and individual use context–technology fit. These are significant indices of users' expectation confirmation, perceived usefulness, and satisfaction, which lead to continuous intention to use the cloud-based bookstore. In addition, this study found that the individual use context–technology fit is not at present a significant effect in both constructs of perceived usefulness and satisfaction; rather, it provided a different insight into advancing exploration of the reasons.

### 6.3. Limitations

The findings of our study may be helpful toward achieving an understanding of how to motivate users to continually use cloud-based bookstores. However, our study has several inherent limitations. First, our sample was collected by snowball sampling and only in Taiwan, which may limit the generalizability of our findings. Second, we adopted a cross-sectional research design, which may not be able to capture the change of respondents' perceptions of studies constructs over time. Third, the study did not measure for IT anxiety, self-efficacy, and the participant psychological status while performing the task.

## 7. Conclusion

The purpose of our study was to study users' continuous use of cloud-based bookstores based upon a deconstructed task–technology fit perspective. The results demonstrate that an ideal task–technology fit and individual use context–technology fit are important antecedents of the confirmation of users' expectation toward cloud-based bookstores. In addition, ideal task–technology fit and expectation confirmation are critical factors of users' perceived usefulness of and satisfaction with cloud-based bookstores. Perceived usefulness predicts users' satisfaction of cloud-based bookstores. Finally, users' perceived usefulness of and satisfaction of cloud-based bookstores are the main motivations as to why users are willing to continue using cloud-based bookstores. The results also demonstrate that our proposed model can explain a sufficient amount of variance (71.8%) of continuous intention to use cloud-based bookstores.

**Author Contributions:** M.-C.H.: Conceptualization and Review and editing; P.C.T.: Data curation and Review and editing; K.-M.K.: Methodology, Data curation and Formal analysis; M.-L.C.: Project administration, Formal analysis, and Review and editing. All authors have read and agreed to the published version of the manuscript.

**Funding:** This work was supported by the Ministry of Science and Technology [Grant no. NSC102-2410-H-343-008], Taiwan, Nanhua University, Taiwan.

**Acknowledgments:** We wish to thank peer reviewers for their contributions to this article.

**Conflicts of Interest:** All of the authors declare that they have no conflict of interest.

**Ethics Statements:** All subjects gave their informed consent for inclusion before they participated in the study. The study was conducted in accordance with the Declaration of Helsinki.

## References

1. Lee, S. An integrated adoption model for e-books in a mobile environment: Evidence from South Korea. *Telemat. Inform.* **2013**, *30*, 165–176. [[CrossRef](#)]
2. Hua, G.; Cheng, T.C.E.; Wang, S. Electronic books: To "E" or not to "E"? A strategic analysis of distribution channel choices of publishers. *Int. J. Prod. Econ.* **2011**, *129*, 338–346. [[CrossRef](#)]
3. Statista. Digital Media Market Report. Retrieved 11 April 2018. Available online: <https://www.statista.com/outlook/213/100/ebooks/worldwide#> (accessed on 15 September 2020).

4. D'ambra, J.; Wilson-Concepción, S.; Akter, S. Application of the task-technology fit model to structure and evaluate the adoption of E-books by Academics. *J. Am. Soc. Inf. Sci. Technol.* **2012**, *6*, 48–64. [[CrossRef](#)]
5. Aldunate, R.; Nussbaum, M. Teacher adoption of technology. *Comput. Hum. Behav.* **2013**, *29*, 519–524. [[CrossRef](#)]
6. Mulholland, E.; Bates, J. Use and Perceptions of E-books by Academic Staff in Further Education. *J. Acad. Librariansh.* **2014**, *40*, 492–499. [[CrossRef](#)]
7. Maduku, D.K. Understanding E-Book Continuance Intention: Empirical Evidence from E-Book Users in a Developing Country. *Cyberpsychol. Behav. Soc. Netw.* **2016**, *20*, 30–36. [[CrossRef](#)] [[PubMed](#)]
8. Mafunda, B.; Bere, A.; Swart, J. Establishing Determinants of Electronic Books Utilisation: An Integration of Two Human Computer Interaction Adoption Frameworks. In Proceedings of the the Human-Computer Interaction, Novel User Experiences, Toronto, ON, Canada, 17–22 July 2016.
9. Sehn, T.C.M.; Fragoso, S. The synergy between eBooks and printed books in Brazil. *Online Inf. Rev.* **2015**, *39*, 401–415. [[CrossRef](#)]
10. Cheng, Y.M. Why do users intend to continue using the digital library? An integrated perspective. *Aslib J. Inf. Manag.* **2014**, *66*, 640–662. [[CrossRef](#)]
11. Hsiao, K.L.; Chen, C.-C. Value-based adoption of e-book subscription services: The roles of environmental concerns and reading habits. *Telemat. Inform.* **2017**, *34*, 434–448. [[CrossRef](#)]
12. Wang, L.; von Laszewski, G.; Younge, A.; He, X.; Kunze, M.; Tao, J.; Fu, C. Cloud Computing: A Perspective Study. *New Gener. Comput.* **2010**, *28*, 137–146. [[CrossRef](#)]
13. Lin, A.; Chen, N.-C. Cloud computing as an innovation: Perception, attitude, and adoption. *Int. J. Inf. Manag.* **2012**, *32*, 533–540. [[CrossRef](#)]
14. Hayes, B. Cloud computing. *Commun. ACM* **2008**, *51*, 9–11. [[CrossRef](#)]
15. Ercan, T. Effective use of cloud computing in educational institutions. *Procedia Soc. Behav. Sci.* **2010**, *2*, 938–942. [[CrossRef](#)]
16. Dishaw, M.T.; Strong, D.M. Extending the technology acceptance model with task-technology fit constructs. *Inform. Manag.* **1999**, *36*, 9–21. [[CrossRef](#)]
17. Saprikis, V.; Markos, A.; Zarpou, T.; Vlachopoulou, M. Mobile shopping consumers' behavior: An exploratory study and review. *J. Theor. Appl. Electron. Commer. Res.* **2018**, *13*, 71–90. [[CrossRef](#)]
18. Davis, F.D.; Bagozzi, R.P.; Warshaw, P.R. User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Manag. Sci.* **1989**, *35*, 982–1003. [[CrossRef](#)]
19. Goodhue, D.L. Development and measurement validity of a task-technology fit instrument for user evaluations of information systems. *Decis. Sci.* **1998**, *29*, 105–138. [[CrossRef](#)]
20. Lu, H.-P.; Yang, Y.-W. Toward an understanding of the behavioral intention to use a social networking site: An extension of task-technology fit to social-technology fit. *Comput. Hum. Behav.* **2014**, *34*, 323–332. [[CrossRef](#)]
21. Oliver, R.L. A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions. *J. Mark. Res.* **1980**, *17*, 460–469. [[CrossRef](#)]
22. Bhattacharjee, A. Understanding information systems continuance: An expectation-confirmation model. *MIS Q.* **2001**, *25*, 351–370. [[CrossRef](#)]
23. Hsieh, T.C.; Chen, S.L.; Hung, M.C. Longitudinal test of ePortfolio continuous use: An empirical study on the change of students' beliefs. *Behav. Inf. Technol.* **2015**, *34*, 838–853. [[CrossRef](#)]
24. Hung, M.C.; Chang, I.C.; Hwang, H.G. Exploring academic teachers' continuance toward the web-based learning system: The role of causal attributions. *Comput. Educ.* **2011**, *57*, 1530–1543. [[CrossRef](#)]
25. Soliman, W.; Tuunainen, V.K. Understanding continued use of crowdsourcing systems: An interpretive study. *J. Theor. Appl. Electron. Commer. Res.* **2015**, *10*, 1–18. [[CrossRef](#)]
26. Yoo, S.J.; Han, S.H.; Huang, W. The roles of intrinsic motivators and extrinsic motivators in promoting e-learning in the workplace: A case from South Korea. *Comput. Hum. Behav.* **2012**, *28*, 942–950. [[CrossRef](#)]
27. Chiu, C.M.; Wang, E.T.G. Understanding Web-based learning continuance intention: The role of subjective task value. *Inf. Manag.* **2008**, *45*, 194–201. [[CrossRef](#)]
28. Goodhue, D.L.; Thompson, R.L. Task-Technology Fit and Individual-Performance. *MIS Q.* **1995**, *19*, 213–236. [[CrossRef](#)]
29. Yen, D.C.; Wu, C.S.; Cheng, F.F.; Huang, Y.W. Determinants of users' intention to adopt wireless technology: An empirical study by integrating TTF with TAM. *Comput. Hum. Behav.* **2010**, *26*, 906–915. [[CrossRef](#)]
30. Ziggers, I.; Buckland, B.K. A theory of task/technology fit and group support systems effectiveness. *MIS Q.* **1998**, *22*, 313–334. [[CrossRef](#)]

31. Hackman, J.R. Toward understanding the role of tasks in behavioral research. *Acta Psychol.* **1969**, *31*, 97–128. [[CrossRef](#)]
32. Campbell, D.J. Task complexity: A review and analysis. *Acad. Manag. Rev.* **1988**, *13*, 40–52. [[CrossRef](#)]
33. Drazin, R.; van de Ven, A.H. Alternative forms of fit in contingency theory. *Adm. Sci. Q.* **1985**, *30*, 514–539. [[CrossRef](#)]
34. Venkatraman, N. The concept of fit in strategy research: Toward verbal and statistical correspondence. *Acad. Manag. Rev.* **1989**, *14*, 423–444. [[CrossRef](#)]
35. Nidumolu, S.R. A comparison of the structural contingency and risk-based perspectives on coordination in software-development projects. *J. Manag. Inf. Syst.* **1996**, *13*, 77–113. [[CrossRef](#)]
36. Daft, R.L.; Lengel, R.H. Organizational information requirements, media richness and structural design. *Manag. Sci.* **1986**, *32*, 554–571. [[CrossRef](#)]
37. Siau, K.; Lim, E.P.; Shen, Z. Mobile commerce: Promises, challenges and research agenda. *J. Datab. Manag.* **2001**, *12*, 4–13. [[CrossRef](#)]
38. Mccullough, M. *Digital Ground: Architecture, Pervasive Computing, and Environmental Knowing*; MIT Press: Cambridge, MA, USA, 2004.
39. Gebauer, J.; Shaw, M.J.; Gribbins, M.L. Task-technology fit for mobile information systems. *J. Inf. Technol.* **2010**, *25*, 259–272. [[CrossRef](#)]
40. Dourish, P. *Where the Action Is: The Foundations of Embodied Interaction*; MIT Press: Cambridge, MA, USA, 2004.
41. Gebauer, J.; Ginsburg, M. Exploring the black box of task-technology fit. *Commun. ACM* **2009**, *52*, 130–135. [[CrossRef](#)]
42. Lin, W.S. Perceived fit and satisfaction on web learning performance: IS continuance intention and task-technology fit perspectives. *Int. J. Hum. Comput. Stud.* **2012**, *70*, 498–507. [[CrossRef](#)]
43. Staples, D.S.; Wong, I.; Seddon, P.B. Having expectations of information systems benefits that match received benefits: Does it really matter? *Inf. Manag.* **2002**, *40*, 115–131. [[CrossRef](#)]
44. Parkes, A. The effect of task–individual–technology fit on user attitude and performance: An experimental investigation. *Decis. Support Syst.* **2013**, *54*, 997–1009. [[CrossRef](#)]
45. Larsen, T.J.; Sørenbø, A.M. The role of task-technology fit as users’ motivation to continue information system use. *Comput. Hum. Behav.* **2009**, *25*, 778–784. [[CrossRef](#)]
46. Jarupathirun, S. Exploring the influence of perceptual factors in the success of web-based spatial DSS. *Decis. Support Syst.* **2007**, *43*, 933–951. [[CrossRef](#)]
47. Lin, W.S.; Wang, C.H. Antecedences to continued intentions of adopting e-learning system in blended learning instruction: A contingency framework based on models of information system success and task-technology fit. *Comput. Educ.* **2012**, *58*, 88–99. [[CrossRef](#)]
48. Stone, R.W.; Baker-Eveleth, L. Students’ expectation, confirmation, and continuance intention to use electronic textbooks. *Comput. Hum. Behav.* **2013**, *29*, 984–990. [[CrossRef](#)]
49. Jin, C.H. Adoption of e-book among college students: The perspective of an integrated TAM. *Comput. Hum. Behav.* **2014**, *41*, 471–477. [[CrossRef](#)]
50. Vijay, T.S.; Prashar, S.; Sahay, V. The Influence of Online Shopping Values and Web Atmospheric Cues on E-Loyalty: Mediating Role of E-Satisfaction. *J. Theor. Appl. Electron. Commer. Res.* **2019**, *14*, 1–15.
51. Anderson, R.; Swaminathan, S. Customer Satisfaction and Loyalty in E-Markets: A PLS Path Modeling Approach. *J. Mark. Theory Pract.* **2011**, *19*, 221–234. [[CrossRef](#)]
52. Choi, N. Information systems satisfaction, loyalty and attachment: Conceptual and empirical differentiation. *Behav. Inf. Technol.* **2015**, *34*, 261–272. [[CrossRef](#)]
53. Churchill, G.A., Jr. A Paradigm for Developing Better Measures of Marketing Constructs. *J. Mark. Res.* **1979**, *16*, 64–73. [[CrossRef](#)]
54. Straub, D.W. Validating Instruments in MIS Research. *MIS Q.* **1989**, *13*, 147–169. [[CrossRef](#)]
55. Hair, J.F.; Black, W.C.; Babin, B.J.; Anderson, R.E. *Multivariate Data Analysis: Pearson New International Edition*, 7th ed.; Pearson Education Limited: Essex, UK, 2014.
56. R Core Team. *R: A Language and Environment for Statistical Computing*; R Foundation for Statistical Computing: Vienna, Austria, 2013.
57. Rosseel, Y. lavaan: An R Package for Structural Equation Modeling. *J. Stat. Softw.* **2012**, *48*, 1–36. [[CrossRef](#)]
58. Fornell, C.; Larcker, D.F. Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *J. Mark. Res.* **1981**, *18*, 39–50. [[CrossRef](#)]

59. Kline, R.B. *Principles and Practice of Structural Equation Modeling*, 3rd ed.; The Guilford Press: New York, NY, USA, 2011.
60. Cohen, J. *Statistical Power Analysis for the Behavioral Sciences*; Academic Press: New York, NY, USA, 2013.
61. Zhang, X.; Savalei, V. Examining the effect of missing data on RMSEA and CFI under normal theory full-information maximum likelihood. *Struct. Equ. Model. Multidiscip. J.* **2020**, *27*, 219–239. [[CrossRef](#)]
62. Ye, J.Q. eBook Business Model. Retrieved 8 April 2018. Available online: <http://edm.itri.org.tw/enews/epaper/9912/d01.htm> (accessed on 12 September 2020).
63. Goodhue, D.L. Understanding user evaluations of information systems. *Manag. Sci.* **1995**, *41*, 1827–1844. [[CrossRef](#)]
64. Aljukhadar, M.; Senecal, S.; Nantel, J. Is more always better? Investigating the task-technology fit theory in an online user context. *Inf. Manag.* **2014**, *51*, 391–397. [[CrossRef](#)]
65. Omotayo, F.O.; Haliru, A. Perception of task-technology fit of digital library among undergraduates in selected universities in Nigeria. *J. Acad. Librariansh.* **2020**, *46*, 102097. [[CrossRef](#)]

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