

The Surprising Foil to Online Education: Why Students Won't Give Up Paper Textbooks

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Purpose of the Study. Digital resources are an integral part of online education. Although advocates of digitized information believe that millennial students will embrace the paperless classroom, this is not proving to be the case. This research addresses gaps in our understanding of student resistance to giving up paper-based learning resources by examining attributes of the paper textbook that are perceived as necessary for knowledge transfer and that are not present in digital information modalities.

Method/Design and Sample. Phase 1 used focus groups to identify the content of items that were incorporated into a quantitative instrument in phase 2. A sample of 386 undergraduate students taking marketing courses at a Canadian urban university completed the online survey. We then used Confirmatory Factor Analysis to test the factors linked to resistance to discontinuing paper textbooks.

Results. Students' resistance to giving up the paper textbook positively relates to the way in which the paper textbook facilitate learning and study processes, is permanent and under the students' control during and after the course is finished. The fluid and dynamic nature of digital content compared to the more consistent and predictable nature of information on paper appears to be a barrier to the acquisition of knowledge for the purpose of assessment.

Value to Marketing Educators. This study provides insights into the underlying reasons for student resistance to discontinuing paper-based learning resources, and benefits marketing educators and developers of educational content by outlining ways to improve student learning success.

Keywords: Study Processes, Permanence, Resistance, Knowledge Transfer, Electronic Textbook

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Digital resources are an integral part of online marketing education either as a complement to in-class instruction or as a substitute. These resources may include primary course materials (e.g. course outline, PowerPoint slides), supplemental materials, or an electronic textbook (e-textbook). Studies on the use of these online materials highlight their ability to improve the interaction between student and instructor, and the dynamic and fluid nature of the content (Rogerson-Revell, 2008).

Although advocates of digitized information believe that millennial students would embrace the paperless in-person or online classroom, this is not proving to be the case. Amazon and Apple targeted the lucrative educational textbook market, running pilot projects with selected universities using their devices as repositories for course content (Damast, 2010). Overall, the trials generated mixed results (Kennedy, Judd, Churchward, Gray, & Krause, 2008; Prenksy, 2001) with most students reiterating their preference for paper textbooks.

Inquiry into e-textbook use tends to focus on the reasons for their adoption or non-adoption (Camacho & Spackman, 2011; Gerlich, Browning, &

Westermann, 2010; Pattuelli & Rabina, 2010) and often begins with the assumption that the innovation is an improvement over previous technology. Undergraduate students are generally assumed to be skilled in using digital resources for acquiring the knowledge necessary to achieve success in tests and exams. However, researchers often overlook students' personal beliefs about how they learn and study most effectively. Their resistance to replacing paper textbooks with e-textbooks together with an ongoing desire to be able to print electronic content suggests that paper-based information serves students' needs better in the educational context. We address a gap in the online educational literature by identifying and testing the key factors that lead to students' resistance to discontinuing paper textbooks.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

One of the major benefits of online education is improved instructor-student and student-student collaboration (Harasim, 2000). Larreamendy-Joerns and Leinhardt (2006) caution that increased interaction

among actors does not guarantee that the information necessary for knowledge building is acquired. They suggest that the quality of the online course content plays an equally important role in the development of knowledge. Course design and student engagement in the course content have also been found to significantly impact student learning (Garrison & Cleveland-Innes, 2010; Hollenbeck, Mason & Song, 2008).

Digital content is often described as dynamic, fluid and interactive (Rogerson-Revell, 2008). The presumed benefit to students is the availability of content in multiple formats that is constantly being updated, and is ever changing. Thus, it appears to provide students with more options than paper for achieving their learning goals. However, their reluctance to giving up the paper textbook suggests that a gap exists in our understanding of its role in learning and studying when a course is delivered in part, or completely online. This study investigates the use of paper textbooks among students who have used e-textbooks and digital resources but who have not given up paper-based content when they have the option to do so. We explore students' perception through the lens of innovation adoption theory.

Rogers (2003) proposed five characteristics of an innovation that affect the rate of its adoption, including its relative advantage compared to the existing version, compatibility with the user's lifestyle, the level of complexity of the innovation, the ease of testing the innovation before adoption, and the observability of the improvements offered by the innovation. In exploring students' reactions to e-textbooks when compared with the paper option, we focus on their perceptions of relative advantage and the compatibility of the paper textbook when an e-textbook is also available. All students in this study had experience with both e-textbooks and paper textbooks. Since three of the five characteristics of an innovation (complexity, trialability and observability) assume no prior experience, we considered that these factors would not be influential in the decision to resist discontinuing paper textbooks.

We tested the remaining two innovation characteristics, relative advantage and compatibility, using the Theory of Reasoned Action (TRA). Fishbein and Ajzen (1975) developed TRA to explain Behavioral Intention based on two antecedents (Attitude Toward the Behavior and Subjective Norm). A differentiating feature of this study is the way in which the question of Behavioral Intention is asked. Most researchers ask for responses about a positive intention (e.g. intention to adopt) (Tourangeau, Rips & Rasinski, 2000). Questioning intention in this way leads the respondent to react as if adoption were the only acceptable outcome. Our study uses question wording that allows students to perceive resistance to giving up the paper textbook as an acceptable outcome. While conceptualizing the Intention construct in this way is unusual, Trafimow and Finlay (2002) demonstrated that the way in which the intention is framed does affect research findings. It has also been used to predict attitudes toward not accepting health

diagnoses among young adults (Van Voorhees, Fogel, Houston, Cooper, Wang & Ford, 2005). This negative framing gives students psychological permission to explain why they continue to use paper textbooks, regardless of whether they also adopt e-textbooks.

Facilitators and Deterrents to Study Processes

In examining the relative advantage of the paper textbook, we explore its functionality when used by students during their study process. Researchers have explored the ability of paper documents to facilitate work processes (Harper & Sellen, 1995), to transfer knowledge between people (Preda, 2002), and to assist in the modification of attitudes and the achievement of common behavior (Freeman, 2006). Paper documents have also been shown to support memory (Malone, 1983) in the same way as consumers arrange objects to remind them to take action, or as a way of locating the object at some point in the future (Case, 1991).

In the academic context, many students may prefer paper textbooks because they think they are easier to highlight (McKiel, 2008). Further, Berg, Hoffmann and Dawson (2010) found that students use the tangibility of the paper textbook as an information-seeking aid, as it is easier to identify their page location within the paper textbook compared to the e-textbook.

Another key component of the study process is reading content to acquire knowledge. Research shows that comprehension is higher when reading from paper than online (Smart, Whiting & DeTienne, 2001). Spyridakis, Wei, Barrick, Cuddihy, and Maust (2005) demonstrate that paper documentation is preferred for more complex tasks. People appear to interact, and organize paper documents differently than online documents. Hernon, Hopper, Leach, Saunders and Zhang (2007) found that online reading for students is disjointed. Students indicate that they have to do too much scrolling and shifting of displays. They report finding that the search feature delivers too much content and requires item-by-item evaluation to determine which information is relevant for a given context. Jeong (2012) reports that student outcomes on computer-based tests are lower than on paper-based tests. This is in part due to technical problems that contribute to reduced readability, document navigation difficulties and increased eye fatigue. The research related to processes that students typically use in studying for tests, examinations and other forms of assessment leads to the following hypothesis:

H₁: The ability of paper textbooks to facilitate students' learning and study processes is positively related to a student's intention to resist giving up paper textbooks.

Permanence and Accessibility

Permanence has been a traditional document characteristic. In fact, the importance of long term preservation of documents can be traced to the earliest civilizations. Recorded information that is

considered permanent has three characteristics: (1) it remains usable, (2) it is available for some period of time, and (3) it is under the control of the holder of the document (Savic, 1995). Students have expressed concerns about the permanence of electronic content because course-based e-textbooks become inaccessible to them once the course has finished (Pattueli & Rabina, 2010). Gerrard, Cunningham and Devlin (2006) found that inaccessibility to software or hardware is one of the reasons given by non-adopters for not using an electronic product or service. Even when the lack of hardware is not an issue, the data's availability (e.g. having access to the Internet) when users need it is one of the key measures in evaluating the success of information systems (Wang, Reddy, & Kon, 1995). The requirement for permanence by students leads to the following hypothesis:

H₂: The relative permanence of paper textbooks over e-textbooks is positively related to students' intention to resist giving up paper textbooks.

Need for Backup

Jarvelainen and Puhakainen (2004) identify two risks associated with electronic systems: System Dependant Risks, which include technological problems and unclear or non-existent legal norms; and Transaction Specific Risks, which involve unequal asymmetric distribution of information between the transaction partners. The vulnerability of electronic records in organizations has been discussed extensively (Arp & Dickman, 2002). When a system is perceived as vulnerable, there is a need for back-up to keep the overall system functioning, and to protect against failure. In the information design literature, redundancy has been shown to improve communication (Mollerup, 2005). Students collect and store information throughout a course in the form of notes, handouts, outlines, PowerPoint slides, and readings, any or all of which are distributed electronically. They also produce assignments and projects based on data they have collected, to which they add their own analysis and interpretation. A system failure, in the form of lost electronic information, is viewed as catastrophic to students, because they are ultimately responsible for their own data collection and retention. Given the serious consequences associated with losing course content or assignment material, we propose the following hypothesis:

H₃: The perception of information on paper as a backup to electronic textbooks is positively related to students' intention to resist giving up paper textbooks.

Subjective Norm

Subjective Norm has been defined as the impact of the opinions of important others, such as family and friends, on the individual to perform or not to perform a particular behavior (Ajzen, 1985). The influence of friends and family on young adults has been

demonstrated for a variety of products and situations (Nordrehaug Astrom & Rise, 2007; Oostveen, Knibbe, & DeVries, 1996). Dean and Jolly (2012) demonstrated the influence of friends and classmates on college students' participation in learning activities. Resistance to discontinuing paper textbooks and to printing electronic content on paper may be behaviors that are subject to peer influence. The role of their peers on the attitudes, beliefs and behaviors of these students leads to the following hypothesis:

H₄: The attitudes of their friends toward paper and e-textbooks are positively related to students' intention to resist discontinuing paper textbooks.

In summary, this research focuses on exploring student perceptions of the function and meaning of the paper textbook versus the e-textbook, by identifying and testing the factors that lead to students' resistance to discontinuing paper textbooks.

METHOD

This two-phased study began with qualitative, followed by quantitative research. Phase 1 ensured that appropriate measures were selected to represent the theoretical concepts being investigated. Phase 2 then tested the proposed factors using Exploratory Factor Analysis (EFA), followed by Confirmatory Factor Analysis (CFA) and running the structural model.

Phase 1 – Qualitative Phase

We invited 1500 undergraduate students in a large, urban university enrolled in marketing courses that used e-textbooks or digital resources in the spring of 2011, to participate in a short online questionnaire that included open-ended questions about their reasons for preferring to work with information in either print or electronic format. We used the data collected to understand individual reactions to paper and e-textbooks, and to qualify respondents for participation in one of three 'large format' focus group sessions, each lasting approximately 1.5 hours. To qualify for the focus group, students had to have experience using an e-textbook or digital resource that replaced or supplemented the paper textbook in one of their courses. We offered students one bonus mark in their marketing course as an incentive for completing the questionnaire. A total of 311 students participated in the online survey, and 190 of these students subsequently attended a focus group session. In the focus group session, we asked questions about the ways in which they access and use digital and paper resources for learning and study purposes, as well as their perceptions of the relative advantages and disadvantages of paper-based resources compared with e-textbooks and digital online resources. We used content analysis to understand the open-ended questions from the online survey and the focus group transcripts. The format of open-ended questions allows for multiple answers to be given by one respondent. Since it is possible that any comment

could contain more than one category, we considered the unit of analysis to be an idea (Henri, 1992). If a comment contained two ideas, we counted it as two ideas. We used the results of the content analysis to develop the items for the questionnaire used in the quantitative phase.

Phase 2 – Quantitative Phase

For the quantitative phase, we sent an email to a different group of 1500 undergraduate students enrolled in marketing courses that used e-books with an invitation to participate in an online survey. All students were screened for experience using an e-textbook or digital resource that replaced or supplemented the paper textbook in one of their courses.

The online questionnaire contained 72 questions items in three sections, of which 25 questions related specifically to the objectives of the study reported in this paper. The first section provided definitions of three digital modalities addressed in this study: paper textbook, e-textbook and digital content platform. Section 2 presented a series of attitude questions using a seven-point Likert scale (strongly disagree to strongly agree) to solicit perceptions about functional qualities of paper textbooks on their own (e.g. items reflecting *facilitating study work processes*,

permanence, back-up to electronic and digital content platforms), and compared to e-textbooks and digital learning platforms, perceptions of friends' reactions to the giving up paper textbooks, and behavioral intentions. Section 3 collected information about self-perceptions of Internet skills, first age of using the Internet, equipment used and Internet connection availability, along with demographic and course-related information.

Of the 1500 students invited to participate, 388 completed the survey for a completion rate of 26%. We used SPSS 19 and AMOS 19 to analyze the quantitative data. Structural equation modeling was used to analyze the factors.

FINDINGS

Phase 1 - Qualitative

The qualitative results provided rich insights into the use of paper and electronic study resources by undergraduate marketing students. What we report in this paper are the results related directly to the construction of the quantitative instrument. A total of 540 ideas were coded and summarized into six categories plus other and are listed in Table 1.

Table 1 – Relative Advantages of Paper Summary Categories

Summary Categories	N=540 %
Highlight material/add extra notes/my notes	30.7
Access to content when without computer/internet/course finished	13.9
Easily distracted/lose focus when using electronic content/better concentration when content on paper	10.9
Easier on the eyes/eyes get tired/eyes hurt	10.6
Easier to read off paper/read for a long time	8.9
Easier to navigate information on paper	5.4
Other (individual categories less than 2%)	19.6

. Given permission to focus on the relative advantage of the paper textbook when considering the e-textbook, students concluded that the paper textbook remains the superior technology for studying and achieving academic success. The first benefit identified was fewer distractions. The paper textbook helps them to avoid the distractions of being on the computer or the Internet, the temptations associated with checking e-mail, Facebook, or surfing the Web for unrelated information. The second benefit had to do with extending study capacity. Students believe they learn more using the paper textbook versus the e-textbook in part because they are able to study longer with less physical and mental fatigue.

Some of the disadvantages highlighted in the focus groups relate to the features of an e-textbook when compared to the paper option. While aware of highlighting and sticky note features in e-textbooks, students comment on the lack of standardization among e-textbooks. Further, these technical features

are device-dependent and require them to learn new software in addition to acquiring the content. Moreover, the electronic sticky notes, in particular, do not provide the same memory assistance as the paper sticky note. Students feel that they have to remember to purposely search for the electronic sticky note, in contrast to the easily observable paper sticky note.

Another concern with e-textbooks for students is access to the content. With a paper textbook, students feel they have more choices for when and where they can access (e.g. when they are without access to a computer, software or the internet), and the length of time they are able to access the content, compared to an e-textbook that expires when a course ends.

Many of the issues and concerns raised in the focus group discussions are consistent with the literature and confirm the importance of these items in understanding why students are reluctant to give up paper textbooks and replace them with e-textbooks.

Phase 2 - Quantitative

The average age of the respondents was 20.6 years. Males accounted for 43% of the sample and females, 57%. The sample was roughly split between lower and upper level classes (54% in first and second year, and 46% in third and fourth year). Along with pursuing their degrees, 55% of the respondents work part-time and 4% work part full-time. One-in-four (42%) do not work. The average age for first Internet access was 14 years. Almost all students (95%) have high speed (Cable or DSL Broadband) Internet access. When asked about their skill level in using the internet, 78% report that they rate their level as expert or very skilled, while 21% report that they rate themselves as fairly skilled with less than 2% rating themselves as not very skilled.

The purpose of the quantitative phase of the research was to identify and test the factors that lead to students' resistance to discontinuing paper textbooks. We screened the data for skewness,

kurtosis, missing values, and outliers, and found the data to be normally distributed (Kline, 2005).

We then conducted an EFA using Maximum Likelihood with Oblique rotation. After removing indicators with weak factor loadings (0.6 or less) or cross-loadings on multiple factors (Tabachnick & Fidell, 2001), the EFA produced four factors that explain 69.04% of the variance using eignenvalue greater than one criteria. The overall scale's coefficient alpha is 0.82 and each of the subscales is 0.75 or greater, well within acceptable ranges (Nunnally, 1967). The final EFA results and the coefficient alphas are listed in Table 2. The dependent variable, Intention to Resist Giving Up Paper Textbooks was measured with two indicators (13a – I am not going to stop buying paper textbooks for my course and 13b – I am not going to stop printing pages from e-textbooks that I use for my courses) which, while not ideal, is acceptable (Kline, 2005).

Table 2 – Exploratory Factor Analysis Results

	Factor Loadings			
	1	2	3	4
Back-up $\alpha = 0.83$				
It is important to me to have a back-up to my e-textbook or digital learning platform printed on paper in case I can't use by computer (Q6a)			.622	
It is important to me to have a back-up to my e-textbook or digital learning platform printed on paper in case I can't remember or lost my password (Q6c)			.838	
It is important to me to have a back-up to my e-textbook or digital learning platform printed on paper in I accidentally delete the electronic version (Q6d)			.906	
Permanence $\alpha = 0.76$	1	2	3	4
I can access and read paper textbooks at a future time regardless of the changes in computer software or hardware (Q6h)				.709
I can access and read paper textbooks after the course has ended (Q6i)				.808
Unlike e-textbooks and digital content platforms, I make a decision about how long I keep paper textbooks for future reference (Q6j)				.632
Facilitates Study Processes $\alpha = 0.88$	1	2	3	4
Paper textbooks are the best format for extended reading and studying (Q9a)		.728		
Paper textbooks are the best format when browsing for information (Q9h)		.571		
It bothers my eyes to read for long periods of time from e-textbooks or digital content platforms (Q11a)		.719		
I learn more when studying from paper textbooks (Q11b)		.897		
I am better able to judge the quality of the content in paper textbooks (Q11c)		.683		
Everyone has different ways of learning and studying. Paper textbooks allow me to learn and study in the way I want (Q11h)		.841		
Subjective Norm $\alpha = 0.92$	1	2	3	4
I would only be interested in using e-textbooks or digital content platforms is my friends were using them (Q12f)	1.014			
I only use paper textbooks because that is what my friends do (Q12g)	.822			

With the EFA complete, we used AMOS (version 19) to conduct CFA and run the structural model. A two-step approach to modeling was used (Kline 2005), where we tested the measurement model and then the structural model. Each indicator loaded on one construct and the constructs were allowed to covary. All the indicators were proposed and tested as reflective of the constructs. The standardized factor loadings for all indicators are above 0.5 except for one indicator (I am not going to stop buying paper textbooks for my course). Given the importance of this indicator to the main research question and that it is

only slightly below (0.45) the accepted range we made the decision to keep this indicator in the model. Composite Reliability (CR) and the Average Variance Extracted (AVE), used to assess reliability of the measurement model (Chin, 1998; Fornell & Larcker, 1981) were found to be acceptable. The factor loadings, CR and AVE are listed in Table 3. The resulting goodness of fit indices for the measurement model are within acceptable ranges: Normed Chi Squared 3.05, NFI 0.896, CFI 0.927 and RMSEA 0.073 (Hu and Bentler, 1999; Kline, 2005).

Table 3 – Confirmatory Factor Analysis Results

Facilitates Study Processes		Factor Loadings	Factor Loadings Squared	Error Variance
Paper textbooks are the best format for extended reading and studying (Q9a)		0.74	0.55	0.45
Paper textbooks are the best format when browsing for information (Q9h)		0.52	0.27	0.73
It bothers my eyes to read for long periods of time from e-textbooks or digital content platforms (Q11a)		0.7	0.49	0.51
I learn more when studying from paper textbooks (Q11b)		0.88	0.77	0.23
I am better able to judge the quality of the content in paper textbooks (Q11c)		0.7	0.49	0.51
Everyone has different ways of learning and studying. Paper textbooks allow me to learn and study in the way I want (Q11h)		0.87	0.76	0.24
		4.41	3.33	2.6707
Composite Reliability	0.879			
Variance Extracted	0.555			
Permanence				
I can access and read paper textbooks at a future time regardless of the changes in computer software or hardware (Q6h)		0.7	0.49	0.51
I can access and read paper textbooks after the course has ended (Q6i)		0.8	0.64	0.36
Unlike e-textbooks and digital content platforms, I make a decision about how long I keep paper textbooks for future reference (Q6j)		0.65	0.42	0.58
		2.15	1.55	1.4475
Composite Reliability	0.762			
Variance Extracted	0.518			

Table 3 – Confirmatory Factor Analysis Results (continued)

Back-up		Factor Loadings	Factor Loadings Squared	Error Variance
It is important to me to have a back-up to my e-textbook or digital learning platform printed on paper in case I can't use by computer (Q6a)		0.67	0.45	0.55
It is important to me to have a back-up to my e-textbook or digital learning platform printed on paper in case I can't remember or lost my password (Q6c)		0.86	0.74	0.26
It is important to me to have a back-up to my e-textbook or digital learning platform printed on paper in I accidently delete the electronic version (Q6d)		0.85	0.72	0.28
		2.38	1.91	1.089
Composite Reliability	0.839			
Variance Extracted	0.637			
Subjective Norm				
I would only be interested in using e-textbooks or digital content platforms is my friends were using them (Q12f)		0.88	0.77	0.23
I only use paper textbooks because that is what my friends do (Q12g)		0.96	0.92	0.08
		1.84	1.70	0.304
Composite Reliability	0.918			
Variance Extracted	0.848			
Intention				
I am not going to stop buying paper textbooks for my course (13a)		0.8	0.64	0.36
I am not going to stop printing pages from e-textbooks that I use for my courses (13b)		0.45	0.20	0.80
		1.25	0.84	1.1575
Composite Reliability	0.574			
Variance Extracted	0.421			

We then ran the structural model. The final model is illustrated in Figure 1. The fit statistics for the structural model are within acceptable range: Normed Chi-square 2.284, NFI 0.927, CFI 0.957, RMSEA 0.058. Based on the indices, we concluded that the data fit the structural model well. We proceeded to evaluate the path coefficients.

The significance of each path is shown in Table 4. The paths from Facilitates Study Processes and from Permanent to Intention are positive and significant. The path from a Back-up to Intention is negative and significant. The path from Subjective Norm is not significant. Of the four hypotheses, two are supported.

Figure 1 - Structural Equation Model for Students' Intention to Resist Giving Up Paper Textbooks

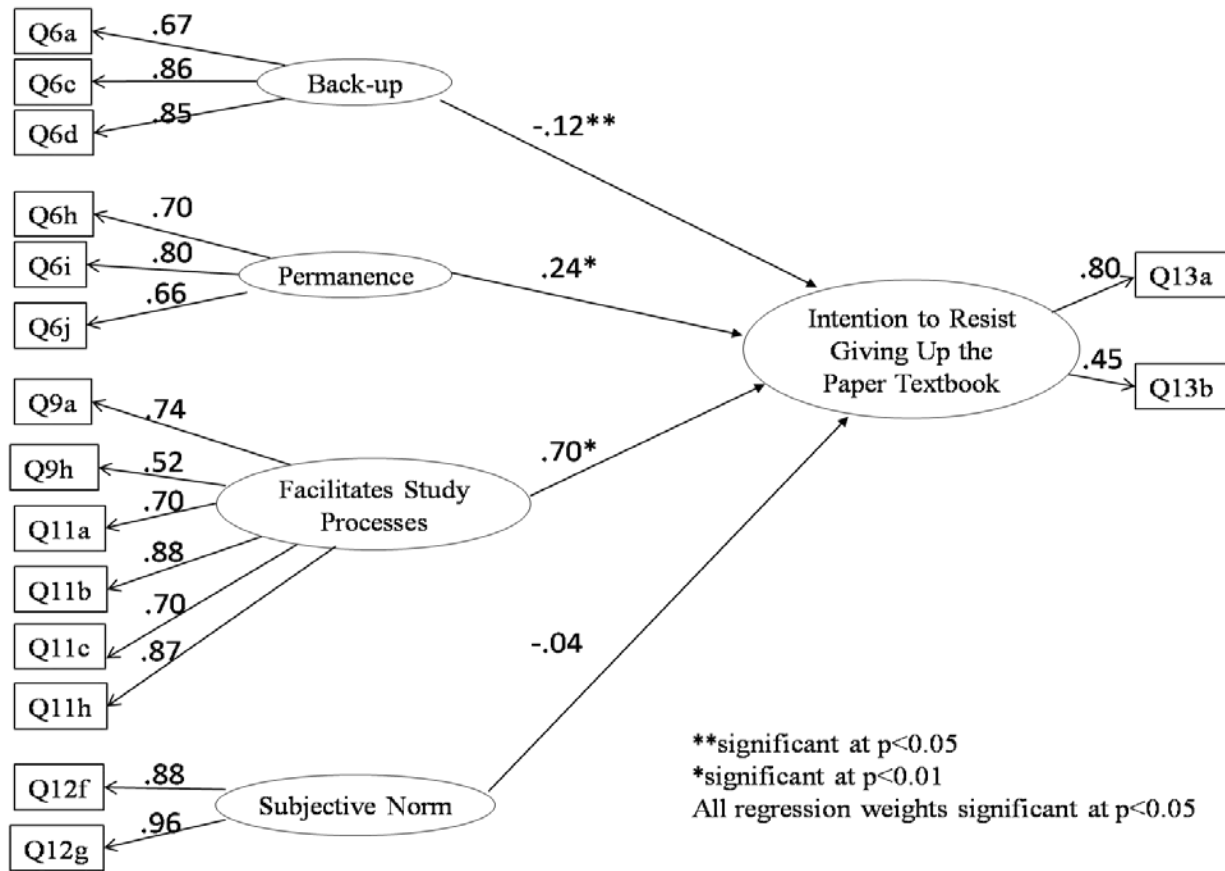


Table 4 – Path Coefficients and Significance of the Hypotheses

Hypothesis		Conclusion	Path Coefficient	Critical Value
H ₁	The ability of paper textbooks facilitate students' learning and study processes is positively related to a student's intention to resist giving up paper textbooks	Supported	.70*	10.5
H ₂	The relative permanence of paper textbooks over e-textbooks is positively related to student intentions to resist giving up paper textbooks	Supported	.23*	3.4
H ₃	The perception of paper textbooks as backup to electronic textbooks is positively related to student intentions to resist giving up paper textbooks	Unsupported	$-.12^{**}$	-2.1
H ₄	The perceptions associated with subjective norms are positively related to a student's intention to resist discontinuing paper textbooks	Unsupported	$-.05$	-0.81

* Significant at $p < 0.01$

** Significant at $p < 0.05$

DISCUSSION

The purpose of this research is to identify the factors that contribute to students' resistance to giving up paper textbooks. In contrast to other studies investigating the use of digital resources that focus on the reasons for adoption of e-books, we framed our project in the context of the relative advantage and compatibility of the paper textbook over the e-textbook for studying and learning. Unlike other studies that have studied students' reaction to e-textbooks, we focused on the use of the paper textbook as part of the students' learning and studying process in which their purpose was to acquire the information for assessment purposes. While using the lens of innovation adoption, we explored this issue with adopters of e-textbooks and digital learning platforms to better understand their resistance to giving up paper textbooks in light of their experience with digital content.

This study demonstrates that two factors underpin students' intention to resist giving up paper textbooks: Facilitates Study Processes and Permanence. The paper textbook is perceived as a critical tool in facilitating students' learning and study processes. The fluid and dynamic nature of digital content compared to the more consistent and predictable nature of information on paper appears to be a barrier to the acquisition of knowledge for the purpose of assessment. Students perceive paper textbooks as the best format for extended reading and studying and for locating information. Students believe that they learn more when studying from paper textbooks. Moreover, paper textbooks allow students to manage content in whatever way they wish to study the material.

Recorded information that is considered permanent has three characteristics (Savic, 1995). Students' reaction to the relative impermanence of electronic content is to continue to resist giving up the paper textbooks. Paper textbooks permit students to have unlimited access to information at any time during a course as well as after the course ends. Moreover, these students have come of age during a time where large organizations increasingly control the students' access to online content. In the case of paper textbooks, content is controlled by the student and not by publishers or IT developers who continuously make changes to computer hardware or software in order to restrict access to the content.

While we expected information on paper as a back-up to e-textbooks to predict resistance to giving up the paper textbook, this did not prove to be the case. We selected items to measure back-up that asked about printing electronic content on paper. Printing electronic content on paper is more likely to occur in the absence of the paper textbook and may not be required if the student has a paper textbook, hence the hypothesis was unsupported. We surmise that printing electronic content on paper is the back-up to e-textbooks. Thus, if the instructor offers only the option of an e-textbook or digital content platform, the

students print electronic content on paper as a fail-safe measure to reduce the risk of catastrophic loss.

This study finds that the opinion of friends is unimportant in the decision to use paper textbooks, e-textbooks or digital learning platforms. We believe that students consider learning and studying to be a personal activity and therefore the decision about which tools to use for learning and studying is unaffected by the opinions of friends.

IMPLICATIONS

This research proposes that resistance to discontinuing paper textbooks is a key signal of the limitations of current electronic tools for learning and studying. This resistance suggests that e-textbooks do not yet provide the benefits required by students. We suggest that the e-textbook requires more development before the resistance can be overcome. However, regardless of the limitations of e-textbooks, in the face of limited financial and effort resources, universities will continue to promote the use of digital content. Consequently, students must develop the learning and study skills if they wish to achieve academic success when using e-textbooks as part of their learning and studying process. Therefore, a need exists for educators and e-textbook developers to develop better tools and strategies for seamlessly integrating the functions and benefits of paper textbooks within e-textbooks. As well, educators must teach students how to effectively use these devices for learning and studying.

We do not believe it is the role of marketing educator to know, or even to teach technology hardware or software. However, we believe that if we are going to mandate the use of digital instead of paper resources, we should be teaching students how to acquire and to analyze the knowledge that arrives in digital form. For example, if URL links to YouTube videos are included in digital marketing curriculum, then teaching critical analysis techniques from film studies may support students' use of this form of non-text based material.

The dynamic, fluid and interactive nature of digital content contrasts strongly with the standardized assessment environment (e.g. test banks or essay style questions with specific answers that are considered correct) that is used to evaluate factual knowledge that the student has acquired (Jonsson & Svingby, 2007). In order to optimize the benefits of digital content and encourage students to make full use of its capabilities, educators may have to rethink their assessment strategies and tools. Reducing the focus on information acquisition, and assigning more weight to analytical, creative, and practical knowledge may weaken students' attachment to paper textbooks. For example, in upper year marketing classes, the use of cases is an opportunity to assess the level of students' marketing theory knowledge as well as developing their understanding of its application to real world situations. Cases, when discussed effectively by

the class, assist the students in developing skills such as persuasive ability.

Students want to study and learn based on their personal strengths and weaknesses. For most, this includes making a decision to resist giving up the paper textbook and planning to print some or all of e-textbooks. For the moment, a choice of paper and e-textbooks should be offered to reflect the diverse learning styles of students and the ways in which they are best able to learn. If only an e-textbook or online platform is selected for a course, then ensuring that printing is permitted allows students to make their own choice. Instructors should be cognizant that not all digital content is easily printed on paper as text. Offering direction to students about how to learn and study from multi-media content is likely to increase their use of it. Otherwise, students may neglect the non-linear and interactive information as a result of the ease of printing the textual information on paper.

University policies on the use of technology in the online or face-to-face classroom serve to inform students about the institutional attitude toward the role of technology. Rules that restrict the use of phones and computers in class are generally put in place because educators believe students are using the devices for social and entertainment purposes rather than supporting learning in the classroom. The rules are generally framed to reflect this belief, and therefore may suggest to the students that the devices are not critical to their learning. Limited bandwidth due to the peak demand during class hours where instructors are unable to access large multi-media or Internet content causes the instructor to fall back on the use of more traditional teaching methods.

Announcements about the technological requirements for participating in an online course communicate to students that having the minimum technical specifications for operating the course website is the only necessary precursor to success. Instead, students who are taking an online course for the first time could be offered the opportunity to complete a self-assessment tool to evaluate their learning and studying preferences. For students with limited knowledge of best practice online learning and studying techniques, we suggest that they be offered remedial instruction on how to learn in a multi-media

environment. Best practices could include information on staying focused, managing their location in fluid content, and how to reduce eye strain and fatigue when reading digital content on-screen. In their current state of development, to make full use of the online environment and digital content, students need specific training on how to leverage these tools to meet their learning goals and support their academic success.

LIMITATIONS OF RESEARCH

There are at least four limitations to this research that may impact the results. We carried out the research in a technologically progressive, urban Canadian university. The results may vary with a change in the level of technological support offered by an institution, or in a different geographic location. The students were self-selected and therefore may not be representative of the perceptions and behaviors of those who did not participate.

Students' resistance to giving up paper textbooks may be linked to the device they use to read the digital content. In this study we did not probe for the specific device, used by the student, to access the digital content. Therefore, additional research to evaluate the devices that have the features, and therefore the potential to reduce students' attachment to paper textbooks for learning and studying may be illuminating.

Further research involving students from other disciplines may prove useful for comparative purposes. The students were all enrolled in marketing courses within a management school. The content from which marketing students learn and study has limited mathematical calculations compared to students enrolled in scientific or mathematical disciplines. Therefore, students who operate in mathematically intense environments may exhibit different responses to paper versus e-textbooks.

Finally, longitudinal research may shed light on whether the observed resistance exists because the use of online course content without the support of paper textbooks is relatively new. Students may need more time to develop expertise and confidence in learning and studying with digital content.

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