Exploring the Characteristics and Attitudes of Electronic Textbook Users and Nonusers

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Abstract: A technological trend influencing society is the provision and adoption of digital books. Digital books are used in education in the form of electronic textbooks (e-textbooks). The research question examined in this manuscript is which students' characteristics and attitudes influence their adoption or non-adoption of e-textbooks? The study explores these characteristics and attitudes of students who have made the decision to become either an e-textbook user or nonuser. The empirical analysis is conducted using 1191 student responses to a questionnaire distributed in a mid-sized university in the western United States. Among these 1191 responses, 530 of the students had used an e-textbook and 661 had not used an e-textbook. The e-textbook user and nonuser groups are studied in three different ways. The first is by examining the counts and percentages for five respondent characteristics. The second way is through statistical tests (i.e., t-tests and multiple analysis of variance) on these characteristics across the groups. The results from these analyses did not identify any meaningful differences in characteristics across the user and nonuser groups. The third way was a content analysis performed on an open-ended question (i.e., What factors influenced you on whether to use an e-textbook?) on the questionnaire. The student e-textbook attitudes discovered from the content analysis showed that for e-textbook users, the cost or price of an e-textbook had a significant influence on e-textbook adoption. Two other attitudes influencing e-textbook users' adoption were usability, both positive and negative. The key attitude of nonusers regarding e-textbook adoption is negative e-textbook usability.

Keywords: e-Textbooks, Technology adoption, Characteristics of e-Textbook adoption

1. Introduction

Technological advances change society and individuals' lives. One example is the development and adoption of digital books. Adoption of digital books, or e-books, were initially slow to be accepted due to a lack of industry standards for the technology, transferability among technologies, and the lack of a clear, consistent business model (Dillon, 2001; Thomas, 2007). Another issue affecting acceptance is usability in the form of eye strain and fatigue on an electronic screen. On the other hand, reducing the cost of book production to an electronic format is advantageous to users, even if the readability is not ideal (Coleman, 2004; Liu, 2005; Baker-Eveleth, Miller, and Tucker, 2011). In a recent Pew Research Center report, around a third of the books read in the United States is of an electronic format (Faverio and Perrin, 2022). Digitized or electronic books have been used in education in the form of electronic textbooks (e-textbooks) for over twenty-years (Young, 2009; DeSantis, 2012; Daniel and Woody, 2013; Ji, Michaels, and Waterman 2014). An e-textbook is defined as a digitized version of a selected book assigned as part of the reading for a course (Dixon, 2020). E-textbooks can be web-based, digital replicas of print textbooks, or downloadable PDF's (Falc, 2013). With the variety of learning environments available to college students such as traditional face-to-face lectures, online, or blended method, e-textbooks can be beneficial for easy access to a written resource (Nouraey and Al-Badi, 2023; Chaw and Tang, 2023). E-textbooks are considered a learning object since they support learning, are reusable, and provide a building block for digital course content (Ritzhaupt, 2010). The structure of an e-textbook allows a student to interact with the discipline content in many ways. Examples include reference material, practice problems, or as a test environment depending on the needs of the student. A typical e-textbook can be used in different learning contexts making it reusable (Mogharreban and Guggenheim, 2008).

Although e-textbooks can provide quick interaction with the course content, several research studies have found that undergraduate students prefer learning with printed textbooks rather than digital (Noyes and Garland, 2005, Noyes and Garland, 2006, deNoyelles and Raible, 2017, Clinton-Lisell, Kelly and Clark, 2020). Users have expressed a willingness to use an e-textbook due to the digitized format making access easier and the ease of mobility although the usability issues of screen readability are a poor substitute for a print text (Bennett and

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Landoni, 2005; Buzzetto-More, Sweat-Guy and Elobaid, 2007; Dwyer and Davidson, 2013; Jardina and Chaparro, 2015). Liu (2005) found that 80% of students surveyed prefer print to digital textbooks to understand the text meaning. In this same study, these undergraduate students found digital or e-textbooks to be less interesting and the authors less credible. The University of California Libraries conducted a study and found that 58% of undergraduate students preferred print books (Falc, 2013) while a study at Northwest Missouri found a 40% reduction in studying because of the e-textbook format (Young, 2009).

Although there is a desire for reading print-based textbooks, increases in educational costs have college students considering ways to reduce their costs. The financial burden of education has escalated remarkably over the last 50 years due to a sharp rise in college tuition costs (Sauter, 2019). In addition to tuition, fees and room and board have increased 1,600%. Furthermore, data from the College Board indicates a continued upward trajectory beyond 2018, with the average costs of attending a private college reaching $60,420, and a public college at $46,730 during the 2022-2023 academic year. The average annual expenditure for ancillary academic materials such as textbooks and supplies are around $1,250; textbook costs have skyrocketed by 800% between 1978 and 2018. An additional impact to academic costs, is inflation, with the most significant increases since the late 1970s and early 1980s, causing additional strains to family budgets, compelling them to seek methods for reducing educational expenses (Staff Writers, 2022; Amadeo, 2023). One notable strategy to alleviate this financial pressure is the adoption of e-textbooks, which are generally 40-50% less expensive than traditional print textbooks (Staff Writers, 2022). In an era marked by economic challenges, every dollar saved on educational expenses is of paramount importance.

If the cost of textbooks is reduced by changing the display format, it would seem college students would be interested in switching to e-textbooks. Understanding if there is a difference between e-textbook and non e-textbook users, would be beneficial to faculty in developing courses. In addition, if there are other characteristics beyond the cost of the e-textbook influencing students' decisions and outcomes, that too would be important to understand.

2. The Literature

The prevalence of digital devices introduces a potential challenge for students: distractions. While e-textbooks and digital learning tools provide valuable interactive elements, they also open the door to various diversions such as social media, emails, and other applications (Jabr, 2013). These distractions can hinder a student's ability to maintain focused and concentrated study sessions.

Some students prefer the tactile experience of physical books and find it easier to highlight, annotate, and navigate through printed pages (Inie, Barkhuus and Brabrand, 2021). E-textbooks can be affected by technical glitches (Novak et al., 2022), compatibility issues (Casselden and Pears, 2020), ease of use issues (D'Ambra, Akter, and Mariani (2022), or Internet connectivity problems (Jaggars et al., 2021), which can disrupt the learning process. Not all students have access to devices capable of displaying e-textbooks (Carlson, 2005), which can create inequalities among students. Some students simply prefer the sensory experience of reading from a physical book and find it easier to engage with the material in that format (Johnston and Salaz, 2019). With physical textbooks, students can sell or share them after the course. E-textbooks might have limitations on reselling or sharing due to licensing and digital rights management (Millar and Schrier, 2015).

Despite the above problems with e-textbooks, there are a variety of advantages, such as lower costs, accessibility alternatives such as audio or video, and improved currency of content (Staff Writers, 2022; Amadeo, 2023; Cavanaugh, 2004). The cost advantage to students is reasonably clear since e-textbooks can be rented for half the price of a traditional textbook (Falc, 2013; Baker-Eveleth, Miller, & Tucker, 2011). Public school districts are also moving to e-textbooks as a cost saving mechanism (Tomassini, 2012); a recent higher education study showed the difference in savings between e-textbooks and traditional texts is insignificant considering a purchased textbook can be kept for longer or returned for cash (DeSantis, 2012). In addition, some states have proposed legislation for e-textbooks to ease costs by focusing on open educational resources (OER) (Scott and Shelly, 2023; deNoyelles and Raible, 2017, Hane, 2011). The goal of OER is to provide affordable college resources by sharing existing online sources thus reducing barriers for students regardless of economic status (Luo, Hostetler, Freeman and Stefaniak, 2020). The challenge may relate to certain disciplinary areas such as healthcare or technology due to rapid changes or the quality of the content.

E-textbooks provide convenience and accessibility for students but also have a positive environmental impact. The attraction stems from the realization that e-textbooks offer a significant reduction in carbon footprint compared to traditional printed textbooks. By embracing digital learning materials, students can actively

contribute to a more sustainable future by minimizing paper production, reducing transportation emissions, and conserving valuable natural resources (Kapuka, Shumba and Munthali, 2017). As ecological consciousness becomes a driving force among the younger generation, e-textbooks stand out as a practical and ecologically friendly choice, aligning education with environmental responsibility.

Students are increasingly gravitating towards the interactive nature of e-textbooks as a preference over traditional print media. The allure lies in the dynamic and engaging features that digital platforms offer, enabling students to delve deeper into their learning experience. Interactive elements such as multimedia content, hyperlinks, embedded quizzes, and simulations enhance comprehension and retention, catering to various learning styles (Spencer et al., 2020, Clinton-Lisell, Kelly and Clark, 2020). This interactivity not only fosters a more immersive educational journey but also empowers students to actively participate in their learning process. As technology continues to evolve, e-textbooks provide a glimpse into the future of education, where customization and engagement are seamlessly integrated into the academic landscape. Internet availability has created an opportunity for easy access to digital resources and e-textbooks. Electronic book readers and tablet devices have also affected the access to digital resources by providing portability, search-ability, and content tagging (Choi, 2012, Peek, 2012, Weisberg, 2011). Searching and tagging on a device mimics a traditional textbook with highlighting, page tagging, and writing comments in the margins (Lai and Chang, 2011). The improved currency of content is due to the ability of publishers to update content more frequently between print editions of a textbook. This is particularly advantageous in dynamic content areas (Cavanaugh, 2004).

Given the mix of advantages and disadvantages of students purchasing and using e-textbooks, not all students adopt, when a volitional decision, e-textbooks. This leads to the research question for this work, what are the student characteristics and attitudes which influence them to adopt or not to adopt e-textbooks? The research to address this question is presented in the following order. First, the data and a description of e-textbook users and nonusers groups are presented. These descriptions are followed by the analysis methods and results. The manuscript finishes with a discussion of the results and conclusions.

3. The Method

3.1 The Sample

The data to empirically examine e-textbook users' and nonusers' characteristics and attitudes were collected using a survey of students at a mid-sized university in the western United States. The questionnaire was web-based and developed and distributed using Qualtrics. A university listserv of students provided the email addresses to which the questionnaire was distributed. A total of 11,957 students received an email invitation to complete the questionnaire and 1382 responses were received producing a 11.56% response rate. Among these 1382 responses, 191 were incomplete and excluded from the study. The remaining 1191 responses had 530 or 45% reporting prior or current e-textbook use and 661 respondents or 55% who had not used an e-textbook. The analysis presented here is based upon these 1191 questionnaire responses, grouped as either an e-textbook user or nonuser. The questionnaire was developed from pre-existing measures related to technology acceptance and expectation-confirmation theory and was pre-tested with graduate students (Stone and Baker-Eveleth, 2013, 2013a).

The target population of respondents for the questionnaire were the students enrolled at the university as they would be included on the student Listserv. To examine the possible presence of nonresponse bias in the sample, two sample demographics were compared to the corresponding university demographics. Females appear to be slightly overrepresented in the sample at 57.36% compared to the student population at 45.70%. Students from the College of Business & Economics were overrepresented in the sample at 22.17%, while in the university population this percentage was 10.53. The greater percentage of business and economics majors in the sample may be because faculty from this college distributed the questionnaire. The gender percentage difference may be the result of a slightly greater percentage of female business and economics majors compared to males in these majors.

3.2 Respondent Characteristics

The study begins by comparing the characteristics of e-textbook users and nonusers. In Table 1, Panel A, the numbers, and percentages of respondents in total and for e-textbook users and nonusers are shown for respondent gender, whether they worked fulltime while in college, and whether they received parental and family support while in college. The overall sample was composed of 41% males and 59% female. These percentages where consistent for e-textbook users at 42% male and 58% female and for nonusers of e-textbooks at 41% male and 59% female. As for working full-time while in college, the overall sample showed 18% did so,

while 16% of e-textbook users worked full-time while 19% of nonusers also worked. In the full sample, 52% of the respondents received support from their parents and family, while 54% of e-textbook users and 51% of nonusers reported this same source of support.

Panel B in Table 1 illustrates the distributions for the two continuous characteristics, percent of expenses paid by the student and the student's grade point average (GPA). Regarding the percentage of expenses paid by the student, the only statistics which varied across all three groups (i.e., all respondents, e-textbook users and nonusers) were the means, standard deviations, and medians. All respondents, on average, paid 66% of their expenses while e-textbook users and nonusers paid 64% and 67% of their expenses, respectively. Similar results are observed for the medians with the all-respondent sample median at 80%, e-textbook users at 79%, and nonusers at 85%. The standard deviation varied slightly across the three groups of respondents with the differences being less than one. For the distribution of GPA, the means ranged from 3.36 to 3.37 and the median values ranged from 3.44 to 3.46. The standard deviations for these three groups differed by only 0.01.

Table 1: The Characteristics of All Respondents, E-Textbook Users and Nonusers

Panel A

Gender	All Respondents	E-Textbook Users	E-Textbook Nonusers
Male	493 (41.39%)	222 (41.89%)	271 (41.00%)
Female	698 (58.61%)	308 (58.11%)	390 (59.00%)
Totals	1191 (100.00%)	530 (100.00%)	661 (100.00%)

Work Fulltime While in College	All Respondents	E-Textbook Users	E-Textbook Nonusers
Yes	191 (17.77%)	77 (15.88%)	114 (19.32%)
No	884 (82.23%)	408 (84.12%)	476 (80.68%)
Totals	1075 (100.00%)	485 (100.00%)	590 (100.00%)

Parental & Family Support While in College	All Respondents	E-Textbook Users	E-Textbook Nonusers
Yes	549 (52.19%)	258 (54.09%)	291 (50.61%)
No	503 (47.81%)	219 (45.91%)	284 (49.39%)
Totals	1052 (100.00%)	477 (100.00%)	575 (100.00%)

Panel B

Percent of Expenses Paid by Student	Measure	All Respondents	E-Textbook Users	E-Textbook Nonusers
	Number of Respondents	1150	513	637
	Mean	65.86%	64.00%	67.35%
	Standard Deviation	37.13	37.59	36.72
	Maximum	100%	100%	100%
	Upper Quartile	100%	100%	100%
	Median	80%	79%	85%
	Lower Quartile	30%	30%	30%
	Minimum	0%	0%	0%

The Characteristics of All Respondents, E-Textbook Users and Nonusers

Grade Point Average	Measure	All Respondents	E-Textbook Users	E-Textbook Nonusers
	Number of Respondents	1167	518	637
	Mean	3.36	3.36	3.37
	Standard Deviation	0.52	0.53	0.52
	Maximum	4.00	4.00	4.00
	Upper Quartile	3.79	3.78	3.79
	Median	3.44	3.44	3.46
	Lower Quartile	3.02	3.02	3.02
	Minimum	0.00	0.00	0.00

All in all, the statistics shown in Table 1 do not indicate, at least to the naked eye, meaningful differences across these three groups. Most importantly for this study, no differences appear to exist between e-textbook users and nonusers. To further study any potential differences in these students' characteristics, statistical tests were also performed. The results of these tests are presented below.

3.3 Statistical Tests

To formally confirm the lack of apparent differences shown from the examination of the values in Table 1, statistical tests of differences were performed. The results from these tests are shown in Table 2. All the tests were performed using PC SAS 9.4. The first set of tests performed were t-tests for mean differences between e-textbook users and nonusers on respondent characteristics. In each test, the equality of the group variances, user and nonuser, was tested. In all these tests, no evidence was found for unequal variances across these groups. As a result, all the reported t-values are computed for equal variances. For each t-test, no significant differences were found between e-textbook users and nonusers for all the examined characteristics. These t-test results support the conclusions reached from an inspection of the values in Table 1.

Table 2: Comparing the Characteristics of E-Textbook Users and Nonusers t-Test Results

Gender

	Number	Mean	Standard Deviation	Standard Error	Minimum	Maximum
User	530	1.58	0.49	0.022	1.00	2.00
Nonuser	661	1.59	0.49	0.019	1.00	2.00

Equality of Variances

Method	Numerator DF	Denominator DF	F	Pr>F
Folded F	529	660	1.01	0.93

t-Test

Method	Variances	Degrees of Freedom	t-Value	Pr>|t|
Pooled	Equal	1189	-0.31	0.76

Work Fulltime While in College

	Number	Mean	Standard Deviation	Standard Error	Minimum	Maximum
User	485	1.84	0.37	0.017	1.00	2.00
Nonuser	59	1.81	0.40	0.016	1.00	2.00

Equality of Variances

Method	Numerator DF	Denominator DF	F	Pr>F
Folded F	589	484	1.17	0.08

t-Test

Method	Variances	Degrees of Freedom	t-Value	Pr>|t|
Pooled	Equal	1073	1.47	0.14

Parental & Family Support While in College

	Number	Mean	Standard Deviation	Standard Error	Minimum	Maximum
User	477	1.46	0.50	0.023	1.00	2.00
Nonuser	575	1.49	0.50	0.021	1.00	2.00

Equality of Variances

Method	Numerator DF	Denominator DF	F	Pr>F
Folded F	574	476	1.01	0.95

t-Test

Method	Variances	Degrees of Freedom	t-Value	Pr>|t|
Pooled	Equal	1050	-1.12	0.26

Percent of College Expenses Paid by Student

	Number	Mean	Standard Deviation	Standard Error	Minimum	Maximum
User	513	64.00%	37.59	1.66	0.00	100.00
Nonuser	637	67.35%	36.72	1.45	0.00	100.00

Equality of Variances

Method	Numerator DF	Denominator DF	F	Pr>F
Folded F	512	636	1.05	0.57

t-Test

Method	Variances	Degrees of Freedom	t-Value	Pr>|t|
Pooled	Equal	1148	-1.52	0.13

Grade Point Average

	Number	Mean	Standard Deviation	Standard Error	Minimum	Maximum
User	518	3.36	0.53	0.023	0.00	4.00
Nonuser	647	3.37	0.52	0.020	0.00	4.00

Equality of Variances

Method	Numerator DF	Denominator DF	F	Pr>F
Folded F	517	648	1.05	0.57

t-Test

Method	Variances	Degrees of Freedom	t-Value	Pr>|t|
Pooled	Equal	1165	-0.43	0.66

Because performing several t-tests on a series of related variables, such as these student characteristics, may distort the probabilities of Type I and Type II errors, multiple analysis of variance (MANOVA) was also performed. The MANOVA was also performed using PC SAS version 9.4. The results show no meaningful differences for the respondent characteristics individually between e-textbook users and nonusers. Additionally, based on the group MANOVA test, no differences were observed across the user and nonuser samples as a group. These results are shown in Table 3.

Table 3: Comparing the Characteristics of E-Textbook Users and Nonusers

Multiple Analysis of Variance Results

Gender

Source	DF	Sum of Squares	Mean Square	F-Value	Pr>F
Model	1	0.004	0.004	0.02	0.89
Error	968	235.90	0.24		
Corrected Total	969	235.90			

Work Fulltime While in College

Source	DF	Sum of Squares	Mean Square	F-Value	Pr>F
Model	1	0.23	0.23	1.95	0.16
Error	968	112.35	0.12		
Corrected Total	969	112.58			

Parental & Family Support Paying for College

Source	DF	Sum of Squares	Mean Square	F-Value	Pr>F
Model	1	0.55	0.55	2.20	0.14
Error	968	241.95	0.25		
Corrected Total	969	242.50			

Percent of College Expenses Paid by Student

Source	DF	Sum of Squares	Mean Square	F-Value	Pr>F
Model	1	2119.68	2119.68	1.53	0.22
Error	968	1,345,296.22	1389.77		
Corrected Total	969	1,347,415.91			

Grade Point Average

Source	DF	Sum of Squares	Mean Square	F-Value	Pr>F
Model	1	0.21	0.21	0.72	0.40
Error	968	274.29	0.28		
Corrected Total	969	274.50			

No Overall E-Textbook User/Nonuser Effect

Statistic	Value	F-Value	Numerator DF	Denominator DF	Pr>F
Wilks' Lambda	0.9956	0.84	5	964	0.52
Pillai's Trace	0.0044	0.84	5	964	0.52

Statistic	Value	F-Value	Numerator DF	Denominator DF	Pr>F
Hotelling-Lawley Trace	0.0044	0.84	5	964	0.52
Roy's Greatest Root	0.0043	0.84	5	964	0.52

3.4 Content Analysis

Intuitively, we expected to observe differences between e-textbook users and nonusers on at least some of the student characteristics. Based upon the literature presented earlier and the lower cost of e-textbooks, it was expected to see some differences in the college expense-related characteristics (i.e., working full-time, parental and family support, percent of student paid expenses). The lack of meaningful differences in these characteristics lead us to investigate the attitudes of e-textbook users and nonusers for differences. To examine the respondents' attitudes, content analysis was performed on student responses to the open-ended question "What factors influenced you on whether or not to use an e-textbook?".

The content analysis was performed by two of the authors who acted as raters for the responses on the open-ended question. Independently, the two raters identified themes and subthemes from both e-textbook users' and nonusers' responses in the open-ended question. If a respondent mentioned a concept or concern, the raters included it in the analysis. The raters did not screen any respondents' answers. After the raters developed their individual themes and subthemes, they agreed to a unified set of themes and subthemes. These final themes and subthemes were used in the analysis discussed below and shown in Table 4. In Table 4, the themes and subthemes are categorized by e-textbook users and e-textbook nonusers. Also displayed in Table 4 are the number of respondents who mentioned the theme or subtheme in their response to the open-ended question. Among the 1191 responding students, 973 left meaningful answers to the open-ended question, which equates to an 81.70% rate. Although there were 973 responses, components of the responses were extracted and may not equal 973.

Table 4: The Content Analysis Results for E-textbook Users and Nonusers

E-Textbook Users

Themes & Subthemes	Number of Responses
Price/Cost	**281**
Usability: Positive	**149**
Portability, Size, Weight	59
Features	39
Ease of Use	26
Convenience	25
Usability: Negative (e.g., Eye Fatigue; Don't Like to Read Online)	**103**
Type of Class (e.g., Subject, Major, Professor, Online)	**78**
Ownership	**66**
Available After Course Over	49
Resale	17
Accessibility (e.g., IT Platform, Device, Mobility, Availability, Internet Access)	**55**
Learning Impacts	**11**
Less Effective	6
More Effective	5
Immediate Delivery	**8**
Better for the Environment	**7**

E-textbook Nonusers

Themes & Subthemes	Number of Responses
Usability: Negative	**132**
Ease of Use	70
Eye Fatigue/ Don't Like to Read Online	62
Price/Cost	**77**
Accessibility (e.g., IT Platform, Device, Mobility, Availability, Internet Access)	**52**
Ownership	**35**
Availability After Course Over	21
Resale	14
Usability: Positive (e.g., Portability, Size, Weight, Convenience)	**32**
Type of Class (e.g., Subject, Major, Professor, Online)	**20**
Learning Impacts (e.g., Less Effective, Preference, Distracting)	**17**
Better for the Environment	**2**

A cutoff of 100 for the number of times a theme was mentioned was used to determine which themes are seen as key issues for the respondents. Using this cutoff, e-textbook users identified three key issues influencing their adoption decision. These key issues, in rank order, were price or cost, usability in a positive sense (e.g., portability, features, ease of use, and convenience), and usability in a negative sense (e.g., eye fatigue, don't like to read online). Only one theme for e-textbook nonusers satisfied this 100-response cutoff. This theme is usability in a negative sense, meaning these respondents do not like to read online or experience eye fatigue when they do.

4. Discussion

The data displayed in Table 1 and the statistical tests indicated e-textbook users and nonusers did not differ on their characteristics studied. The content analysis indicated that e-textbook users and nonusers displayed attitude differences regarding the adoption or potential adoption of e-textbooks. E-textbook users displayed positive attitudes toward the price or costs of adopting e-textbooks and the usability of e-textbooks. However, these users also acknowledged the negative aspects of usability, eye strain and having to read online, of using e-textbooks. These attitudes are consistent with the literature presented earlier. Specifically, e-textbooks are lower cost, quicker access to start reading, and a better delivery method, but not a better way to read. E-textbook nonusers, on the other hand, most frequently commented on the negative aspects of e-textbook usability. Their second most frequent comment was the price or cost of e-textbooks. It may well be that for these students the negative usability aspects of an e-textbook such as eye strain are so significant that these dominate any potential cost savings from adopting an e-textbook when making the adoption decision.

The content analysis results indicate that students' adoption or non-adoption of e-textbooks is very much a matter of personal preference, tempered by economic or cost considerations. The student population characteristics (e.g., economic circumstances) at a particular university or in a particular major or program could significantly influence e-textbook adoption rates. Given current concerns regarding higher education costs, in general, e-textbook use could be an important factor for universities and instructors to consider when performing instructional design.

Overall, the results do provide some insights into students' attitudes regarding the use or nonuse of e-textbooks. Most surprising and interesting in these results is the lack of needed financial support or self-funded educational expenses (i.e., percent of college expenses paid by the student, whether the student received parental or family support while in college) influencing a student's use or nonuse of e-textbooks. One often cited motivation for students to use an e-textbook is the reduced cost of e-textbooks. The statistical results do not support this motivation, but the content analysis indicated this was one motivation for e-textbook users. Confounding this result is that the content analysis for nonusers showed that price or cost was the second most frequently commented attitude. The question which comes to mind is "Do e-textbook nonusers perceive the negative usability of e-textbooks to be so negative as to make their lower costs insufficient to warrant using e-textbooks?

Another interesting result was identified for the attitudes of usability, both positive and negative. E-textbook users listed the themes of positive usability and negative usability as the second and third most mentioned comment. E-textbook users appear to acknowledge both the positive and negative aspects of e-textbooks. Possibly when balancing both positive and negative usability aspects of using an e-textbook with the lower costs, e-textbook users evaluate the benefits from e-textbook use to be greater than these negative usability aspects. Hence, they adopted the e-textbook. In the case of e-textbook nonusers, they appear to evaluate the negative usability aspects of e-textbooks as so great that these overwhelm any price or cost advantages.

5. Conclusions

Given the growing trend of e-textbooks in education, and the expansion of course delivery methods, it is worthwhile to understand the characteristics and attitudes which influence students' willingness to adopt electronic textbooks. The entirety of these results provides mixed findings regarding the adoption motivations of e-textbook users and nonusers. Additional research is needed to understand students' attitudes and motivations toward adopting or not adopting e-textbooks. The interplay of the positive and negative aspects of usability balanced with the cost or price factor is of particular interest. The course subject (e.g. business, mathematics, biology) may also influence users and nonusers motivation to read e-textbooks but limited research has been conducted identifying courses; this could provide valuable feedback to faculty when adopting e-textbooks.

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