Printed Books versus Digital Books

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Abstract

The purpose of this study was to determine whether college aged students prefer to read from printed books or e-books when reading for pleasure and for school. Many factors go into the decision of which platform readers choose to read from such as cost, portability, durability, reading conditions, and lifetime. It is valuable to determine what drives consumers to be making these choices.

The findings of this study conclude that college aged students that read for both school and pleasure prefer to read from printed books. After asking multiple questions in relation to the various factors that go into choosing which platform to read from, the majority of participants revealed that they prefer printed books throughout various scenarios.
Chapter 1
Introduction

Statement of the Problem

Growing up in an age of technology has its advantages and disadvantages. The world is becoming more productive due to these advances; however, the addition of technology can at times overshadow the processes of the past. This could not be truer in relation to the publishing world, as technologies such as the Kindle and similar devices have quickly stolen the spotlight from published print books. These technological advances have seemingly opened up an entirely different world on how information is perceived. The Kindle has different features than a printed book, as it is interactive through a screen rather than physically in one's hands. Due to differences in how the consumer uses these products, people will have definitive preferences as to which they are more likely to use. The status of the print industry has been up for debate for years as to whether technology will completely overtake the print publishing world.

The purpose of this research is to explore how people prefer print and digital books. Through this research we will be able to determine the pros and cons of digital versus print books and why people prefer one to the other. It is specifically interesting to look at college students in relation to textbooks.

Significance of the Research

The intended audience for this research is college age students that read for both pleasure and for schoolwork. This millennial generation will have a greater consumer impact than previous generations, so knowing whether they prefer print or digital could help
determine what the future of the print industry will be. This research is important to understand why people are making these decisions and what makes them develop these preferences. The benefits that will be derived from the study will help to illustrate which way the population feels about print versus digital and what choices go into making that decision.

**Interest in the Research**

Books have been a large part of my life since I can remember. My interest in the research is why people are choosing print or e-books and what goes into making that decision for them. I would like to have concrete evidence, not only from other people’s research but also from interviewing people I personally know, about the decisions going into purchasing printed or e-books. I would also like to know if people that have reading disabilities have a preference as to which type of book is easier to read. There are so many decisions that go into buying a print versus e-book, and I am incredibly curious as to know what makes people ultimately decide to go with one over the other.
Chapter 2

Literature Review

Books are an integral part of people’s lives. They provide the foundation of learning from an early age and continue to grow with people throughout their adult lives. The purpose of a book is to convey information. Whether that information be intellectually driven or for personal reasons, books are always going to be a part of people’s lives. However, the appearance of books has taken a drastic change within the past couple of years. Transitioning over to a digital age, books are no exception. While many readers are familiar with printed books, e-books are a relatively new option when considering the format of reading. With all of the advances being made in technology to make lives easier and more efficient, the printing industry could be in danger of having people choose a digital lifestyle over a printed one. When examining print books versus e-books, readers must choose which they like best, and what options go into making that decision.

Kindles are a type of e-reader that Amazon currently sells. Barnes and Noble sells a similar product called the Nook. The Kindle boasts of having a touchscreen display, which includes many features to easily read the information displayed. The screen promotes being glare-free and has the look of real paper which makes it easy to read in brightly lit areas with natural sunlight. The Kindle is easy on the eyes and auto adjusts its brightness level to be the same as everything else in the room, meaning that the reader’s eyes do not have to adjust, which can result in fatigue over time. It is lighter than an actual printed paperback, which means it is comfortable to hold for long periods of time.
The Kindle also does not require to be plugged in while the reader is using it, meaning that the reader can use it for weeks on end with a single charge. Actual ink particles make up the text on the page, which maintains a crisp text similar to a printed book. The fonts are hand-built as well which improves the text and image quality. The Kindle has many features such as the Smart Lookup tool which enables readers to access definitions while they are reading. The reader is able to adjust their text size and can organize books into custom categories that are suited specifically for the individual. It can translate passages into different languages and can hold thousands of books at a time. Overall the Kindle is an e-reader that has incorporated many different features to enable books to transfer over to the digital world (amazon.com, 1996-2015).

The history of the printed word dates all the way back to China in 868 CE. It was suspected that printing actually took place before this date as well. The purpose of printing in that time was focused on pictures or decorations and were typically carved from wood, stone and metal, which would then be rolled with ink or paint. Books were typically created for religious purposes (Bellis, 2015). Johannes Gutenberg was the creator of moveable type and produced Gutenberg’s Bible in 1455. Gutenberg’s contribution to printed books resulted in the mass production of books, which eventually became cheaper and more plentiful to society after the success of printers and publishers. Any books that were published before the year of 1501 were called “incunabula” which roughly translates to meaning cradle or birthplace in Latin (“The History”, n.d.). Using moveable type did not change in process over the next 350 years, however the format of books did change to accommodate a type of cover page, which included the scribe’s name, date of completion, and sometimes a small prayer (“The History”, n.d.).
One of the many decisions going into whether consumers will buy a print or e-reader is cost. According to a survey conducted at Auburn University at Montgomery, it is significantly higher of a cost for their libraries to implement e-readers instead of print books. E-readers are “consistently higher than print in initial price.” (Bailey et al., 2015). The study found that e-readers often times have more costs that the consumer will endure such as, “ebooks carry a ‘premium price,’ and possibly include annual charges of some sort. E-books often carry the extra price of printing before patrons use a section of the book, a cost that is either passed on to the patron or that added to what the institution is already paying to purchase or lease the book in the first place” (Bailey et al., 2015). Books often endure the same cost for things such as “production costs such as editing and formatting” as well as the cost for prepress and the cost associated with hiring editors, however, e-books require additional unique costs such as “online hosting, server and network maintenance, reformatting for multiple formats, customer service, and technical support” (Bailey et al., 2015). Additionally when considering whether to buy an e-book or a print book in relation to schooling, not all titles are available in digital format. According to the same study conducted by Auburn University “titles requested by the faculty were then examined to determine availability of an e-version of the title. Of the unique titles, 57% (264) were also available in an electronic format” (Bailey et al., 2015).

The circulation of print versus e-books was looked at in a study done by David Gray and Andrea Copeland. Their results found that “demand for print copies outpaced demand for e-book copies. In a direct comparison of circulation counts, print copies circulated four times as much as the e-book copies in this study. However, one must consider that there was more than four times the number of print copies available to be
checked out” (Copeland & Gray, 2012). When looking at a study on whether print really could be replaced with e-books in a library setting by Craig Anderson and Jeanie Pham, they concluded, “it appears unlikely that more than 26% of current print holdings could be replaced with e-books. The magnitude of this cost alone is likely to make the exercise of replacing print-on-paper books with e-books in order to save floor space unlikely” (Anderson & Pham, 2013). Natalie Danford has looked into how digital and print books affect the travel industry and when asking Bill Wood, the travel publishing managing director of AAA, he concludes, “Printed books will continue to have a place in publishing as long as there is a viable distribution system for the consumer to get them. We've done the business analysis, and AAA will still be distributing millions of paper books and maps annually to members 10 years from now." Wood does acknowledge that there are issues with print however. He claims, "There's a festering distribution defect that will hasten migration to digital. Obtaining printed books is getting more and more difficult as stores close and the remaining ones remove bookshelves for another coffee-shop table or stacks of toys and games” (Danford, 2011).

When examining other features that differ from a digital to print book, a study was done to see if e-readers could be more effective than printed books in students with dyslexia. The study found that e-readers offer more accessibility options than a printed book does, which allows readers to format their device to display fewer words per line (Chen et al., 2013). Due to this accessibility option, “We found that [the] use of the device significantly improved speed and comprehension, when compared with traditional presentations on paper for specific subsets of these individuals: Those who struggled most with phoneme decoding or efficient sight word reading read more rapidly using the
device, and those with limited VA Spans gained in comprehension” (Chen et al., 2013). Another study that looked at e-reader use from people that had vision impairment found that “only 22 respondents (17%) used an electronic book reader; 32 people were not interested in owning one, 19 had never thought of getting one, 14 thought they would not be able to use one and 13 thought it would be too expensive” (Crossland et al., 2014). The same study also noted that “the most frequently cited reason for not using these devices included cost and lack of interest” (Crossland et al., 2014).

A different study examined the difference between a small multimedia display and a printed book. They tested for “eyestrain, visually induced motion sickness, changes in visual functioning, user experience, and the essential optical parameters of the reading equipment” (Hakkinen et al., 2012). The results showed “reading from a hard copy was the most comfortable experience. All near-to-eye displays induced eyestrain and sickness symptoms, but the magnitude of these symptoms varied according to the device. The adverse symptoms were related to problems with the display optics and design, text layout, headset fit, use context, and individual differences” (Hakkinen et al., 2012). This study also found that while reading from a print book over long periods of time can cause eyestrain, the reader would get eyestrain significantly faster after reading for over 20 minutes from an e-book. The study determined that “the limitations in the text layout, especially when a small type size was used, were the most critical characteristics for viewing discomfort with a small-sized display” (Hakkinen et al., 2012). However, a different study that examined eye movement when reading from printed books, computer displays and e-readers came up with the results that reading from printed books and e-readers was very comparable and virtually the same. The study focused on “the analysis
of eye movements during reading from different eReading tools and from printed book focus[ing] on progressive fixations and regressions. Mean fixation duration was longer in reading from the computer display, whereas tablet and eReader did not differ from the printed book” (Carniglia & Zambarbieri, 2012).

Reading books will always be a foundation for many. Whether that is due to educational purposes or reading for their own personal pleasure, people will continue to have a need for books. However, due to the ever changing technological advances of the world, books have taken on different physical forms throughout the past several decades resulting in a divide between the printing and digital world. The difference in e-readers and printed books are very different and consumers have to weigh their options in order to make a decision on which type of format they choose to read from. Cost, availability, and features of both e-readers and printed books are all options that can influence a reader’s choice on which type of format they prefer. Understanding the decisions that people make in their preference from digital or printed books is a wonderful start to understanding whether there is a possibility of digital technology overtaking the printing industry.
Chapter 3
Methodology

Introduction
Technology has advanced so immensely within the past couple of decades that it is rapidly becoming consumers favored way to do things. Technology has the opportunity to replace analog practices and has been successful in replacing the way things have been done in the past. There is no exception in the publishing industry as digital books such as the Kindle are rapidly trying to replace the printed word. Consumers will have to make a choice on which platform they choose to read based on several different options that must be carefully thought out when making that decision. The purpose of this project is to examine the preferences between the digital and printed word and determine what options are driving consumers to their decision. The objective is to determine how portability, readability and cost affect user choices when deciding between a kindle and printed book.

Audience
The audience in this study consisted of college age students that use books for both educational purposes as well as reading for pleasure. Age is the biggest influence in this study as the target market was only college aged students ranging from 18-23 years of age. This particular group of people grew up when digital books existed, however digital books were not quite as prevalent back then as they are today.

Procedure
In order to obtain results and understand the decisions that go into digital versus print, college aged students were surveyed. In order to develop a significant data set, between
50-100 responses are desirable. Students were asked many questions based on their answers to whether they prefer print or digital books. The survey was submitted for approval to the Human Subjects Research at Cal Poly. The main focus was to determine what roles cost, usability, features, ability to share, damage, weight and other options that consumers have when choosing to read from print or digital. These questions were administered through a Google Forms survey so that students from various schools were able to take the survey.

**Analysis**

All information was written down or recorded with the specific comments from each person under the correct category. The data was then analyzed through charts and graphs to see where the majority of people fell in this debate. The majority of the questions required the participant to choose from a list of predefined responses, making the distribution of answers easily formatted into a graph for each individual question. By looking at the answers that the majority of people chose, it was clear to see whether digital or print books were preferred in college age students and what options have gone into making that decision.
Chapter 4

Survey Results

This survey was designed and conducted to determine the platform in which college aged students prefer to read from. The chosen demographic was college students aged from 18-23. A sample size of 80 people was surveyed. The questions that were asked prominently focused on the reader’s experience with both printed books and e-books and which platform they most preferred. They were asked questions in the form of a scenario where they would need to pick either an e-book or a printed book, as well as questions regarding their demographic. They were asked about cost, how often they read, and which platform they generally preferred. All responses were anonymous.

1. What is Your Age?

![Pie chart showing age distribution]

The majority of participants (55%) fell within the age range of 21-23 years of age. The second largest portion (30%) fell between 18-20 years of age.
2. Are you currently in college?

![Pie chart showing 85% Yes, 15% No.]

The majority of the participants (85%) of the survey were in college.

3. How many hours per week do you typically read (e-book or printed book) for fun/pleasure?

![Pie chart showing 42.5% 0-1 hour, 35% 1-3 hours, 20% over 3 hours, 2.5% I do not read for pleasure.]

The majority of participants did read for pleasure on a weekly basis with only 2.5% saying that they never read for pleasure. Of those that do read for pleasure on a weekly basis, 42.5% say that they read between 0-1 hour per day, 35% read between 1-3 hours per week while, and 20% read over 3 hours per week.
4. How many hours per week do you typically read (e-book or printed book) for school?

The majority of participants do read for school on a weekly basis with only 8.8% that do not read for school. Out of those that read for school on a weekly basis, the majority of those participants read 1-3 hours per week with the second largest portion reading over 3 hours per week.

5. In general, which do you prefer to read for extended periods of time?

In general, the majority of participants (81.2%) in this survey choose to read from printed books for extended periods of time.
6. **How many e-books have you completed or mostly completed in the last year?**

For the participants that chose to read from e-books (digital books) the majority of participants have full completed or mostly completed over 5 e-books in the last year. The second largest portion had read between 3-4 e-books in the past year.

7. **Which platform have you used to read your e-books?**

The majority of participants that do read from e-books have their chosen platform of the Kindle at 73.3% and the second largest portion chose to read from the iPad (33.3%).
8. What factors have made you choose an e-book over a printed book?

The factors that typically go into choosing an e-book over a printed book are portability (93.3%), the ability to carry multiple books at once (73.3%), and that it is less expensive than a printed book (66.7%).

9. Was cost a factor influencing you to purchase an e-book over a printed book?

The majority of the participants (66.7%) did conclude that cost is a factor influencing the purchase of an e-book over a printed book.
10. What factors have made you choose a printed book over an e-book?

In the participants that chose to read printed books over e-books, the factors go into choosing a printed book over an e-book are that they prefer to read from a paper/physical copy (92.3%), that they can easily flip through pages (78.5%), and no eye-strain when reading after long periods of time.

11. Was cost a factor influencing you to purchase a printed book over an e-book?

The majority of participants (83.1%) concluded that cost is not a factor in influencing the purchase of a printed book over an e-book.
12. Scenario 1: You are a college student buying textbooks for a class on campus.

You will need to take this book with you to your class on campus. If there is no difference in cost would you prefer to read this book printed or digitally?

The majority of the participants (70%) said they would choose a printed book over an e-book for this scenario.

13. Scenario 2: You are reading a book during your free time while in your own home. The book is a fiction bestseller. If there is no difference in cost would you prefer to read this book printed or digitally?

The majority of the participants (81.2%) said they would choose a printed book over an e-book for this scenario.
14. Scenario 3: You are reading an English book for a college level course that you will have to write a term paper on for your final grade in the class. In order to do this you will need to go through passages in the text and heavily annotate them for quotations and such. If there is no difference in cost would you prefer to read this book printed or digitally?

The majority of the participants (78.7%) said they would choose a printed book over an e-book for this scenario.
15. Scenario 4: You have a heavy-duty chemistry book that includes a lot of practice problems as well as complex equations. You will need to be able to follow along with this book when doing homework or when using it in class, while flipping back and forth through different pages within a chapter. If there is no difference in cost would you prefer to read this book printed or digitally?

The majority of the participants (73.7%) said they would choose a printed book over an e-book for this scenario.
16. Scenario 5: You are looking through a book on one of the greatest photographers of all time. The book is a collection of the best pieces of work throughout the years in which the photographer was active in the industry. The book contains at least 100 high-resolution photos. The book is classified as a “coffee table book” and is approximately 20 inches by 15 inches in size. If there is no difference in cost would you prefer to read this book printed or digitally?

The majority of the participants (82.5%) said they would choose a printed book over an e-book for this scenario.
Chapter 5

Conclusion

The purpose of this study is to find out how people prefer print or digital books, especially in the target market of college students within the age range of 18-23 years old. The study specifically focused on gaining information from this target market through a survey aiming to dissect the pros and cons of printed books versus digital books, when reading for both school and pleasure. The conclusions that were drawn from this study are from the target market of college students aged 18-23 that participated in the survey.

The majority of participants do read on a weekly basis for both school related activities as well as for personal pleasure. When asked for general reading purposes the majority of participants also claimed that they would choose a printed book over an e-reader. While there were some people that did choose e-books over printed books as their desired platform to read on, there were only 18% of participants that had completed an e-book in the past year. It can also be concluded that price is definitely a factor when people choose e-books over printed books, as e-books can at time be more cost effective than purchasing a printed book. 66.7% of people agreed that cost was a definitive factor in the influence of buying an e-book over a printed book. Compared to the people that choose to read off of printed books, the majority of those participants (83.1%) agreed that price was not a factor. This can conclude that people that choose to read printed books over e-books are more loyal in choosing printed books, while readers that choose e-books can be easily persuaded between the two based on price.

The scenario questions at the end of the survey are fictitious in nature, however provide a real world example as to what people might prefer in actual reading situations.
The main purpose was to address school related reading as well as pleasure related reading, and see if there is any connection between the reading activities and the type of platform being used. The majority of people in response to every single scenario question chose a printed book over an e-book. In order to determine if cost is a large factor in whether readers are choosing one platform over another, the participant was asked at what cost savings they would switch to an e-book. The majority of participants would not change regardless of price for every single scenario and the second largest portion said that they would only switch if they had over a 50% cost savings. Based on these results, it can be concluded that customers that prefer printed books to e-books are not likely to change the platform that they read on. This can also conclude that readers that choose printed books are much more loyal to their platform of reading and are less likely to be persuaded to read a digital book.

Overall, it is concluded that college aged students prefer printed books to e-books in both reading for pleasure and in reading for school. There are many factors that go into the decision of an e-book versus a printed one, such as cost, portability, durability, reading conditions, and lifetime. Both printed books and e-books have pros and cons, however it can be determined that people will choose printed books over e-books regardless of the scenario or price.
Limitations and Recommendations for Further Study

Further recommendations for this study would have been more time to conduct the study and a larger sample size of students. To develop a sample size of students that were outside of the San Luis Obispo area would also help to understand if these findings were consistent with people in other areas. Additionally it could be beneficial to address renting both printed and e-books and how that can affect the cost of purchasing books.
Appendix A: Works Cited


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The History of Printing and Printing Process. (n.d.) *Harry Ransom Center: The University of Texas at Austin*. Retrieved from

http://www.hrc.utexas.edu/educator/modules/gutenberg/johann/
Appendix B: Survey Questions

1. What is your age?
   - □ 18-20
   - □ 21-23
   - □ over 23

2. Are you currently in college?
   - □ Yes
   - □ No

3. How many hours per week do you typically read (e-book or printed book) for
   fun/pleasure?
   - □ 0-1 hours per week
   - □ 1-3 hours per week
   - □ over 3 hours per week
   - □ I do not read for pleasure

4. How many hours per week do you typically read (e-book or printed book) for school?
   - □ 0-1 hours per week
   - □ 1-3 hours per week
   - □ over 3 hours per week
   - □ I do not read for school
5. In general, which do you prefer to read for extended periods of time?

- e-books
- printed books

*If the answer for question 5 is e-books they are directed to the questions below:

How many e-books have you completed or mostly completed in the last year?

- 1-2
- 3-4
- 4-5
- over 5
- none

Which platform have you used to read your e-books? (Please check all that apply.)

- Kindle
- Nook
- IPad
- PDF on computer
- PDF on phone
- Other: _____________

What factors have made you choose an e-book over a printed book?

- portability
- it is less expensive
- you can carry multiple books at once
- can search through the text focusing on key words
- font adjustment (you can make the font larger or smaller)
- Other: _____________

*If the answer for question 5 is printed books they are directed to the questions below:

What factors have made you choose a printed book over an e-book?

- prefer to read from a paper/physical copy
- no eye-strain when reading for long periods of time
- can physically highlight or write in
- can easily flip through pages
- no batteries needed
- not as easily damaged as an e-book
- Other: _____________

Was cost a factor influencing you to purchase a printed book over an e-book?

- yes
- no
6. Scenario One: You are a college student buying textbooks for a class on campus. You will need to take this book with you to your class on campus:

If there is no difference in cost would you prefer to read this book printed or digitally?

- Printed
- E-book

* Participants that answered printed books will then be asked this question

At what cost savings would influence you to change your mind to an e-book?

- would not change regardless of price
- 10%-25% saved
- 26%-50% saved
- over 50% saved

7. Scenario Two: You are reading a book during your free time while in your own home. The book is a fiction bestseller.

If there is no difference in cost would you prefer to read this book printed or digitally?

- Printed
- E-book

* Participants that answered printed books will then be asked this question
At what cost savings would influence you to change your mind to an e-book?

- would not change regardless of price
- 10%-25% saved
- 26%-50% saved
- over 50% saved

8. Scenario Three: You are reading an English book for a college level course that you will have to write a term paper on for your final grade in the class. In order to do this you will need to go through passages in the text and heavily annotate them for quotations and such.

If there is no difference in cost would you prefer to read this book printed or digitally?

- Printed
- E-book

* Participants that answered printed books will then be asked this question

At what cost savings would influence you to change your mind to an e-book?

- would not change regardless of price
- 10%-25% saved
- 26%-50% saved
- over 50% saved

9. Scenario Four: You have a heavy-duty chemistry book that includes a lot of practice problems as well as complex equations. You will need to be able to follow along with
this book when doing homework or when using it in class, while flipping back and forth through different pages within a chapter.

If there is no difference in cost would you prefer to read this book printed or digitally?

- Printed
- E-book

* Participants that answered printed books will then be asked this question

At what cost savings would influence you to change your mind to an e-book?

- would not change regardless of price
- 10%-25% saved
- 26%-50% saved
- over 50% saved

10. Scenario Five: You are looking through a book on one of the greatest photographers of all time. The book is a collection of the best pieces of work throughout the years in which the photographer was active in the industry. The book contains at least 100 high-resolution photos. The book is classified as a “coffee table book” and is approximately 20 inches by 15 inches in size.

If there is no difference in cost would you prefer to read this book printed or digitally?

- Printed
- E-book

* Participants that answered printed books will then be asked this question
At what cost savings would influence you to change your mind to an e-book?

- would not change regardless of price
- 10%-25% saved
- 26%-50% saved
- over 50% saved