Consumer Preferences Towards Book Formats: How to Address Technological Disruption in the Publishing Industry

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Consumer Preferences Towards Book Formats: How to Address Technological Disruption in
The Publishing Industry

By

Felipe Cotrino

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree
Of
Doctor of Philosophy
In the Robinson College of Business
Of
Georgia State University

GEORGIA STATE UNIVERSITY
ROBINSON COLLEGE OF BUSINESS
2021
ACCEPTANCE

This dissertation was prepared under the direction of the FELIPE COTRINO Dissertation Committee. It has been approved and accepted by all members of that committee, and it has been accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Business Administration in the J. Mack Robinson College of Business of Georgia State University.

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ACKNOWLEDGEMENTS

I thank God for all the blessings He has gave me during the years, for the opportunities and gifts He always present to me.

I would like to thank my parents and sister for their constant support and love on every step of my life, for guiding and teaching me in the right values and principles.

I am grateful to the GSU faculty and staff and to my fellow cohorts, thank you all for the great time together in this journey.

I also thank my advisor and Chair, Dr. Naveen Donthu, and my committee members, Dr. Denish Shah and Dr. Bruce Pilling for their wisdom and support in this research.

This work is dedicated to my wife Liliana and my children Juan and Silvia, I’m so blessed to have them in my life and to have their unconditional support and love. I couldn’t do it without them.
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ABSTRACT

Consumer Preferences Towards Book Formats: How to Address Technological Disruption in the Publishing Industry

By

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April 2021

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Program: Doctorate in Business Administration

The digital era has disrupted the publishing industry in many fronts during the last two decades. The way people consume media content has evolved dramatically, creating alternative platforms to the traditional printed material. Specifically for the book segment, publishing companies have developed new formats in order to capture some of the new digital trends, offering to the public not only the traditional paper-based book, but also an electronic and audio version. These new formats have helped the companies in the industry to partially keep the pace of the market dynamics, but on the other hand have severely increased the cost of production and commercialization for each title, limiting their ability to increase the product offer and consequently to maintain a sustainable and profitable growth on the mid and long term.

Additionally, the providers of the publishing industry, specifically, the printing suppliers have been severely affected by these new megatrends and uncertainty on the publishing houses. Historically, the printing industry has been a solid driver of the whole value chain of books production; providers of ink, paper, other supplies as well as printing equipment and technology have faced similar impact, significantly threatening their stability.
One of the main gaps, is the lack of a solid knowledge about consumer preferences regarding available formats. A better understanding of consumers’ influencing factors, will significantly help the publishing companies to do a better match between book formats and customer preference, providing business leaders in the industry a useful guidance for addressing their production and marketing efforts and consequently the definition of their business strategy and tactical approach to the market.

Combining three main theories: individual difference, involvement theory, and product attributes in consumer theory, this quantitative study identifies which book format between paper-based and electronic, will consumers prefer given certain demographics, involvement level and specific attributes of each book format. As there are not many studies on consumer’s preference towards book formats, the hypotheses were formulated from two sources, reading comprehension theory and discussion with industry leaders.

The evidence suggests that across all demographics there is a higher preference for print books rather than electronic, and despite of not all hypotheses being statistically significant, there are good indications to business leaders in the publishing industry on how to address their marketing and production resources.

INDEX WORDS: Book Formats, Consumer Preferences, Publishing Industry, Print Book vs E-Book
I INTRODUCTION

1.1 Background

For centuries, books have influenced the development of humankind, have strengthen the social establishment, and have been a solid vehicle for sharing ideas and knowledge through generations. Since the development of writing forms, societies have portrayed their history in written material, helping them to preserve their own existence over time. Since the invention of the printing press by Johannes Guttenberg in the 15th century, the paper printed book rapidly became the preferred media for authors and notaries, creating the publishing industry as known today.

The publishing industry comprises two main segments, the periodical publications, which includes magazines, newspapers, catalogues and similar, and the book segment, which in its broader definition includes all types of compiled and structured content in a defined format, usually pages and chapters. Both segments, have significant differences in their business model and value proposition, to name a few, in periodical publications, the revenue is mainly generated by advertising, the content is usually coming from recent events or developments and consequently get outdated faster, and the usage is regularly short-term. In the book segment, the revenue is mainly generated by the sale of the product itself, the content is normally a result of a longer and more structured work between authors and editors, and the usage of such content tends to be for longer periods of time.

With the development of the digital era, the industry is facing significant changes in all its value chain and business model, challenges are coming from many fronts, content generation, cost of materials, production technologies, distribution channels, logistics, piracy, and consumer preferences among others. In the United States, the book publishing industry has shown an
almost flat compound annual growth rate (CAGR) of 0.1% between 2014 and 2019, reaching $29.5 billion dollars in revenue, and the number of business have declined -1.0% in the same period of time, rounding 2.450 establishments (Devin, 2019). Meanwhile, the periodical publications have declined -3.8% between 2015 and 2020, reaching $25.5 billion dollars in revenue, and the number of establishments have declined -4.4% to a total of 4.650 enterprises. Given the significant differences between the two main segments, this study will focus only on the book publishing and will not refer to the magazines and periodical publications.

In the book segment, titles can be categorized in four main segments: textbooks, religious, STM (scientific, technical and medical) and trade books. Textbooks are mainly for academic purposes, covering all types of students, topics and professional fields. Religious, are usually scriptures, prayers, devotionals and related scope. STM, includes content for all areas of knowledge in the scientific, technical and medical fields. Trade books are publications intended for the general public and normally available through the different retail channels, some common examples are novels, children’s books, biographies, art books, cook-books, among others.

With the explosion of communication channels, publishing houses are facing ambiguity about how individuals will consume books, and therefore, they are uncertain about what format(s) they should use for the content they produce. Currently, three main formats are available, paper-based books, electronic books (E-Books) and audio books.

For this study, paper-based books definition includes all paper printed books, independently of the printing technique (digital or analogue), substrate (paper, cardboard, synthetics, others) or finishing (hard cover, soft cover, laminated, others). Electronic book or E-Book refers to the content available to download and read in any digital platform, such as tablets, PCs, laptops, smartphones or similar. The term does not refer to the device itself, or the software
to create and/or download it. Therefore, the definition of E-Book is: “editorial content which its
textual and/or graphic visuals are available to be read in a digital device. It might include but not
necessarily, other additional digital features like hyperlinks to external content, multimedia
objects, interactive features or similar”. Audiobooks are defined as the format with content being
read out loud, independently of the method of transmission (live streaming, downloads, CD’s,
others), device used to listen to it (tablets, PCs, laptops, others) and the extend of the content
(abridged, complete).

Given the fact that audiobooks usage is mainly in trade books such as novels or
instructional books, and rarely used in STM and textbooks, this study won’t address that product
category, limiting only to paper and electronic.

E-Books vs paper-based formats have been studied in quite good extent but mainly with
academic orientation purposes, and specially towards comprehension and effectiveness in the
learning process. This research is not intended to advance in those fields but focus specifically on
the consumer preferences towards the different formats, looking for a better understanding under
the circumstances when and individual will prefer one format versus the other.

1.2 Book Publishing, Printing Industry and Problem Statement

The book publishing industry has been impacted by the digital megatrends, inducing
individuals to change their behavior towards book consumption. Different channels are now
available for students, scientists, professionals and general readers, and this situation has made
the different subsegments in the market to evolve in various ways. Meanwhile education and
textbooks have had a healthy growth in the last five years, trade books have declined severely,
offsetting almost totally the growth of the industry, showing only 0.1\% annualized growth from
2014 to 2019 (Devin, 2019).
In terms of profit, it has decline significantly from 7.6% in 2014 to 5.4% in 2019, driven mainly by the increased costs of production together with lower prices per unit. The main components of production costs are labor, paper, printing equipment assets depreciation, and rent. In general, in order to keep positive margins, companies have sacrificed marketing expenditures and investment in new technologies, meanwhile being conservative in publishing authors considered “high-risk”.

The expectations for the next five years are not very different from current state, revenue is projected to grow at an annualized rate of 1% with similar percentages of profit of around 5% (Devin, 2019). Fair to mention, that book publishing has not suffered the same impact as the other publishing segments, like newspapers and magazines, where the digitalization has deepened dramatically the business and significantly reduced the number of establishments.

One of the biggest inhibitors for publishing firms to increase the number of titles and broaden their portfolio, is the uncertainty of customer preferences towards books’ formats (paper-based, electronic and audio). Despite there are common costs for any publication independently of the format, there are production, commercialization and marketing efforts related to each of them. Depending on the format(s) to develop, the publishing companies and the related stake holders need to trigger a full set of activities, demanding significant amount of resources allocation, majority of which are not reversable or recoverable in case the book is not successful in the market. Generally speaking, there are two main groups of tasks which differ depending on the format selected, the production and the commercialization plans.

If a publishing house decides to offer a title in a paper-based format, the production plan carried by the printing company is an extensive and lengthy process, involving procurement, pre-press, printing, finishing and logistics activities. Expenses include cost of materials such as
paper, ink and related consumables, printing and finishing equipment time, labor, inventory and storage space, distribution, supply chain, and some others. From the commercialization aspect, there are also many activities to coordinate, independently if it is exclusively or a combination of the available channels such as academic institutions, bookstores, retailers or web platforms, the publishing house needs to heavily invest in the sales and marketing plan. Depending on the type and content of the book, the promotion and sale efforts might vary significantly, representing important expenditures to the firm.

On the other side, for the E-Book format, there are also dedicated investments. Despite of not having the printing aspect, the production has some uniqueness like the design which needs to adapt to different screen sizes and device types, or the creation of all the animated, interactive and any other content which might be not present in the paper edition. The commercialization plan also differs, it demands agreements with different platforms, cloud or server storage space, encryption, security royalties, among others. Then, depending on the title and if active promotion is required, there might be expenditures in search words, pop-ups and adds in social media, specialized portals, academic institutions web sites, etc.

Besides the non-recoverable costs, there is another big component that impacts heavily the publishing firm, which is the cost of opportunity. Because of the tight margins, publishing companies have been very conservative and risk averse in terms of new titles, doing a big scrutiny to authors, topics and content. If one of those is considered “risky”, the book might be not be published at all, reducing the total portfolio of the firm.

Even with this cautious approach, many of current titles are being produced and marketed erratically, wasting precious resources and creating a vicious circle for the publishing companies. Important to remark that the situation exposed here refers to a marketing and product positioning
issue, specifically about understanding better the consumer preference towards book’s formats. It is not about the educational value of the different formats, the comprehension for the reader out of them, or the adoption of new technologies in the book industry.

Figure 1. Book Publishing Industry in the US Supply Chain Diagram
(Devin 2019, Book Publishing in the US, IBISWorld)

Figure 2. Book Publishing Industry in the US Product and Service Segmentation
(Devin 2019, Book Publishing in the US, IBISWorld)
The uncertainty and cautious approach have also impacted the providers of the publishing industry, specifically, the printing industry and all its vendors. Providers of ink, paper, plates and many other supplies, as well as manufacturers of printing, composing and finishing equipment have suffered the collateral impact. The production of a printing book title requires significant more investment for a publishing company, in time, resources, space and capital. Naturally, being an industry in turbulent times, the conservative approach is taking predominantly in the printed books, where fewer titles and shorter runs are being printed.

The printing industry developed through the years and flourishment of the printed book a significant installed capacity; many vendors did investments in new developments, R&D, and production plants to serve the publishing houses. Now, with the sudden reduction on printed titles, they are also facing a threatening scenario, the compound annual revenue growth during the last five years (2015-2020) has been -3.9% , and the projection for the next five years (2020-2025) is -4.6% (Rodriguez, 2020). Profit margins have also declined to 1.7% and the
expectations for the coming five years is -1.6pp, reaching a not profitable scenario by 2025 (Rodriguez, 2020).

**Figure 4. Printing Industry in the US Supply Chain Diagram**
(Rodriguez 2020, Printing Industry in the US, IBISWorld)

**Figure 5. Printing Industry in the US Major Market Segmentation Diagram**
(Rodriguez 2020, Printing Industry in the US, IBISWorld)
In summary, book publishing firms are facing a very uncertain future, which at best, presents a no-growth scenario with low expectations of increasing profit. However, there is still time for many companies in the industry to drive internal changes that might positioning them better versus the competition within and outside the industry, most likely, this will require to increase their product portfolio, number of titles produced, investment in new technologies, and risk taking.

Figure 6. Printing Industry in the US Industry Performance (Rodriguez 2020, Printing Industry in the US, IBISWorld)
II RESEARCH QUESTION

What are the demographic, attributional and involvement factors that lead to consumer preferences towards books’ formats?
III THEORETICAL FRAMEWORK

III.1 Involvement Theory

Involvement is a construct that has been extensive and controversially studied, creating different literature streams with various definitions, elements, characteristics and measurements. The first boundary I am defining on this theoretical framework, is the area of knowledge where involvement is studied. Despite of the multiple fields where involvement can be applied, such as education, medicine, psychology, social studies, and many others, this study is focused on the marketing grounds, specifically on customers’ involvement.

Probably one of the main reasons why there are various approaches to study involvement, is because for many authors, involvement is a hypothetical construct, and in that sense, it can neither be observed nor experimentally verified (MacCorquodale & Meehl, 1948) and can only be inferred from the presence or absence and intensity of its alleged determinants or antecedents (Kapferer & Laurent, 1985). Consequently, it can be found in the literature multiple models for involvement, depending on which antecedent or consequence were included by the author.

Andrews et al. (1990), acknowledging the multiple definitions and approaches, and the need of having a clearer understanding of the construct, summarized all the research streams, grouped them into categories, and proposed a framework for conceptualizing and measuring the involvement construct as described in Figure No. 7.
Out of Andrews et al. study, I find two key components that will support the theoretical framework to this research. The first one is the definition itself, for the authors, “involvement is an individual, internal state of arousal with intensity, direction and persistence properties”. This definition besides focusing on the individual, also gives the properties included in the domain of the construct, and therefore giving a clear guideline on who to measure and what to measure. In this case, measuring the involvement of the individual consumer of the book content (not the product and nor the situation around him or her), and his or her degree of involvement based on intensity, direction, and persistence.

The second useful component is the clear separation in the framework of the involvement per se with its antecedents, consequences, and potential related constructs. This split will allow to properly measure the relationship on how the antecedents might impact the involvement.
properties, and not confounding with measuring the antecedent independently and inferring from there the relationship with the construct.

Involvement has three properties, intensity, direction, and persistence, and through them happen the connection of the antecedents with the related consequences. Intensity, following the definition by Andrews et al., refers to the degree of arousal or preparedness of the involved consumer with respect to the goal-related object, which in the case of the present study, I define it as the book in any of its formats. Direction refers to the target of the involvement intensity level, in other words, toward which stimulus the customer is focusing the arousal. An example for this research can be, if the arousal is targeted to the format itself, the content of the book, or any of the characteristics or benefits from the format.

Persistence refers to the duration of the involvement intensity, and as expected it might vary by the antecedents, either personal factors of the individual, or the situational and decision ones. In the case of this study, the intended usage of the book might affect the involvement of the consumer, specifically regarding intensity and duration.

III.2 Individual Differences

Individual differences have been studied in innumerable papers about consumer preferences. Either looking into personality traits, values, social identity, demographic characteristics, or any other factor, individuality of the consumer is directly or indirectly related with the decision-making process of preferring one product versus others. As stated by Childers et al. (1985) individuals differ significantly in their acquisition of information, the strategies they employ during acquisition, and their utilization of acquired information when forming judgments.
Reviewing the literature, market segmentation through Individual differences has two usual approaches, demographics, such as age, gender, race, and psychological characteristics, like values, traits, personal objectives, among others. Both categories are commonly used for understanding consumer preferences towards specific products and services, either using only one of them or the combination of the two. To limit the framework, and also given the reduced number of studies in the literature answering the research question, for this study, only demographics characteristics will be included, specifically, gender, age, and education level.

Gender and age are major demographic characteristics, usually defined as good predictors to categorize consumers. As stated by Mitchell and Walsh (2004), males and females want different products and they are likely to have different ways of thinking about obtaining these. And as defined by Phillips and Sternthal (1977), age differences result in a complex set of changes in individuals’ sources of information, ability to learn, and susceptibility to social influence. The implications of these changes are discussed in terms of marketing practice, theory, and methodology.

Education level is also commonly and broadly accepted demographic factor for consumer preferences, and given the research area of this study, I believe is a solid predictor of books’ formats preference.

**III.3 Product Attributes and Consumer Theory**

Consumer preference may be generated by many factors, and one of them might be a specific, or set of attributes in a product. Specifically, for book formats between paper and electronic, each of them has an array of unique attributes that differentiate from the other. Conceptually, as introduced by Lancaster (1966) “goods are consumed for the characteristics they possess and they are the objects of consumer preference or utility”. It is generally presumed
that the characteristics of a product, are in principle objective and the same for all individuals, meanwhile the utility is subjective and varies across individuals.

The good per se, does not give utility to the consumer; it possesses characteristics, and these characteristics give raise to utility (Lancaster, 1966). This is a fundamental concept to understand consumer preferences and the individuality of it, despite the characteristics are defined and in general understand as factual, at the end is the interpretation from consumer on how that specific characteristic or attribute will benefit him or her in the use or consumption of the product.

From the theoretical perspective, product attributes and preference also relates to judgment and choice, as stated by Tversky et al. (1988), “preference can be inferred from direct choice between options or from a matching procedure in which the decision adjust one option to match another”. Theory states that for the case of choice, the individual selects just between two or more choices offered, meanwhile in the matching procedure, each individual is required to give some value to each of the attributes to be able to compare. In this specific research, the theoretical framework focuses on the former, as the study design is not intending to ask individuals to value the different attributes, but just the product characteristic itself.

As stated by Heeler et al. (1979), attribute importance is a construct of interest in several branches of marketing research. One of the measurement approaches that have emerged is the one that it’s defined as “self-report determinant attribute”. One example of is the study from Myers and Alpert (1968) who from a business management perspective, use determinant attributes as attitudes toward product or service features which are most closely related to preference or to actual purchase decisions. In a continued study, Alpert (1971), researched on three different methods to measure the impact of determinant attributes between direct
questioning, indirect questioning, observation and experimentation, finding that in the population he researched (college students), direct questioning was the best method.

III.4 Reading Comprehension

Reading comprehension has been studied for many years in multiple fronts, with most theorist studying the relation between three factors, reader, text and context. In its hypothetical model, all three components have same degree of influence like shown in Figure No.8 (Pearson & Cervetti, 2015).

Figure 8. Reading Comprehension Hypothetical model
(Pearson & Cervetti, 2015)

Theory has evolved during time, shifting emphasis between components, from text, to reader, to context, mostly studied by psychological and pedagogical fields, with a high predominance during last decades on understanding how individuals form representations of what a text means (Graesser et al., 2001). Relevant to this study, many current models show a strong prominence to the sociocultural context, for Valencia et al. (2014), the context extends to physical location (school, work or home), discipline (science, literature, or social studies), and purpose (reading to
learn, to be entertained, or for insight, or reading for gist or details), forming the RAND model of reading comprehension (Snow, 2002).

![RAND Model](image)

**Figure 9. RAND Model**  
(Snow, 2002)

The RAND model developed a heuristic approach on how the components interrelate in reading comprehension (Snow, 2002). The reader provides his or her cognitive capabilities (visualization, memory, attention); motivation (interest in the content, purpose for reading); knowledge (vocabulary, linguistics, knowledge on the topic); and experiences.

The text impacts significantly comprehension, since the reader interpret different representations of the text, including the surface code (exact wording), the text base (the idea that represent the meaning of the text), and the mental model (how the information is processed by the reader). Snow (2002), remarks that electronic texts bring specific challenges to comprehension due to its non-linear nature of hypertext, but at the same time, hyperlinks might provide additional support with difficult words or definitions.
The activity of reading in terms of comprehension evaluates three main aspects, the purpose, the process and the outcome, all of these, highlighting the individuality of reading. Each person has different nuances in every component and changing constantly over time.

For context, learning and literacy are perceived in some extent as sociocultural activities, not only because they are part of social interaction, but also because it exemplifies how a group or community interprets the world and communicate information (Snow, 2002). Groups can be formed by physical proximity, education levels, ethnicity, native language and many others.
IV HYPOTHESIS

Following the problem statement and based on the theoretical framework, I propose three groups of hypotheses, each of them aligned with the three theories exposed.

As there are not many studies on customer preference towards books’ formats, I supported the hypotheses definition from two additional sources, first, the extensive literature on reading comprehension, predominantly between paper-based and E-Books, and second, discussions with industry leaders, who shared their view and perception towards the topic.

IV.1 H1: Individual Differences hypotheses

As stated by Singer and Alexander (2017), individual difference factors are the variations or deviations among individuals with regard to the characteristics shown to play a significant role in human learning and development, thus, assessing them could help clarify patterns in comprehension performance across mediums, specifically in this case, E-Books versus print-books.

H1a: Younger Individuals prefer E-Books more than print books
(Young individuals defined between 18 and 34 years old)

Despite E-Books origins date back to middle of the twentieth century with the concept of memex as a way for individuals to store and read available information, and with the Gutenberg project in 1971 to start digitizing texts (Manley & Holley, 2012) is only until the end of the 2000 decade, with the launch of the Kindle from Amazon in November 2007 (Clark et al., 2008), the Portable Reader from Sony in 2006 and the Nook from Barnes and Noble (Manley & Holley, 2012) that the technological evolution of allowed the E-Book product category to be accepted by the general public and started massive adoption, followed in the years after by the usage on PC’s, tablets and mobile phones.
Additionally, after discussions with industry leaders, they believe that there might be a difference for the millennial generation, where they prefer E-Books rather than paper-based, not only because of comprehension but also because of environmental consciousness and the digital environment they have been involved.

In that sense, referring to the timeline of E-Book popularization and the assumption of the industry experts, I hypothesize that individuals younger than 34 years old, will prefer E-Books if other conditions remain the same.

**H1b: Educated individuals prefer E-Books more than less educated individuals**
(Educated individuals defined as college degree holders and higher education)

As expected, majority of the studies assessing reading comprehension between print and electronic books’ formats, (over 50% in the 18-year systematic literature review by Singer and Alexander (2017) have done their sampling among college students, and despite such studies have not agreed on a conclusion to show a significant difference in terms of comprehension between both media (Akbar et al., 2013), is generally accepted the increase of electronic reading in academic institutions, even for high-stake assessments that have moved to digital, such as the Graduate Record Examination (Educational Testing Service, 2013) or the Scholastic Aptitude Test (College Board, 2009) (Singer & Alexander, 2017), making the digital literacy to increase through the academic years.

Industry leaders, also believe that educated individuals accept better electronic formats than paper, however, for them is not clear if highly educated individuals will prefer e-books. Hence, I hypothesize that individuals with a college degree will prefer E-Books if other conditions remain the same.
H1c: Women prefer print books more than E-Books

Quoting Akbar et al. (2013) in their study of efficacy of learning in digital sources versus print, they state that “males have a much more highly developed spatial memory in comparison to females, whereas females are superior to males in verbal memory. Verbal memory is essentially a form of semantic memory, in that it constitutes highly abstract information. Spatial memory, on the other hand, is much more highly episodic, as episodic memory includes source locations and surroundings”. Based on these findings and comparing them to the characteristics of both formats, I hypothesize that women will prefer print books over E-Books if all other conditions remains the same.

IV.2 H2: Involvement hypotheses

H2a: Individuals in high involvement situations prefer print books.
H2b: Individual in low involvement situations prefer E-Books

Referring to the three properties of involvement described in the theoretical framework, intensity, persistence and direction, I define a high involvement situation where the individual has a high degree of arousal with the circumstances where the book is going to be used (intensity), the duration of the interaction is significant (persistence), and the direction is towards the object itself, in this case the print book.

In the method section, I describe the question with which I intend to define a high or low involvement situation.

IV.3 H3: Attribution hypotheses

H3a: Individual preferences for print books will go up when its physicality and permanency attributes are emphasized
H3b: Individual preferences for E-Books will go up when its interactivity attribute is emphasized
Physicality refers to the fact that print books are tangible and unique objects, and permanency denotes the fact that they will tend to remain in such state. Interactivity refers to the ability of electronic books to include hyperlinks to other texts, pictures, videos or related content, and denotes the additional accessibility to further knowledge or detail through the same book.
V  METHOD

To test the hypotheses and based on the theoretical framework, I used a quantitative method manipulating involvement and attribution factors within a group of individuals with different demographics characteristics.

I used a sample of 451 randomly selected people through M-Turk portal, assigning them into six different groups based on the demographics stated in the hypotheses. First, by gender, including only men and women, important to notice that in this category I excluded 4 individuals from the total sample, as they identify themselves as third gender and I was not able to assign them into one of the two groups of hypotheses. Second, by age, between 18 to 34 years old and 35 years old and older, and finally, by education level, high education level and low education level, defining high education as any individual with a completed college degree or higher level. Sample size and groups detailed in Table No.1.

<table>
<thead>
<tr>
<th>Table 1. Study Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic Factor</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Young (18 to 34 years old)</td>
</tr>
<tr>
<td>Old (35 years old or older)</td>
</tr>
<tr>
<td>Education</td>
</tr>
<tr>
<td>High (Completed College Degree or higher)</td>
</tr>
<tr>
<td>Low (Non completed College Degree or lower)</td>
</tr>
</tbody>
</table>

V.1  Data and Sample Selection

Data was collected using an electronic survey powered by Qualtrics capturing the three demographic factors required by the method design, plus specific questions about high and low involvement situations and highlighting the physicality attribute of the paper based book and the interactivity attribute of the electronic book as I will detail further in this section.
All the sample was collected through MTurk portal where the electronic survey link was posted, paying a compensation of $1 (one dollar) to each participant who submitted a complete questionnaire. Using the web portal capabilities, system qualifications were added to enforce high quality. I specifically defined three qualifications, a) Only Master workers allowed, b) above 95% acceptance rate, and c) Minimum 5000 HITs. Based on the portal definitions, Master Workers are individuals who have consistently demonstrated a high degree of success in performing a wide range of HITs (Human Intelligence Tasks) across a large number of requesters. A HIT is defined by MTurk as a single, self-contained, virtual task that a worker can work on, submit an answer and collect a reward for completing.

MTurk uses statistical models to assess and grant the “Master Worker” qualification, including the ability of the worker to consistently submit high-quality results, marketplace tenure and variety of work performed. The percentage of acceptance denotes the ratio of completed tasks that are approved by requesters, and the number of HITs exclude all workers that have not completed at least that minimum number, in this case, 5000 HITs.

The three qualifications together, master category, above 95% acceptance rate and minimum HITs give requirements needed to be qualified as high-quality sample, as stated by Peer et al. (2014). Sampling high reputation (above 95% approval ratings) can ensure high-quality data, which is one of the major concerns of using crowdsourcing websites such as Amazon Mechanical Turk.
I also defined additional qualifications to limit participants only to be located in the United States territory and being at least 18 years old. Initially, I did a wide search for five hundred participants, but only got 158 responses, then, additional batches had to be run in order to have enough sample size in all of the groups needed. Detailed sample is described in Table No.2.

<table>
<thead>
<tr>
<th></th>
<th>Female</th>
<th></th>
<th>Male</th>
<th></th>
<th>Third Gender</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td><strong>Age</strong></td>
<td><strong>Education</strong></td>
<td><strong>Age</strong></td>
<td><strong>Education</strong></td>
<td><strong>Age</strong></td>
<td><strong>Education</strong></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td><strong>n =</strong></td>
<td>63</td>
<td>57</td>
<td>64</td>
<td>37</td>
<td>80</td>
<td>36</td>
</tr>
</tbody>
</table>
V.2 Hypotheses Testing

To test the hypotheses, besides the identification markers to classify the demographic groups of gender, age, and education level, specific questions were formulated to address the three main groups of hypotheses, individual differences, involvement, and attribution. For individual differences, participants were asked to rate his or her preferences for print books and E-Books all being equal, using a 5-point Likert scale from *Do Not Prefer*, to *Prefer a great deal*.

For involvement, participants were instructed to imagine two situations, one for high involvement and another one for low involvement. Specifically for high involvement, individuals were requested to imagine a situation that either brings a high degree of excitement, high degree of personal relevance, or they will be connected for a certain time, and then, asked to answer his or her preference for a book related with this scenario (e.g., a required book for an important course). Answers were rated using the same 5-point Likert scale for each of the formats, paper based and electronic. Equally, for low involvement, participants were asked to imagine the opposite situation, either because it has a low degree of arousal, low degree of personal relevance, or they will be connected for a short period of time, and then, asked their preference for a book to be used in this scenario (e.g., a casual story book).

To test attribution, two independent questions were included in the questionnaire, one emphasizing the fact that print books are physically accessible permanently, and another one, highlighting the interactivity attribute of the E-Book. For both questions, individuals were asked to rate their preference in a 5-point Likert Scale.

ANOVA methodology was used for all variables, defining age and education level as categorical variables (high/low) instead of continuous that would’ve allowed to run regression analysis. This choice was done mainly due to a specific focus on an “overall” effect in two main
groups, which at the same time was derived from the interest of the industry leaders during the interviews to form the hypotheses. As data was collected as continuous variables, future research might include regression analysis, adding better predictive capabilities.

As control questions for further research and analysis, participants were asked if they owned a e-reader device and if they believe that electronic books are more environmentally friendly than paper books, both questions with a yes/no answer.
VI RESULTS

VI.1 Descriptive statistics and general results

As this study main interest is to help the publishing industry and its value chain in terms of customer preferences for book formats between paper-based and electronic, basic initial descriptive statistics start to give some directional indications. Before any demographic analysis and just measuring the preference for each of the formats all being equal, the mean for Print Book preference in a scale 1 to 5, being 5 the highest preference is 3.59 with a standard deviation of 1.30, and the mean for E-Book preference using same scale is 2.77 with a standard deviation of 1.37 as described in Table No.3.

Table 3. Descriptive Statistics Format Preference all being equal

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Print Book Preference</td>
<td>451</td>
<td>1.00</td>
<td>5.00</td>
<td>3.5876</td>
<td>1.30238</td>
</tr>
<tr>
<td>E-Book Preference</td>
<td>451</td>
<td>1.00</td>
<td>5.00</td>
<td>2.7650</td>
<td>1.37363</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>451</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>Higher number represents higher preference

Doing same analysis now including the characteristic of each of the formats, permanency for the paper-based and interactivity for the electronic book, mean is 3.68 with standard deviation of 1.21 for the former and mean of 2.79 with standard deviation of 1.30 for the latter as described in Table No.4.

Table 4. Descriptive Statistics Format Preference and Attribute

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Print Book Preference</td>
<td>451</td>
<td>1.00</td>
<td>5.00</td>
<td>3.5876</td>
<td>1.30238</td>
</tr>
<tr>
<td>E-Book Preference</td>
<td>451</td>
<td>1.00</td>
<td>5.00</td>
<td>2.7650</td>
<td>1.37363</td>
</tr>
<tr>
<td>Permanency Paper</td>
<td>451</td>
<td>1.00</td>
<td>5.00</td>
<td>3.6763</td>
<td>1.20990</td>
</tr>
<tr>
<td>Interactivity E-Book</td>
<td>451</td>
<td>1.00</td>
<td>5.00</td>
<td>2.7871</td>
<td>1.30432</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>451</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>Higher number represents higher preference
VI.2 Hypotheses

**H1a: Younger Individuals prefer E-Books more than print books**
(Young individuals defined between 18 and 34 years old)

Hypothesis was tested using a t-test for the format preference all being equal and the two age groups, between 18-35 (young) and more than 35 years old (old). For younger individuals, preference for Print Book has a median of 3.51 versus a preference for Electronic Book of 2.79, with \( p > 0.05 \) being not statistically significant.

Hypothesis H1a is NOT supported, and mean results give opposite directionality of the original supposition, as younger individuals have a higher preference towards print books than electronic books (3.5140 vs 2.7850), as described in Table No. 5.

**Table 5. Format Book Preference by Age Group**

<table>
<thead>
<tr>
<th>Two Groups Age</th>
<th>N</th>
<th>Mean(^a)</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Print Book Preference</td>
<td>18 -34</td>
<td>214</td>
<td>3.5140**</td>
<td>1.24368</td>
</tr>
<tr>
<td></td>
<td>More than 35</td>
<td>237</td>
<td>3.6540**</td>
<td>1.35238</td>
</tr>
<tr>
<td>E-Book Preference</td>
<td>18 -34</td>
<td>214</td>
<td>2.7850**</td>
<td>1.35680</td>
</tr>
<tr>
<td></td>
<td>More than 35</td>
<td>237</td>
<td>2.7468**</td>
<td>1.39127</td>
</tr>
</tbody>
</table>

\(^{**}\) Not significant \( p > 0.05 \)
\(^{a}\) Higher number represents higher preference

**H1b: Educated individuals prefer E-Books more than less educated individuals**
(Educated individuals defined as college degree holders and higher education)

Hypothesis was tested using a t-test for the format preference all being equal and the two education level groups, college degree and higher (High) and non-completed college degree or lower (Low). For educated individuals (High Education), preference for E-Books has a median of 2.72 versus the preference from less educated individual (Low Education) Electronic Book of 2.84, with \( p > 0.05 \) being not statistically significant.
Hypothesis H1b is NOT supported, and mean results give opposite directionality of the original supposition, as described in Table No. 6.

Table 6. Book Format Preference by Education Level

<table>
<thead>
<tr>
<th>Two Groups Education</th>
<th>N</th>
<th>Mean a</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Print Book Preference</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Education</td>
<td>172</td>
<td>3.7093**</td>
<td>1.28296</td>
<td>.09783</td>
</tr>
<tr>
<td>High Education</td>
<td>279</td>
<td>3.5125**</td>
<td>1.31087</td>
<td>.07848</td>
</tr>
<tr>
<td>E-Book Preference</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Education</td>
<td>172</td>
<td>2.8430**</td>
<td>1.43221</td>
<td>.10921</td>
</tr>
<tr>
<td>High Education</td>
<td>279</td>
<td>2.7168**</td>
<td>1.33658</td>
<td>.08002</td>
</tr>
</tbody>
</table>

** Not significant p > 0.05

a Higher number represents higher preference

H1c: Women prefer print books more than E-Books

Hypothesis was tested using a t-test for the format preference all being equal and the two main genders, male and female. For Print Books, Women have a preference with a median of 3.78 versus 2.76 for electronic books, with p < 0.05 being statistically significant as described in Table No. 7

Hypothesis H1c IS supported.

Table 7. Book Format Preference by Gender

<table>
<thead>
<tr>
<th>What is your gender?</th>
<th>N</th>
<th>Mean a</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Print Book Preference</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>226</td>
<td>3.3850*</td>
<td>1.31911</td>
<td>.08775</td>
</tr>
<tr>
<td>Female</td>
<td>221</td>
<td>3.7828*</td>
<td>1.25331</td>
<td>.08431</td>
</tr>
<tr>
<td>E-Book Preference</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>226</td>
<td>2.7655</td>
<td>1.39641</td>
<td>.09287</td>
</tr>
<tr>
<td>Female</td>
<td>221</td>
<td>2.7647</td>
<td>1.35137</td>
<td>.09090</td>
</tr>
</tbody>
</table>

* Significant p < 0.05

a Higher number represents higher preference

H2a: Individuals in high involvement situations prefer print books.

This scenario asked participants to imagine a high involvement situation and then rate their preferences towards print books and E-Books. Using a frequency table, individuals in a
high involvement situation, either because brings a high degree of excitement, high degree of personal relevance, or they will be connected for a certain time, prefer print books with a mean of 3.74 versus E-Books with 2.49 as described in Table No.8. When looking into percentages, 62% of participants prefer Print Books a great deal and prefer a lot, versus 38% of prefer a moderate amount, prefer slightly, or do not prefer (Table No.9). Additionally, as supportive data, in the same scenario for E-Books, 24.8% of individuals prefer a great deal and prefer a lot. (Table No.10)

Hypothesis H2a IS supported.

Table 8. High Involvement Book Format Preference

<table>
<thead>
<tr>
<th></th>
<th>High Involvement Print Book</th>
<th>High Involvement E-Book</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Valid</td>
<td>451</td>
<td>451</td>
</tr>
<tr>
<td>Missing</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mean</td>
<td>3.74</td>
<td>2.49</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>1.292</td>
<td>1.359</td>
</tr>
</tbody>
</table>

a Higher number represents higher preference

Table 9. High Involvement Situation Print Book Preference

<table>
<thead>
<tr>
<th>Valid</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not prefer</td>
<td>32</td>
<td>7.1</td>
<td>7.1</td>
<td>7.1</td>
</tr>
<tr>
<td>Prefer slightly</td>
<td>59</td>
<td>13.1</td>
<td>13.1</td>
<td>20.2</td>
</tr>
<tr>
<td>Prefer a moderate amount</td>
<td>80</td>
<td>17.7</td>
<td>17.7</td>
<td>37.9</td>
</tr>
<tr>
<td>Prefer a lot</td>
<td>103</td>
<td>22.8</td>
<td>22.8</td>
<td>60.8</td>
</tr>
<tr>
<td>Prefer a great deal</td>
<td>177</td>
<td>39.2</td>
<td>39.2</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>451</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
Table 10. High Involvement Situation E-Book Preference

<table>
<thead>
<tr>
<th>Valid</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not prefer</td>
<td>143</td>
<td>31.7</td>
<td>31.7</td>
<td>31.7</td>
</tr>
<tr>
<td>Prefer slightly</td>
<td>108</td>
<td>23.9</td>
<td>23.9</td>
<td>55.7</td>
</tr>
<tr>
<td>Prefer a moderate amount</td>
<td>88</td>
<td>19.5</td>
<td>19.5</td>
<td>75.2</td>
</tr>
<tr>
<td>Prefer a lot</td>
<td>60</td>
<td>13.3</td>
<td>13.3</td>
<td>88.5</td>
</tr>
<tr>
<td>Prefer a great deal</td>
<td>52</td>
<td>11.5</td>
<td>11.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>451</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

H2b: Individuals in low involvement situations prefer E-Books

In this scenario, individuals were asked to imagine the opposite situation, now in low involvement, either because it has a low degree of arousal, low degree of personal relevance, or they will be connected for a short period of time. Using a frequency table, participants prefer E-Books with a mean of 3.14 versus print books with a mean of 2.82 (Table No.11). In percentages, 45.2% prefer a great deal and prefer a lot E-Books, versus 54.8% who prefer a moderate amount, prefer slightly, and do not prefer (Table No.12). Additionally, preference for print books in the same situation and scales, is 30.2% (Table No.13)

Hypothesis H2b IS supported.

Table 11. Low Involvement Book Format Preference

<table>
<thead>
<tr>
<th></th>
<th>Low Involvement Print Book</th>
<th>Low Involvement E-Book</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Valid</td>
<td>451</td>
<td>451</td>
</tr>
<tr>
<td>Missing</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mean&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.8248</td>
<td>3.1441</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>1.33597</td>
<td>1.40920</td>
</tr>
</tbody>
</table>

<sup>a</sup>Higher number represents higher preference
Table 12. Low Involvement Situation E-Book Preference

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do not Prefer</td>
<td>76</td>
<td>16.9</td>
<td>16.9</td>
<td>16.9</td>
</tr>
<tr>
<td>Prefer Slightly</td>
<td>89</td>
<td>19.7</td>
<td>19.7</td>
<td>36.6</td>
</tr>
<tr>
<td>Prefer a Moderate Amount</td>
<td>82</td>
<td>18.2</td>
<td>18.2</td>
<td>54.8</td>
</tr>
<tr>
<td>Prefer a lot</td>
<td>102</td>
<td>22.6</td>
<td>22.6</td>
<td>77.4</td>
</tr>
<tr>
<td>Prefer a great deal</td>
<td>102</td>
<td>22.6</td>
<td>22.6</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>451</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 13. Low Involvement Situation Print Book Preference

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do not Prefer</td>
<td>81</td>
<td>18.0</td>
<td>18.0</td>
<td>18.0</td>
</tr>
<tr>
<td>Prefer Slightly</td>
<td>129</td>
<td>28.6</td>
<td>28.6</td>
<td>46.6</td>
</tr>
<tr>
<td>Prefer a Moderate Amount</td>
<td>105</td>
<td>23.3</td>
<td>23.3</td>
<td>69.8</td>
</tr>
<tr>
<td>Prefer a lot</td>
<td>60</td>
<td>13.3</td>
<td>13.3</td>
<td>83.1</td>
</tr>
<tr>
<td>Prefer a great deal</td>
<td>76</td>
<td>16.9</td>
<td>16.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>451</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

H3a: Individual preferences for print books will go up when its physicality and permanency attributes are emphasized

Comparing preference for Print Books all being equal with preference for Print Books when permanency attribute is highlighted, there is a slight increase in the median from 3.59 to 3.68 (Table No.14)

H3a IS supported

Table 14. Print Book Preference all equal vs Permanency Highlighted

<table>
<thead>
<tr>
<th>Print Book Preference</th>
<th>Permanency Highlighted Preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Valid</td>
<td>451</td>
</tr>
<tr>
<td>Missing</td>
<td>0</td>
</tr>
<tr>
<td>Mean&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3.5876</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>1.30238</td>
</tr>
</tbody>
</table>

<sup>a</sup> Higher number represents higher preference.
**H3b: Individual preferences for E-Books will go up when its interactivity attribute is emphasized**

Comparing preference for E-Books all being equal with preference for E-Books when interactivity attribute is highlighted, there is a slight increase in the median from 2.77 to 2.79 (Table No.15).

H3b IS supported.

**Table 15. E-Book Preference all equal vs Interactivity Highlighted**

<table>
<thead>
<tr>
<th></th>
<th>E-Book Preference</th>
<th>Interactivity E-Book</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Valid</td>
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\(^a\) Higher number represents higher preference

**VI.3 Additional Results – Subgroups Analysis**

Despite not being included in the original hypotheses, as the different demographic groups are not exclusive, I performed subgroups analysis to check interaction effects between them through a univariate analysis of variance. In general, all subgroups are consistent with hypotheses results, but the ones related only with E-Books, specifically for the interactivity attribute and low involvement situations. From there I can infer that E-Books preference is not as strong as print books.

Hypothesis H1a, *Younger individuals prefer E-Books more than print books*, was not supported and the mean results gave opposite directional results, younger individual actually have a higher preference for print books. When split into the two additional demographics,
gender and education level, results are still not statistically significant, however, for all four groups results keep consistent for a higher preference for print books versus E-Books. Young male (3.40 vs 2.71), young female (3.69 vs 2.89), educated young individual (3.91 vs 2.51) and less educated young individual (4.15 vs. 2.89).

![Format Preference Young Population](image)

**Figure 10. Format Preference Young Population**

For hypothesis H1b, *Educated individuals prefer E-Books more than less educated individuals*, hypothesis is not supported, and results give opposite directional results. When split into groups with age and gender, results maintain consistency in all subgroups, educated individuals don’t prefer E-Books more than less educated individuals. Educated young vs less educated young (2.51 vs 2.89), educated old vs less educated old (2.78 vs 3.30), educated male vs less educated male (2.70 vs 2.90), and educated female vs less educated female (2.74 vs 2.81).
For hypothesis H1c, *Women prefer print books more than E-Books*, hypothesis was supported with statistical significance. When split into subgroups for age and education level, results keep consistent, and in the four subgroups women prefer print books more than E-Books, educated women (3.67 vs 2.74), less educated women (3.92 vs 2.82), younger women (3.66 vs 2.90), and older women (3.92 vs 2.66).

**Figure 11. E-Book Preference by Education Subgroups**

**Figure 12. Women Book Format Preference**
For hypothesis H2a, *Individuals in high involvement situations prefer print books*, hypothesis is supported. When analyzed by the three different demographic groups, age, gender and education, results are consistent across all groups and all of them in high involvement situations, prefer print books versus E-Books. Young individuals (3.62 vs 2.45), old individuals (3.72 vs 2.38), male (3.63 vs 2.56), female (3.85 vs 2.46), educated individuals (3.67 vs 2.36), and less educated individuals (3.67 vs 2.47).

![Graph of Book Format Preference in High Involvement Situations](image)

**Figure 13. Book Format Preference in High Involvement Situations**

In hypothesis H2b, *Individuals in low involvement situations prefer E-Books*, when split into the different demographic groups, results are not consistent across all of them. Only the split by gender, for both, male and female have a clear preference towards E-Books in low involvement situation, but when analyzed for the additional two groups, age and education, results are not conclusive. Print Book preference versus E-Books in low involvement situation is as follows: Male (2.71 vs 3.12), female (2.94 vs 3.16), young individuals (3.19 vs 3.03), old
individuals (3.26 vs 3.18), educated individuals (3.16 vs 3.12), less educated individuals (3.29 vs 3.09).

Figure 14. Book Format Preference in Low Involvement Situations

For H3a, *Individual preferences for print books will go up when its physicality and permanency attributes are emphasized*, hypothesis is confirmed. When divided into the three demographic categories, results are consistent for age and education in both groups, for male, but for women, preference doesn’t go up but stays the same (less than 0.0015% difference). The mean preference for each group of print books all being equal vs attributes emphasized is as follows: Young population (3.76 vs 3.916), old population (3.89 vs 4.01), educated individuals (3.75 vs 3.90), less educated individuals (3.90 vs 4.03), male (3.41 vs 3.58), and female (3.789 vs 3.784).
For H3b, *Individual preferences for E-Books will go up when its interactivity attribute is emphasized*, hypothesis is supported, but the increase when the attribute is highlighted is minimal. When divided into the three demographic groups, results are not consistent and inconclusive. For education and age give opposite directionality. Mean preferences for E-Books all being equal versus when the attribute of interactivity is highlighted, are as follows: young population (2.79 vs 2.39), old population (2.75 vs 2.38), male (2.79 vs 2.86), female (2.78 vs 2.80), educated individuals (2.70 vs 2.27), less educated individuals (2.83 vs 2.49).
Figure 16. E-Book Preference when Interactivity is Highlighted
VII FINDINGS AND IMPLICATIONS

This study intend is to give the publishing industry and its providers a better view of consumer preference in terms of book formats, specifically between printed and electronic. The results of the research bring significant and meaningful information on how to approach authors, content, production, and commercialization for publishing houses, and also give industry providers good insights to support their sales motion and business development with the publishing houses.

Commencing with the general descriptive findings, interestingly, among the total sample of 451 individuals with different demographics in terms of gender, age and education, there is a significantly higher preferences for the print book rather than the electronic format. Remarkably, being in the digital era, with so much content available in different platforms, social media, podcasts, and others, when refers to books, the general population still prefers paper-based books.

VII.1 Key Findings

H1a Younger Individuals prefer E-Books more than older individuals

Interestingly, even though the hypothesis is not supported, the study found that younger individuals, defined as 18 to 34 years old, prefer paper-based books rather than electronic by a noteworthy difference, 3.51 vs 2.79 in a 5-point scale. Despite of not being statistically significant, the finding actually contradicts the general belief of the industry leaders and the suggestions from the comprehension theory literature. People 34 years old or younger were born and raised in the digital era, for a majority of them, technology, internet, screens and social media content were available since a very early age. Independently of their level of education,
high chance that at some extend they leveraged technology devices to learn, to read, to capture content.

In this hypothesis, all aspects are being equal, and we are not evaluating other demographic factors, situation, intend of use, or product attribution, that would be later in this section, but having such a big group of the US population, still having a directional preference towards paper-based books is a tremendous insight for the publishing industry, editors and writers, who produce a lot of titles for such demographic group.

Important to note that this study surveyed only people who are 18 years old or older, excluding all the teenagers and children for whom many books are also produced. At the same time, it means that the young population analyzed were born between 1986 to 2002, covering a big portion of the millennial generation that based on the Pew Research Center, correspond to anyone born between 1981 to 1996 (Dimock, 2019), and the early Generation Z, who based on the same report correspond to anyone born between 1997 to 2012.

Covering majority of the millennial generation is also good insight for the publishing industry, who can address better the content that might suit such age group, which also is perceived to have currently a relatively good consumer buying power.

**H1b: Educated individuals prefer E-Books more than less educated individuals**

Comprehension literature suggests that people with longer periods of education and consequent possible longer interaction with digital devices and platforms, tend to accept, use, and comprehend digital texts better than the ones with shorter periods of education. Nevertheless, educated individuals do not show a higher consumer preference towards the electronic format than the less educate, (2.72 vs 2.84). Unfortunately, the results were not statistically significant, and the mean difference in preference for the two groups is not giving
substantial directional indications either, or we can’t conclude that education level is a factor for format book preference.

Nonetheless, the 2x2 matrix from this hypothesis provides an interesting finding. When comparing print book versus E-Book, both demographical groups, high educated and low educated individuals, show a significantly higher preference for paper based than electronic, adding directional evidence to the general population findings. Also interestingly, less educated people have an even higher preference for print books than more educated population.

Lastly, as contrast with comprehension theory, it might be inferred that despite the theory states that the higher the education level, the higher the individual comprehension of the content, preference for the format doesn’t increase. In other words, one might comprehend better the content of an e-book if he or she is highly educated, but it doesn’t necessarily mean that he or she will prefer an e-book over a print book.

**H1c: Women prefer print books more than E-Books**

Literature suggests that women are better in verbal memory than in spatial memory which translates into a higher efficiency in learning and comprehending from paper texts rather than electronic. This study confirms that it applies for their consumer preference towards print books as well, with a statistically significant preference of 3.78 for paper, versus 2.76 for electronic. Additionally, and beyond the hypothesis, results show that female preference for print books is higher than male preference.

These findings are tremendously beneficial for the publishing industry on how to address production and commercialization resources for book production. From one side, there are titles where the content is clearly directed to a majority of female audience, for which the efficacy of the marketing and production plans can significantly improve. And on the other side, even for
gender indifferent content, for titles with mixed production (paper and electronic), it can be better distributed, and the marketing messages can also be refined for each of them.

Based on the Book Publishing in the US report 2019 from IBISWorld, adult trade books, which are fiction and nonfiction books published for consumption by the adult population, constitute 18% of the industry sales in 2019 (Devin, 2019). Adult trade books have declined their revenue during the last five years, despite the volume has increased among several categories, and this is because this segment has been the most popular for E-Books, generating less revenue per copy sold for publishers and authors, and none for printers. The findings bring a solid opportunity for the industry, women represent 50.8% of the population in the United States (U.S. Department of Commerce, 2011), with a proper approach, publishing houses can capture more revenue and profit, even without increasing the total volume of copies sold.

**H2a: Individuals in high involvement situations prefer print books.**

Based on the literature, involvement is a hypothetical construct that can only be measured by its determinants or antecedents (Kapferer & Laurent, 1985), which in the case of books, it’s mainly related with the content of the book and the personal meaning for the reader, or the situation where it’s going to be used. Specifically in this study, participants were asked to imagine a situation with high level of arousal, high degree of personal relevance, or connection for certain time. The results confirmed the hypothesis, giving meaningful insights to the publishing industry.

One can argue that for an editor or a publishing house might be difficult to assess on the personal relevance and arousal that the user will have with the book, but there is a significant amount of titles for which can be inferred if there will be a long connection, for example, textbooks or religious books. There are also authors that using market research editors can
establish if they impact people in some way that increase the level of arousal; for all of those, publishing firms will have a better view on how to produce and the mix between paper and electronic format.

Another perspective for inferring high involvement, are books that are bought as a present for somebody else. Beyond the physicality attribute of the paper-based format that I will discuss later on this section, there is a component of high involvement in giving, people usually get some degree of arousal when looking for a present. Again, editors can survey the market to identify the titles that are being bought as gifts and redirect the production and commercialization of the book.

**H2b: Individuals in low involvement situations prefer E-Books**

Conversely from previous situation, participants were asked to imagine a low involvement situation with opposite characteristics of the high involvement in terms of arousal, relevance, and connection time. Results show that the hypothesis is confirmed, and individuals prefer electronic books in low involvement cases. In a similar way is useful for the publishing industry the findings on high involvement situations, are the low involvement ones. There are titles for which might be inferred that the level of involvement would be low.

For the printing industry, it might be also a good insight, because even though the preference is towards electronic books, if they would like to have a share of those titles, they would need to develop strategies to make the titles relevant. For example, using digital printing technologies, customize or even personalize the books for each individual to get some degree of personal relevance that will make the paper-based format attractive.
H3a: Individual preferences for print books will go up when its physicality and permanency attributes are emphasized

Comparing the preference for print books all being equal versus the preference when the attribute of physicality is highlighted, study confirms that when the attribute is emphasized the preference goes up. The fact that a paper-based book is a physical object brings a good amount of implications in various aspects. First, is the sensory aspect, feeling, touching, smelling a paper book transmit more messages to the reader than the electronic format, it might give a very different sensation and experience for the one reading the content. Second, is the uniqueness of every book, even though they might be printed in the same format size, paper and finishing, each printed title is different from the other, meanwhile in the electronic, besides the cover and font, all books are very similar, and at the end, read in a digital device, probably the same one.

Third, is the memory aspect, and related to the comprehension theory, where the human brain uses all senses to remember things; smells, textures, position in a page, evoke memories on a person, and the printed book has a better ability to trigger all those messages. Fourth, is the ability to hand it over to someone else, like a gift as mentioned earlier in this section. Even though the electronic format can also be given as a present, there might be still a difference when you deliver something physical to the one you want to please with the gift. Fifth, there may be a component of status and decoration from printed books. For some people and professions, like lawyers or doctors, where having physical books give a sense of status, a confirmation of their profession and knowledge. Also, they might be considered elements of decoration, very well printed and high-quality books, like photography ones, are usually taken more as a decoration object than an information one.
**H3b: Individual preferences for E-Books will go up when its interactivity attribute is emphasized**

When preference for E-Books all being equal was compared with the preference for the same format when interactivity is highlighted, the study confirms that preference goes up when the attribute is emphasized. One of the many unique attributes of the electronic format is the interactivity, the ability to link to other content, like videos, pictures, references, or even simple word definitions, support significantly the use of this format.

Publishing companies, editors and authors should really leverage this attribute to increase demand for electronic books. One of the main objectives for a book is to transmit information, to communicate, and the potential to create connections across content increases this aspect exponentially. On top, if the content is coming from the same publishing house, is a tremendous competitive advantage as it directs the reader to the firm products, increasing awareness, and probably purchase of additional titles.

It’s important to note, that creating or connecting to existent content to increase interactivity, brings a significant increase in development, edition, royalties and in general additional time and resources to implement, with the consequent increase in production costs. Technological systems and solid partnership with other publishing houses might be considered.

**Interaction effects (Sub-group analysis)**

For marketing studies, interaction effects results could be even more interesting than primary effects, which might apply on this study as well. As described in the results section, the main finding is that all hypotheses were consistent when analyzed at the subgroup level, but the ones related with e-books in attribution and involvement, inferring that e-books preference is not as strong as print books preference.
For example, hypothesis stating that women prefer print books more than e-books was supported, and when looking into the interaction effects is consistent across all groups, it doesn’t matter if it is a young, old, high educated, or less educated, all women have a stronger preference towards print books. Same case for involvement situation, for all groups, young, old, female, male, high educated and low educated, if the individual is in a high involvement situation, he or she will prefer a print book. This finding is extremely powerful for practitioners, it gives them the predominant factors for preference.

On the contrary, for the hypotheses related with e-books, in both, low involvement situations, and interactivity attribute highlighted, the results are not consistent across all sub-groups. Clearly, presenting a situation for future research, but also insightful for practitioners as they would need to be more careful on the preconceptions about e-books preference until additional findings are confirmed.

**VII.2 Implications**

**Implications to Practitioners**

As described in the key findings section, the publishing industry and its value chain of providers have a lot to leverage from the results and insights from this study. It gives them directionality on critical points under current challenging times. Both, publishers and printing companies need to understand better the consumer preferences to adapt their efforts and properly allocate the scare resources they have. There are multiples opportunities in the market for the book industry, which if exploit correctly, it will take the industry back to growth, understanding how they coexist with the digital era and the consumer trends.

It’s very positive for the industry to identify demographics, situations, and product attributes where consumers prefer one format versus the other, both, paper-based and electronic
have potential to revamp the revenue and profit trend. In every sub-segment of the market, providers, editors, publishers, and go-to-market channels can address better their commercialization and marketing strategies, reaching the different consumer groups with a more refined message, being more effective in their business activity.

Publishing Houses are able to infer for many titles the predominant targeted audience, or predominant situation where the book is going to be used, and therefore, understanding the preference by demographic groups or level of involvement is extremely useful to design production, sales, and marketing plans. Indifferently from the product category where the publisher is currently competing, either if it is textbooks, religious, STM (scientific, technical, and medical), or trade books, all would find meaningful insights to increase the efficacy of their business activities.

From the age demographics hypothesis, there is a fundamental implication for practitioners, not only related to the current state and how to address their efforts depending on the audience, but also for the future of the business. Industry leaders had a belief that millennial generation prefers e-books, and that has significant consequences on the next couple of decades as they will carry a significant portion of the purchasing power of the economy, affecting not only their own purchases but also likely influencing their children’s book consumption, confirming a big group of the total addressable market for publishing companies.

Another significant implication for practitioners is the impact on risk aversion that they are currently experiencing. As defined in the problem statement, driven by the no-growth and decreased profitability status of the industry, publishers are being more cautious on the titles they produce, creating a significant cost of opportunity and consequent vicious circle on growth and profit hard to break. Having insight of customer preferences, might give them a better confidence
and be more aggressive on the authors to publish, increasing their portfolio of products, creating a possibility of increasing revenues and profits.

On my executive tenure, working for the market leader of digital printing equipment, I will write a white paper with the results of the study. Printing providers are constantly working on business development campaigns, helping their customers and the customers of their customers, to find new ways of doing business and how to increase utilization of the printing equipment, especially in the digital devices that offer a new array of possibilities, from printing on-demand, to high personalization and customization.

**Implications to literature**

This research combines individual differences theory, involvement theory and product attributes for marketing purposes, specifically, consumer preferences in book formats, for which there are not many studies in the body of literature.

On comprehension theory, from where the individual differences hypotheses were formulated given the lack of studies in marketing, one can inferred that there is not significant correlation between comprehension and consumer preference. Education literature focuses on how much the reader interpret, remember, and learn from the book, but it doesn’t necessarily correlate with the preference of consumption between the two main formats.
VIII LIMITATIONS AND FUTURE RESEARCH

Sample size is a limitation of this study, with n=451 there might be not enough size to give statistical significance to some of the hypotheses. A larger study might help to test current and new hypotheses. Also, future research including additional demographics groups might be beneficial to extend the body of knowledge for consumer book preferences, for example, annual income, socio-economic level, professional activity, and geographical location might give even deeper insights to publishing houses.

From the product attribution perspective, the study is limited to just one attribute per type of format, when there are plenty differentiated characteristics for paper-based and electronic books. Additional research including new attributes might also expand the findings. For example, portability, easiness of purchase, availability, and status of ownership.

A significant group of book consumers is the under-age population, children, and teenagers from 5 to 17 years old consume a lot of content from written sources, in the case of books, highly related with education, but might be also for recreational purposes. Understanding the preferences among different age groups, will clearly support the publishers and editors who produce titles for that segment.

On top of demographic factors, future research might include psychographic factors which opens a completely new perspective for book format preferences research. To give few examples, time constrains, cognitive style, lifestyles, or beliefs. For time constrains, in the current high-speed pace of living for many individuals, a factor that might significantly impact the preference is when, how and how fast it can be purchased or consumed. In cognitive style, some people might prefer visual versus written, or listening versus reading, and that could be the predominant factor. For lifestyle, the collection of day-to-day activities, how people like to spend
their time, might certainly impact the preferences. In beliefs there are many possibilities to research, a quick example can be environmental beliefs and impact of paper production for the environment.

In terms of formats, study is limited to paper based and electronic, but certainly future research might include audio books or other ways where authors can communicate their ideas, such as, podcasts, blogs, videos, etc.

This study is limited to measure each of the three theories separately, individual differences, involvement and attribution were tested with a set of hypotheses each. However, future research might include combining two theories, for example, demographic groups under certain involvement situation, or product attributes with involvement. All new scenarios might contribute to the body of knowledge and provide more educated insights to the industry and its value chain.

In terms of methodology and as mentioned previously, age and education level were treated as categorical variables and therefore, ANOVA was performed, limiting the predictive abilities of the analysis. Future research might include regression analysis, using the variables as continuous.

Last, this study is limited to current preferences and situations, it doesn’t explore future preferences. As an interesting research it might be expanded to simulate future situations that lead to infer what would be the book format preferences in some years from now, this will give meaningful insights to the industry on how to plan their future strategy.
REFERENCES


APPENDICES

Appendix A: Book Publishing Industry detailed data

### Industry Data

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<th>IVA (Sm)</th>
<th>Establishments (Units)</th>
<th>Enterprises (Units)</th>
<th>Employment (Units)</th>
<th>Exports (Sm)</th>
<th>Imports (Sm)</th>
<th>Wages (Sm)</th>
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### Annual Change

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<th>Establishments (%)</th>
<th>Enterprises (%)</th>
<th>Employment (%)</th>
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Source: Book Publishing in the US (Devin, 2019)
## Appendix B: Printing Industry detailed data

### Industry Data

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<th>IVA ($m)</th>
<th>Establishments (Units)</th>
<th>Enterprises (Units)</th>
<th>Employment (Units)</th>
<th>Exports ($m)</th>
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<th>Wages ($m)</th>
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### Annual Change

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Source: Printing in the US (Rodriguez, 2020)
Appendix C: Univariate Analysis of Variance Plots Interactions between demographics

Print Book Preference

Estimated Marginal Means of Print Book Preference

What is your gender?
- Male
- Female
- Non-binary / third gender

Estimated Marginal Means

Age
- 18-34
- More than 35

Two Groups Age

Estimated Marginal Means of Print Book Preference

Two Groups Education
- Low Education
- High Education

Estimated Marginal Means

Age
- 18-34
- More than 35

Two Groups Age
E-Book Preference

Estimated Marginal Means of Print Book Preference

- Two Groups: Education
  - Low Education
  - High Education

What is your gender?

Estimated Marginal Means of E-Book Preference

- What is your gender?
  - Male
  - Female
  - Non-binary / third gender

Two Groups: Age

18-34 vs. More than 35
Estimated Marginal Means of E-Book Preference

Two Groups
Education

Low Education
High Education

Estimated Marginal Means

Two Groups Age

16-34
More than 35

Estimated Marginal Means of E-Book Preference

Two Groups
Education

Low Education
High Education

Estimated Marginal Means

What is your gender?

Male
Female
Non-binary/third gender
Low Involvement Print Book Preference

Estimated Marginal Means of Low Involvement Print Book

What is your gender?
- Male
- Female
- Non-binary / third gender

Estimated Marginal Means

Two Groups Age

Estimated Marginal Means of Low Involvement Print Book

Two Groups Education
- Low Education
- High Education

Two Groups Age
Low Involvement E-Book Preference

Estimated Marginal Means of Low Involvement E-Book

Two Groups Age

What is your gender?

Estimated Marginal Means of Low Involvement Print Book

Two Groups Education

What is your gender?

Estimated Marginal Means

Low Involvement Print Book Preference
Print Book Preference Permanency Highlighted

Estimated Marginal Means of Permancy Paper

What is your gender?
- Male
- Female
- Non-binary / third gender

Estimated Marginal Means of Permancy Paper

Two Groups Education
- Low Education
- High Education

Two Groups Age

- 18-34
- More than 35
E-Book Preference Interactivity Highlighted

Estimated Marginal Means of Interactivity E-Book

What is your gender?

Two Groups Age

Estimated Marginal Means of Permancy Paper

Two Groups Education

What is your gender?
Estimated Marginal Means of Interactivity E-Book

Two Groups Age

Estimated Marginal Means of Interactivity E-Book

Two Groups Education

What is your gender?
VITA

Felipe Cotrino

Background

Felipe Cotrino is a senior executive in the technology and printing industry. With more than 25 years of experience, has worked on multiple roles in finance, sales, and operations. He has experience working in multiple markets, including Latin America, North America and recently in a global position for the last 2 years. He also has been a scholar for the last 10 years, being a part-time MBA professor, in Operations Management and Finance departments.

Education

**Doctor of Business Administration**, J. Mack Robinson College of Business, Georgia State University, Atlanta, GA. Major field: Business, Chair: Dr. Naveen Donthu, 2020

**Master in Business Administration**, INALDE Business School, Bogota, Colombia, 2010

**Master in International Finance**, Universidad de La Sabana, Bogotá, Colombia, 1998

**Bachelor of Science**, Universidad de La Sabana, Bogotá, Colombia. Major field: Business, 1996