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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

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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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ABSTRACT

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

By

Felipe Cotrino

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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

I.1 Background

For centuries, books have influenced the development of humankind, have strengthened 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.

I.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 ads 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.

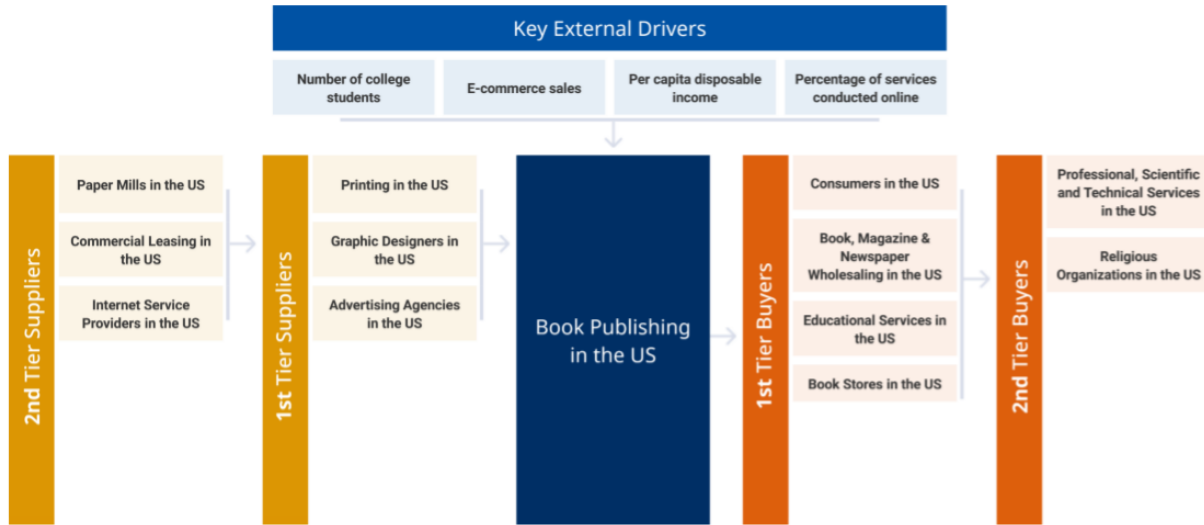


Figure 1. Book Publishing Industry in the US Supply Chain Diagram
(Devin 2019, Book Publishing in the US, IBISWorld)

Products and Services Segmentation

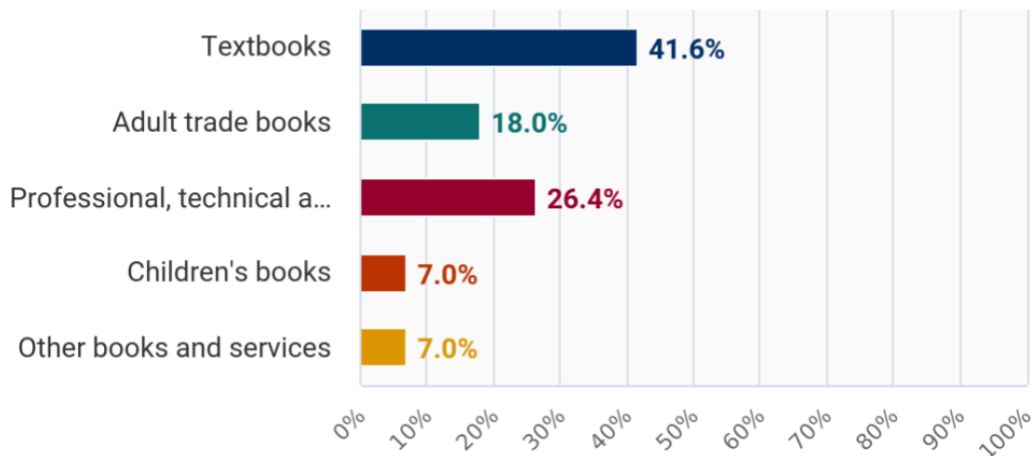


Figure 2. Book Publishing Industry in the US Product and Service Segmentation
(Devin 2019, Book Publishing in the US, IBISWorld)

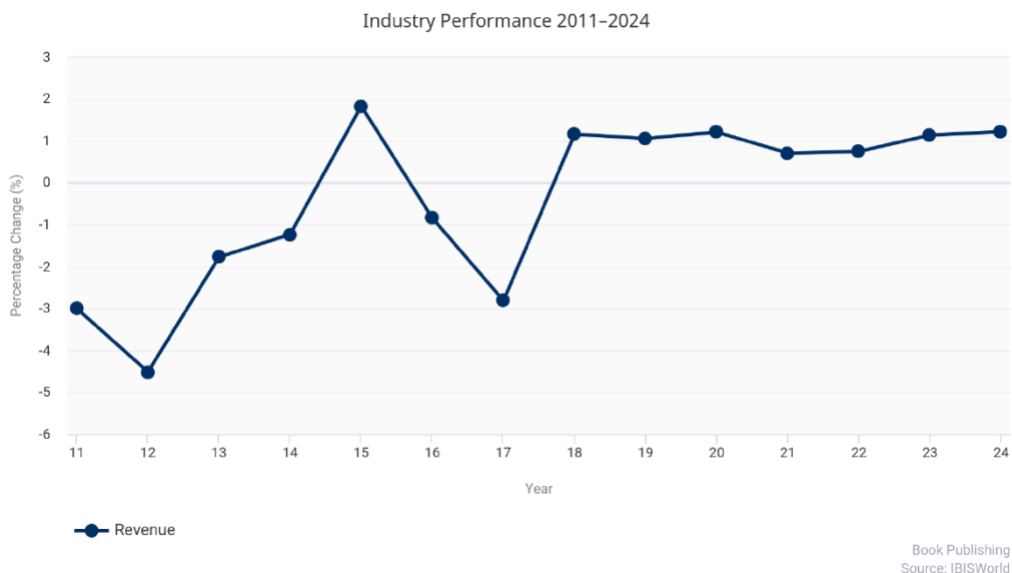


Figure 3. Book Publishing Industry in the US Industry Performance 2011-2024
(Devin 2019, Book Publishing in the US, IBISWorld)

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 flourishing 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).

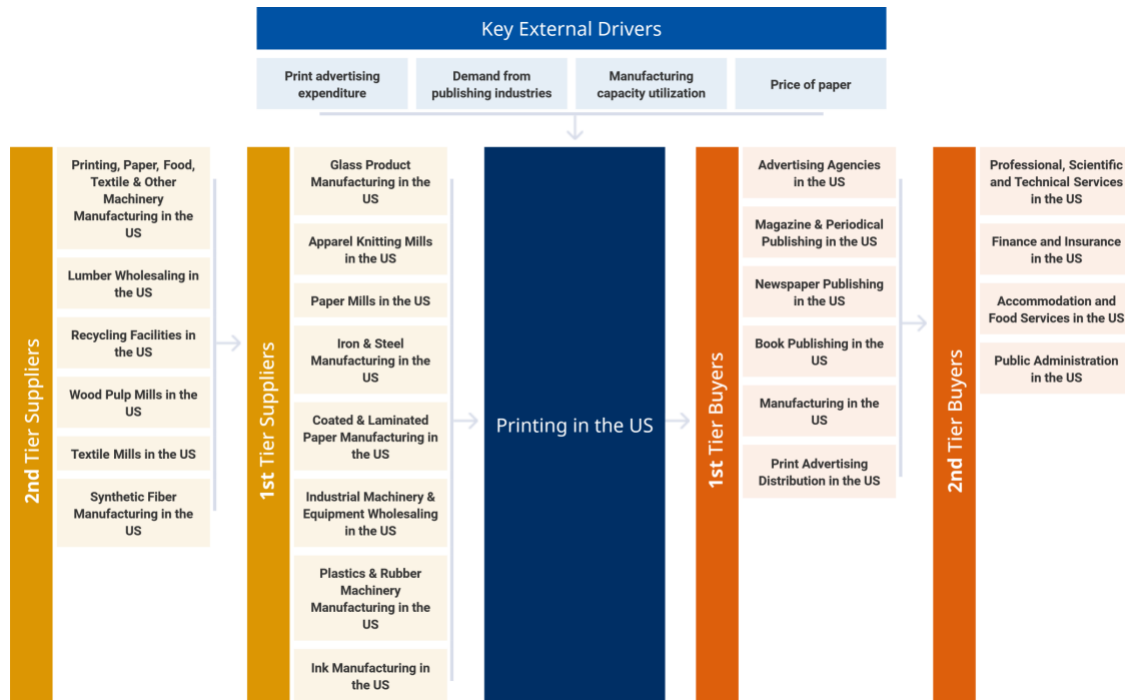


Figure 4. Printing Industry in the US Supply Chain Diagram
(Rodriguez 2020, Printing Industry in the US, IBISWorld)

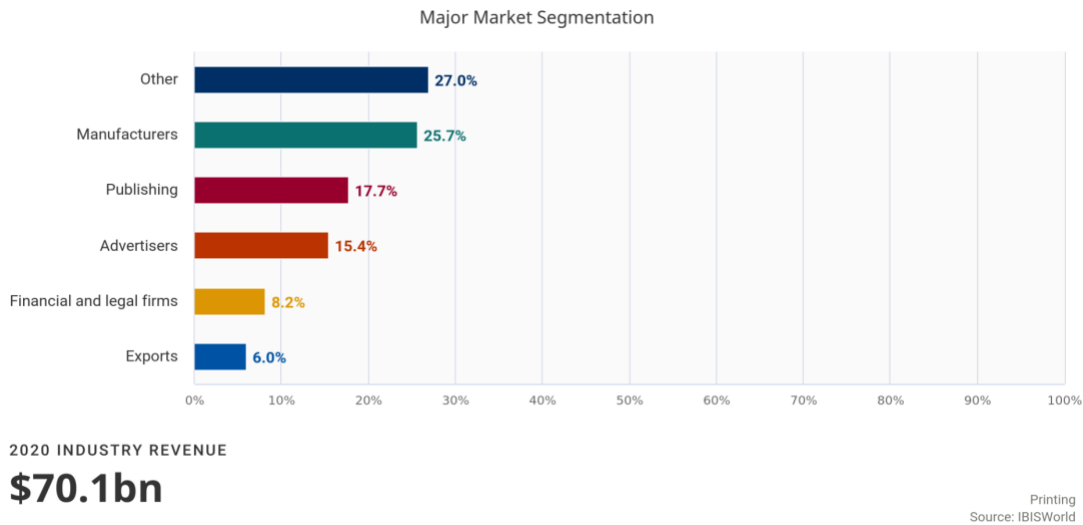


Figure 5. Printing Industry in the US Major Market Segmentation Diagram
(Rodriguez 2020, Printing Industry in the US, IBISWorld)

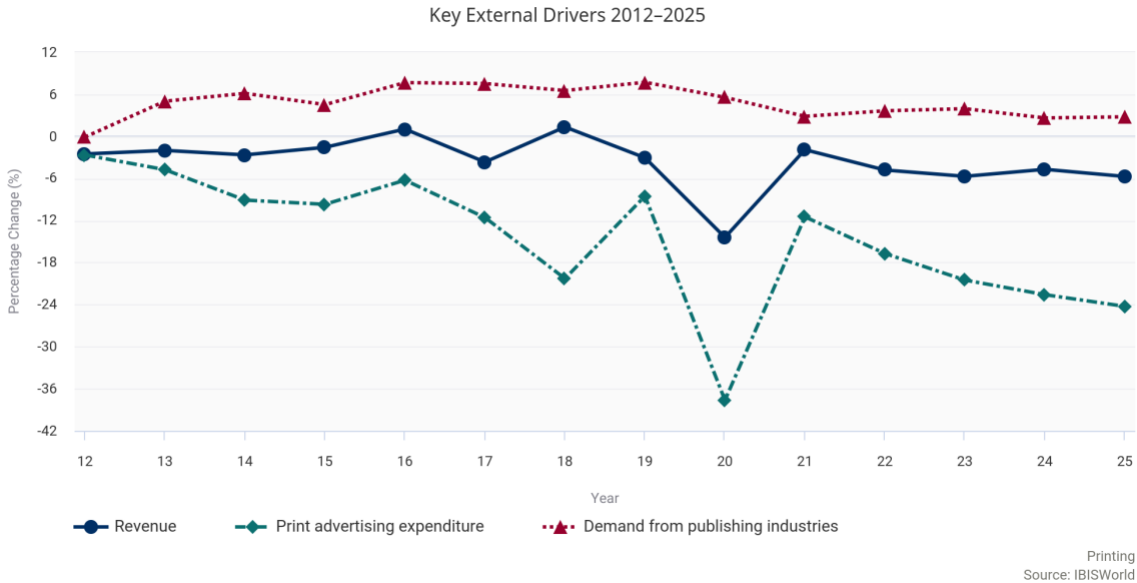


Figure 6. Printing Industry in the US Industry Performance
(Rodriguez 2020, Printing Industry in the US, IBISWorld)

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.

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.

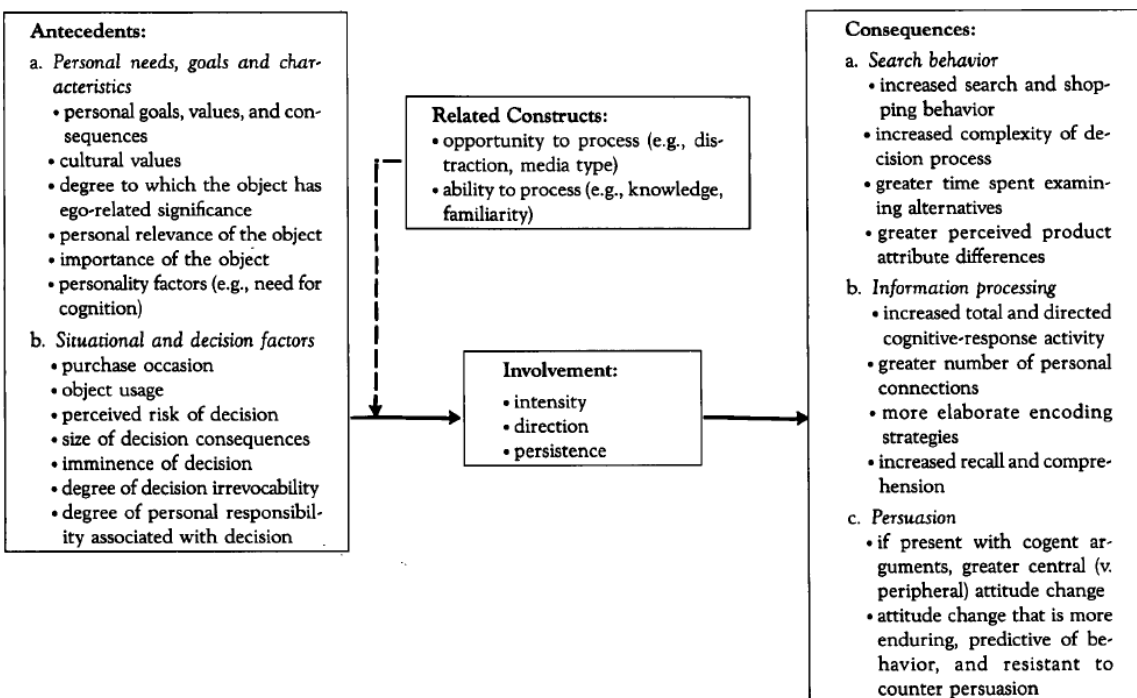


Figure 7. Involvement construct model
(Andrews et al., 1990)

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 rise 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 understood 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).

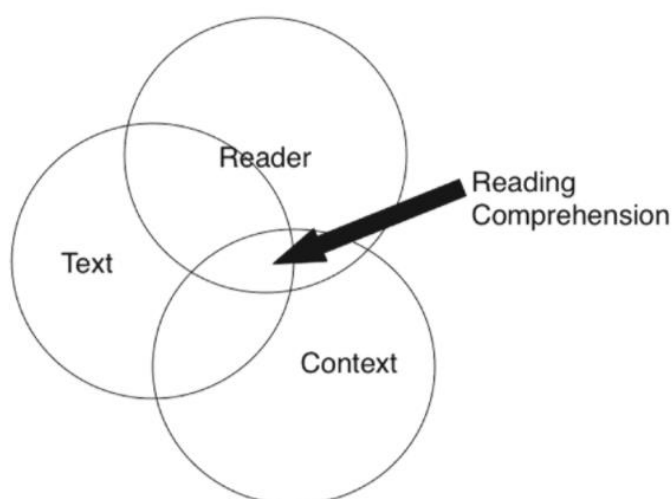


Figure 8. Reading Comprehension Hypothetical model
(Pearson & Cervetti, 2015)

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).

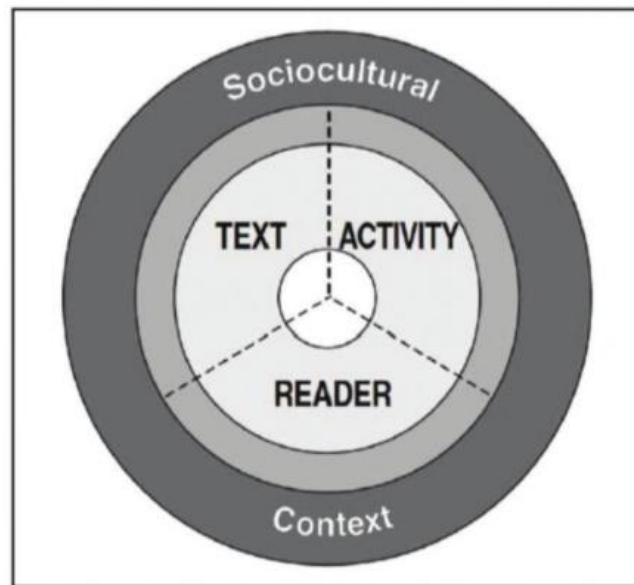


Figure 9. RAND Model
(Snow, 2002)

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 HYPOTHESES

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 1. Study Sample

Demographic Factor	Total Sample
Gender	447
Male	226
Female	221
Age	451
Young (18 to 34 years old)	214
Old (35 years old or older)	237
Education	451
High (Completed College Degree or higher)	279
Low (Non completed College Degree or lower)	172

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 2. Detailed Study Sample

Gender	Female				Male				Third Gender			
Age	High		Low		High		Low		High		Low	
Education	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
n =	63	57	64	37	80	36	70	40	1	0	1	2

Methodologically, as stated by several authors, Mturk has been proven as a solid method for social studies research (Cheung et al., 2017). For example, Horton et al. (2011) found that experiments conducted on the MTurk were as valid (both internally and externally) as other kinds of experiments (i.e. laboratory and field experiments). Or Buhrmester et al. (2016) who states that data provided by MTurk participants had satisfactory psychometric properties comparable to characteristics of published studies.

Regarding attention concerns during Mturk surveys, there are also studies that have measured the attentiveness to instructions, comparing traditional pools with Mturk online surveys. As stated by Hauser and Schwarz (2016), Mturkers appear to be more attentive than traditional samples, and suggests that Mturk is a viable avenue for collecting data, crowdsourcing tasks, and even psychological tasks that require somewhat complicated instructions.

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

	N	Minimum	Maximum	Mean ^a	Std. Deviation
Print Book Preference	451	1.00	5.00	3.5876	1.30238
E-Book Preference	451	1.00	5.00	2.7650	1.37363
Valid N (listwise)	451				

^a 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

	N	Minimum	Maximum	Mean ^a	Std. Deviation
Print Book Preference	451	1.00	5.00	3.5876	1.30238
E-Book Preference	451	1.00	5.00	2.7650	1.37363
Permanency Paper	451	1.00	5.00	3.6763	1.20990
Interactivity E-Book	451	1.00	5.00	2.7871	1.30432
Valid N (listwise)	451				

^a 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

	Two Groups Age	N	Mean ^a	Std. Deviation	Std. Error Mean
Print Book Preference	18 -34	214	3.5140**	1.24368	.08502
	More than 35	237	3.6540**	1.35238	.08785
E-Book Preference	18 -34	214	2.7850**	1.35680	.09275
	More than 35	237	2.7468**	1.39127	.09037

** 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

	Two Groups Education	N	Mean ^a	Std. Deviation	Std. Error Mean
Print Book Preference	Low Education	172	3.7093**	1.28296	.09783
	High Education	279	3.5125**	1.31087	.07848
E-Book Preference	Low Education	172	2.8430**	1.43221	.10921
	High Education	279	2.7168**	1.33658	.08002

** 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

	What is your gender?	N	Mean ^a	Std. Deviation	Std. Error Mean
Print Book Preference	Male	226	3.3850*	1.31911	.08775
	Female	221	3.7828*	1.25331	.08431
E-Book Preference	Male	226	2.7655	1.39614	.09287
	Female	221	2.7647	1.35137	.09090

* 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

	High Involvement Print Book	High Involvement E-Book
N Valid	451	451
Missing	0	0
Mean ^a	3.74	2.49
Std. Deviation	1.292	1.359

^a Higher number represents higher preference

Table 9. High Involvement Situation Print Book Preference

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Do not prefer	32	7.1	7.1	7.1
	Prefer slightly	59	13.1	13.1	20.2
	Prefer a moderate amount	80	17.7	17.7	37.9
	Prefer a lot	103	22.8	22.8	60.8
	Prefer a great deal	177	39.2	39.2	100.0
	Total	451	100.0	100.0	

Table 10. High Involvement Situation E-Book Preference

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Do not prefer	143	31.7	31.7	31.7
	Prefer slightly	108	23.9	23.9	55.7
	Prefer a moderate amount	88	19.5	19.5	75.2
	Prefer a lot	60	13.3	13.3	88.5
	Prefer a great deal	52	11.5	11.5	100.0
	Total	451	100.0	100.0	

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

		Low Involvement Print Book	Low Involvement E-Book
N	Valid	451	451
	Missing	0	0
	Mean ^a	2.8248	3.1441
	Std. Deviation	1.33597	1.40920

^a Higher number represents higher preference

Table 12. Low Involvement Situation E-Book Preference

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Do not Prefer	76	16.9	16.9	16.9
	Prefer Slightly	89	19.7	19.7	36.6
	Prefer a Moderate Amount	82	18.2	18.2	54.8
	Prefer a lot	102	22.6	22.6	77.4
	Prefer a great deal	102	22.6	22.6	100.0
	Total	451	100.0	100.0	

Table 13. Low Involvement Situation Print Book Preference

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Do not Prefer	81	18.0	18.0	18.0
	Prefer Slightly	129	28.6	28.6	46.6
	Prefer a Moderate Amount	105	23.3	23.3	69.8
	Prefer a lot	60	13.3	13.3	83.1
	Prefer a great deal	76	16.9	16.9	100.0
	Total	451	100.0	100.0	

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

	Print Book Preference	Permanency Highlighted Preference
N Valid	451	451
Missing	0	0
Mean ^a	3.5876	3.6763
Std. Deviation	1.30238	1.20990

^a 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

	E-Book Preference	Interactivity E-Book
N Valid	451	451
Missing	0	0
Mean ^a	2.7650	2.7871
Std. Deviation	1.37363	1.30432

^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).

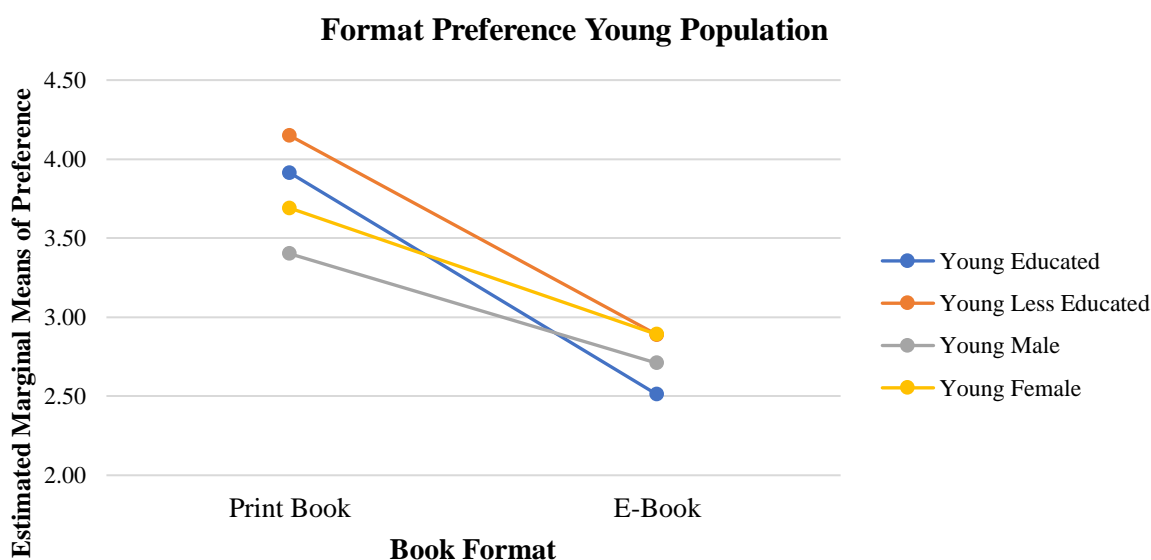


Figure 10. Format Preference Young Population

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).

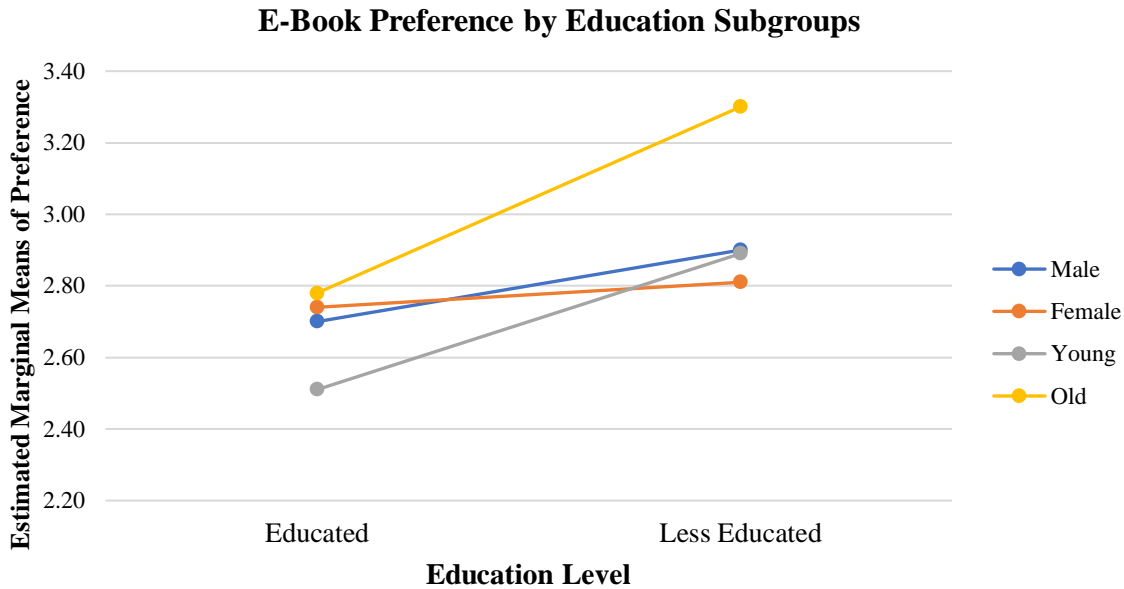


Figure 11. E-Book Preference by Education Subgroups

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).

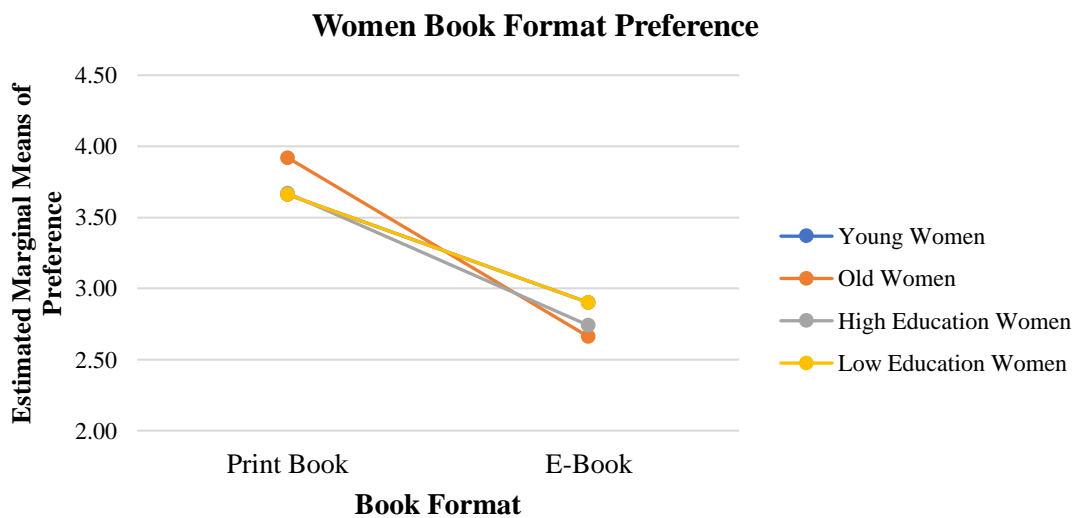


Figure 12. Women Book Format Preference

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).

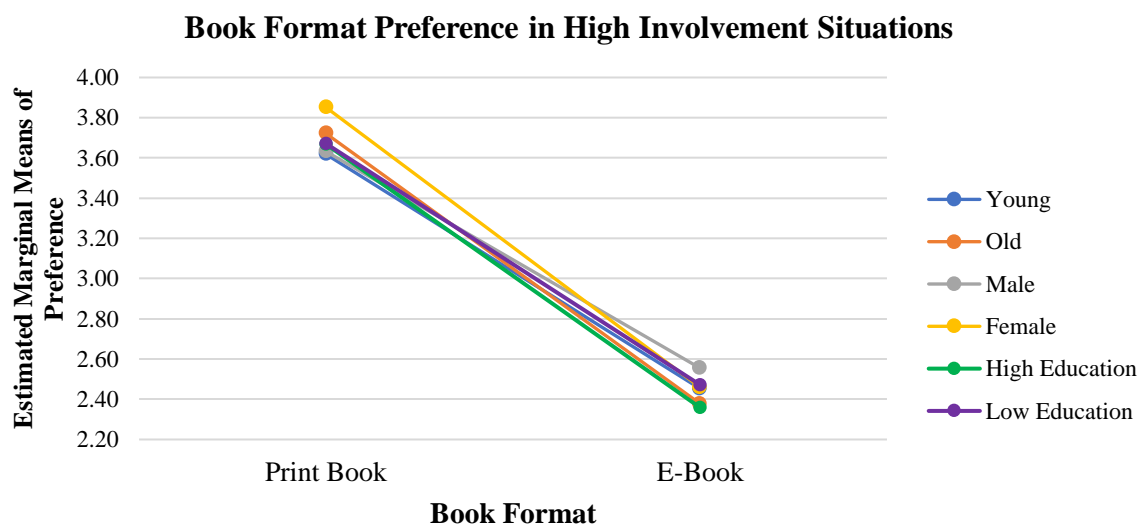


Figure 13. Book Format Preference in High Involvement Situations

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).

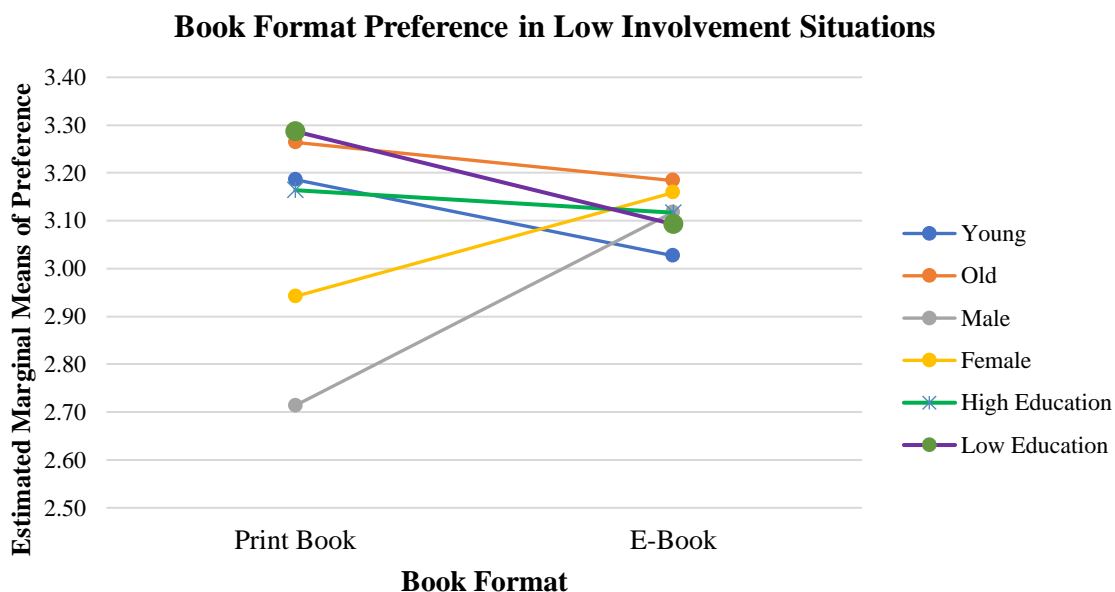


Figure 14. Book Format Preference in Low Involvement Situations

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).

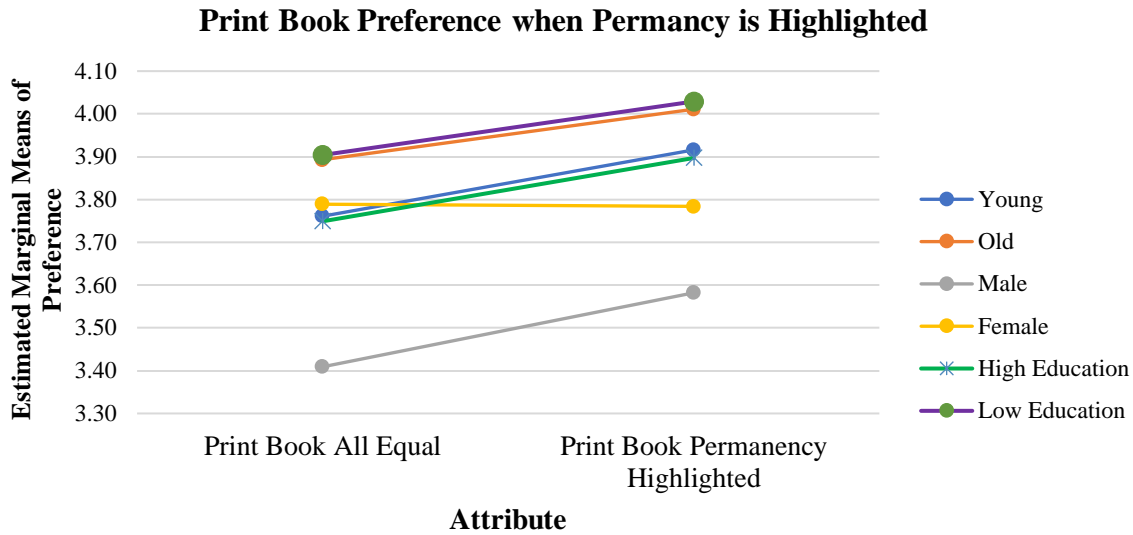


Figure 15. Print Book Preference when Permanency is Highlighted

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).

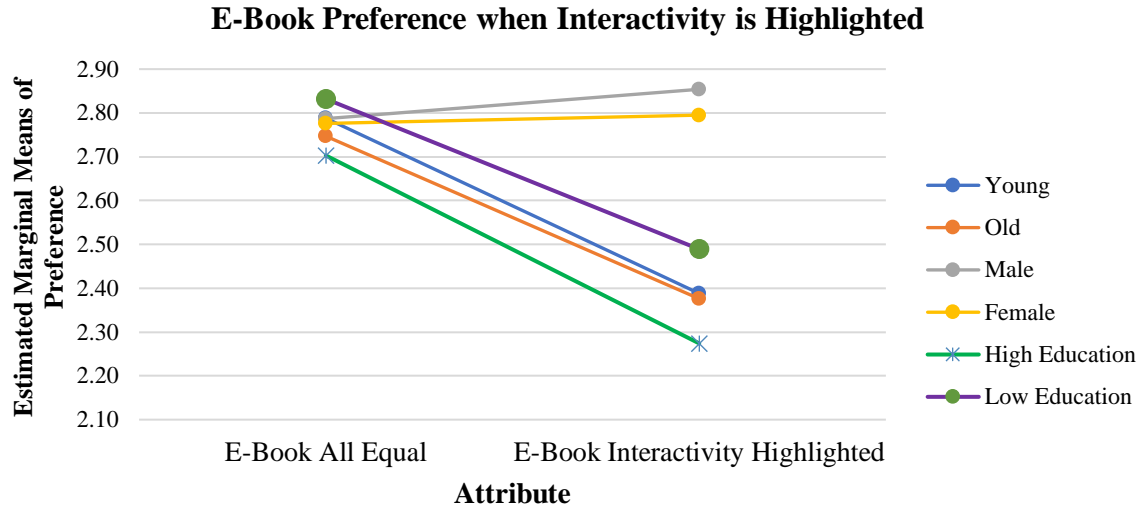


Figure 16. E-Book Preference when Interactivity is Highlighted

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 extent 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 scarce resources they have. There are multiple 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 infer that there is not significant correlation between comprehension and consumer preference. Education literature focuses on how much the reader interprets, remembers, and learns 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.

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APPENDICES

Appendix A: Book Publishing Industry detailed data

Industry Data

	Revenue (\$m)	IVA (\$m)	Establishments (Units)	Enterprises (Units)	Employment (Units)	Exports (\$m)	Imports (\$m)	Wages (\$m)	Domestic Demand (\$m)	E-commerce sales (\$b)
2010	32,586	7,955	2,973	2,640	81,511	N/A	N/A	6,260	N/A	170
2011	31,612	7,846	2,885	2,581	71,996	N/A	N/A	5,444	N/A	200
2012	30,187	7,548	2,622	2,332	64,969	N/A	N/A	5,284	N/A	230
2013	29,653	7,544	2,619	2,287	67,387	N/A	N/A	5,557	N/A	261
2014	29,288	7,932	2,630	2,305	65,189	N/A	N/A	5,326	N/A	299
2015	29,824	7,951	2,555	2,280	64,520	N/A	N/A	5,386	N/A	340
2016	29,574	7,717	2,574	2,296	64,085	N/A	N/A	5,351	N/A	397
2017	28,744	7,338	2,510	2,240	62,902	N/A	N/A	5,326	N/A	461
2018	29,078	7,102	2,486	2,216	60,633	N/A	N/A	5,192	N/A	631
2019	29,387	7,138	2,466	2,195	60,638	N/A	N/A	5,204	N/A	767
2020	29,744	7,192	2,465	2,192	60,960	N/A	N/A	5,238	N/A	918
2021	29,958	7,211	2,460	2,187	61,024	N/A	N/A	5,250	N/A	1,083
2022	30,186	7,240	2,453	2,180	61,156	N/A	N/A	5,267	N/A	1,304
2023	30,531	7,302	2,456	2,181	61,498	N/A	N/A	5,303	N/A	1,577
2024	30,905	7,389	2,458	2,181	61,890	N/A	N/A	5,343	N/A	1,916

Annual Change

	Revenue (%)	IVA (%)	Establishments (%)	Enterprises (%)	Employment (%)	Exports (%)	Imports (%)	Wages (%)	Domestic Demand (%)	E-commerce sales (%)
2010	0.98	1.43	-2.14	-1.20	-2.67	N/A	N/A	-1.54	N/A	16.8
2011	-3.00	-1.37	-2.96	-2.24	-11.7	N/A	N/A	-13.0	N/A	17.5
2012	-4.51	-3.80	-9.12	-9.65	-9.77	N/A	N/A	-2.94	N/A	15.4
2013	-1.77	-0.06	-0.12	-1.93	3.72	N/A	N/A	5.16	N/A	13.2
2014	-1.23	5.14	0.42	0.78	-3.27	N/A	N/A	-4.17	N/A	14.4
2015	1.83	0.24	-2.86	-1.09	-1.03	N/A	N/A	1.14	N/A	14.0
2016	-0.84	-2.95	0.74	0.70	-0.68	N/A	N/A	-0.67	N/A	16.7
2017	-2.81	-4.92	-2.49	-2.44	-1.85	N/A	N/A	-0.48	N/A	16.0
2018	1.16	-3.22	-0.96	-1.08	-3.61	N/A	N/A	-2.51	N/A	36.9
2019	1.06	0.49	-0.81	-0.95	0.00	N/A	N/A	0.21	N/A	21.5
2020	1.21	0.76	-0.05	-0.14	0.53	N/A	N/A	0.66	N/A	19.8
2021	0.71	0.26	-0.21	-0.23	0.10	N/A	N/A	0.22	N/A	18.0
2022	0.75	0.40	-0.29	-0.33	0.21	N/A	N/A	0.32	N/A	20.4
2023	1.14	0.85	0.12	0.04	0.55	N/A	N/A	0.67	N/A	20.9
2024	1.22	1.19	0.08	0.00	0.63	N/A	N/A	0.75	N/A	21.5

Source: Book Publishing in the US (Devin, 2019)

Appendix B: Printing Industry detailed data

Industry Data

Year	Revenue (\$m)	IVA (\$m)	Establishments (Units)	Enterprises (Units)	Employment (Units)	Exports (\$m)	Imports (\$m)	Wages (\$m)	Domestic Demand (\$m)	Print advertising expenditure (\$b)
2011	93,437	28,869	51,444	50,279	469,555	7,444	6,036	22,048	92,029	45.3
2012	91,093	28,136	51,741	50,618	460,554	7,202	5,954	21,600	89,844	44.1
2013	89,272	27,652	50,218	49,122	431,084	7,013	5,783	21,108	88,042	42.0
2014	86,924	27,109	49,779	48,697	417,539	6,490	5,761	20,445	86,195	38.2
2015	85,575	27,372	49,288	48,195	414,333	6,050	5,954	21,011	85,480	34.5
2016	86,469	28,076	48,509	47,187	418,068	5,712	5,828	21,416	86,586	32.3
2017	83,307	27,034	49,055	47,701	428,946	5,505	5,814	21,032	83,616	28.6
2018	84,428	27,270	49,165	47,750	423,750	5,176	5,995	20,650	85,247	22.8
2019	81,856	26,310	48,378	47,027	413,447	5,027	5,918	20,123	82,747	20.9
2020	70,067	22,035	45,316	44,299	371,251	4,183	4,493	17,900	70,377	14.2
2021	68,739	22,312	44,583	43,591	364,317	4,143	4,360	17,565	68,957	13.4
2022	65,443	21,594	43,317	42,409	350,414	3,965	4,126	16,860	65,604	11.7
2023	61,718	20,571	41,862	41,051	334,486	3,755	3,873	16,055	61,836	10.0
2024	58,818	19,677	40,558	39,821	320,922	3,594	3,674	15,383	58,898	8.56
2025	55,456	18,615	38,983	38,328	304,844	3,402	3,447	14,591	55,501	7.33

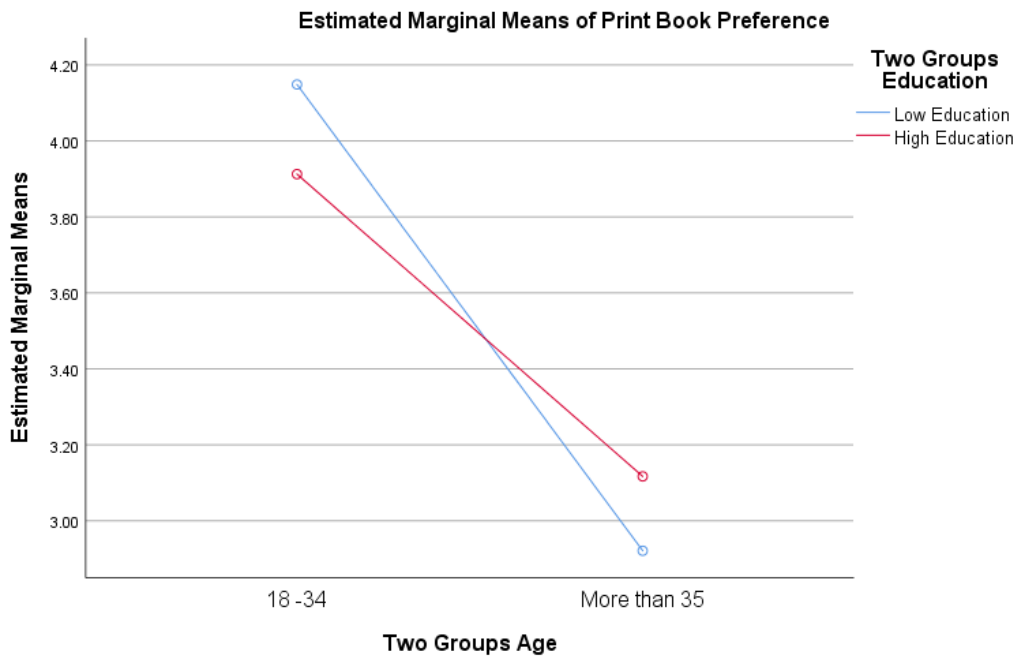
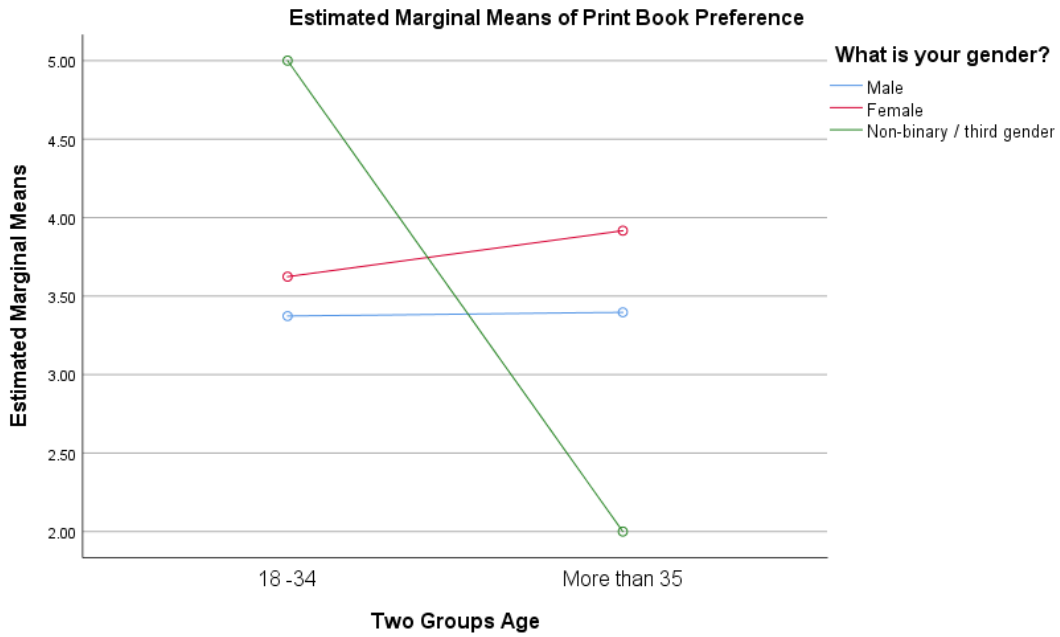
Annual Change

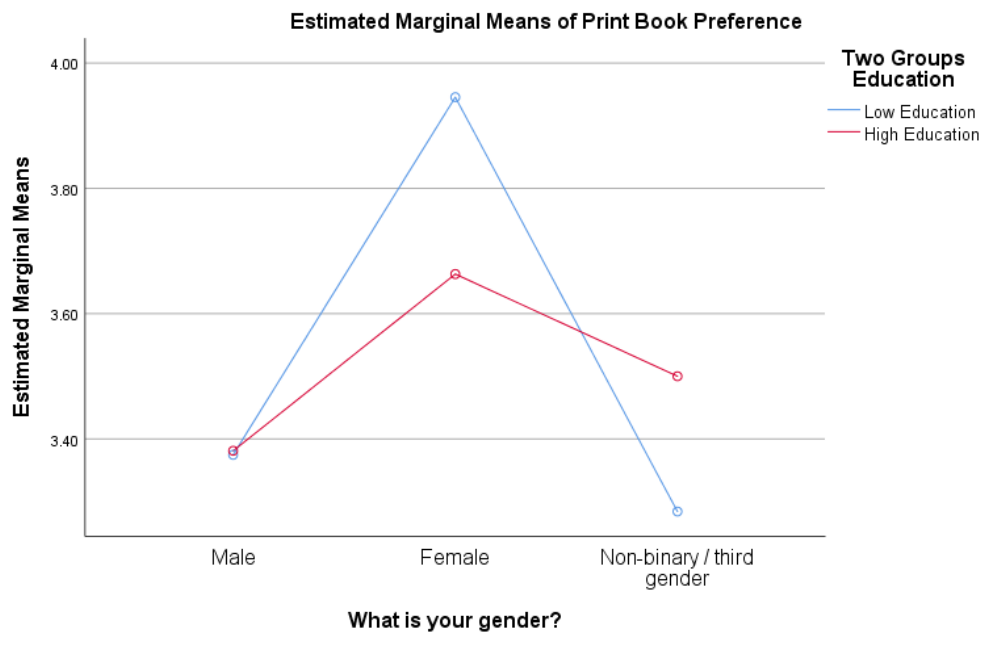
Year	Revenue (%)	IVA (%)	Establishments (%)	Enterprises (%)	Employment (%)	Exports (%)	Imports (%)	Wages (%)	Domestic Demand (%)	Print advertising expenditure (%)
2011	-1.51	-2.69	-1.84	-1.80	-1.46	-1.20	-3.48	-3.06	-1.66	-2.60
2012	-2.51	-2.55	0.57	0.67	-1.92	-3.24	-1.37	-2.04	-2.37	-2.65
2013	-2.00	-1.72	-2.95	-2.96	-6.40	-2.64	-2.87	-2.28	-2.01	-4.75
2014	-2.64	-1.97	-0.88	-0.87	-3.15	-7.47	-0.39	-3.15	-2.10	-9.09
2015	-1.56	0.96	-0.99	-1.04	-0.77	-6.78	3.36	2.76	-0.83	-9.69
2016	1.04	2.57	-1.59	-2.10	0.90	-5.59	-2.12	1.92	1.29	-6.25
2017	-3.66	-3.72	1.12	1.08	2.60	-3.62	-0.26	-1.80	-3.43	-11.6
2018	1.34	0.86	0.22	0.10	-1.22	-5.99	3.11	-1.82	1.95	-20.3
2019	-3.05	-3.53	-1.61	-1.52	-2.44	-2.88	-1.29	-2.56	-2.93	-8.53
2020	-14.4	-16.3	-6.33	-5.81	-10.2	-16.8	-24.1	-11.1	-14.9	-32.0
2021	-1.90	1.25	-1.62	-1.60	-1.87	-0.97	-2.95	-1.88	-2.02	-5.72
2022	-4.80	-3.22	-2.84	-2.72	-3.82	-4.29	-5.38	-4.02	-4.86	-12.4
2023	-5.70	-4.75	-3.36	-3.21	-4.55	-5.31	-6.14	-4.78	-5.74	-14.5
2024	-4.70	-4.35	-3.12	-3.00	-4.06	-4.30	-5.15	-4.19	-4.75	-14.7
2025	-5.72	-5.40	-3.89	-3.75	-5.01	-5.32	-6.17	-5.16	-5.77	-14.4

Source: Printing in the US (Rodriguez, 2020)

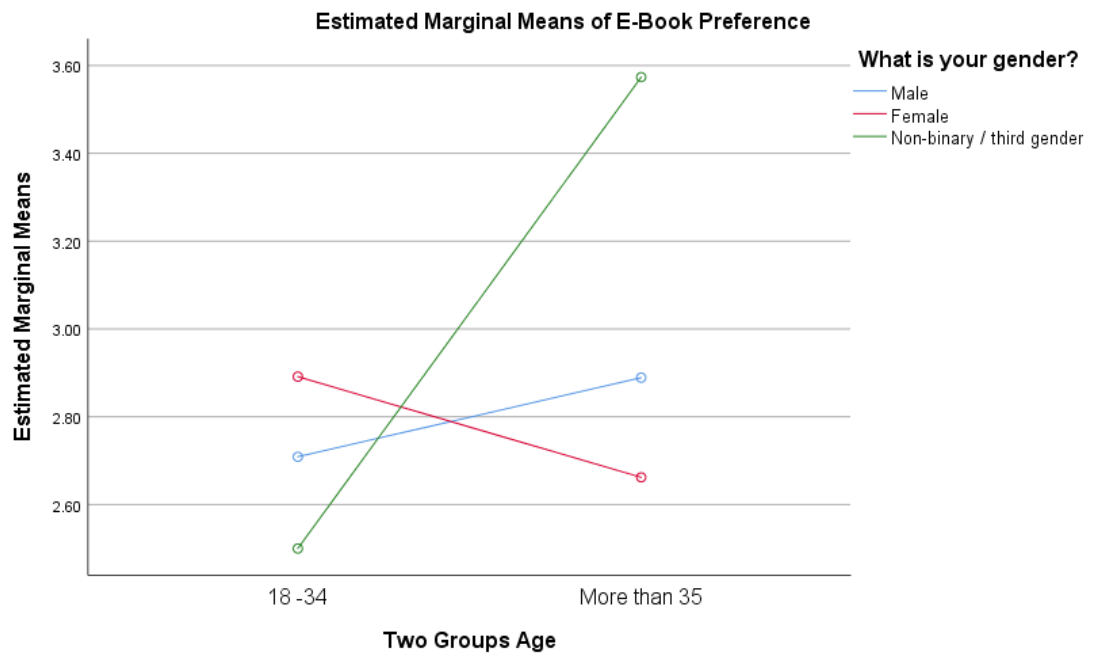
Appendix C: Univariate Analysis of Variance Plots Interactions between demographics

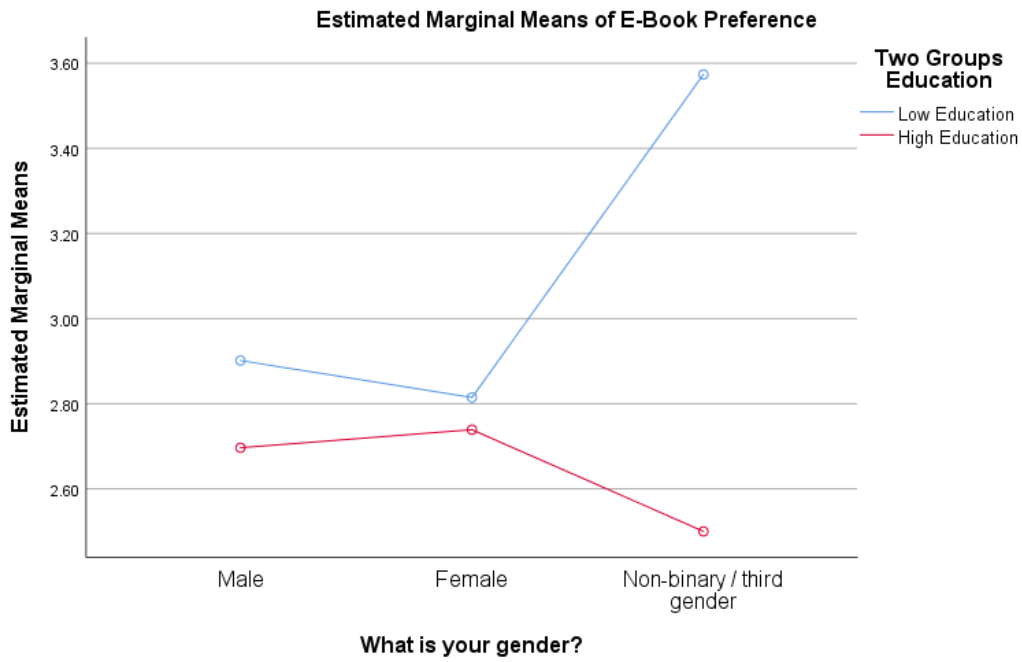
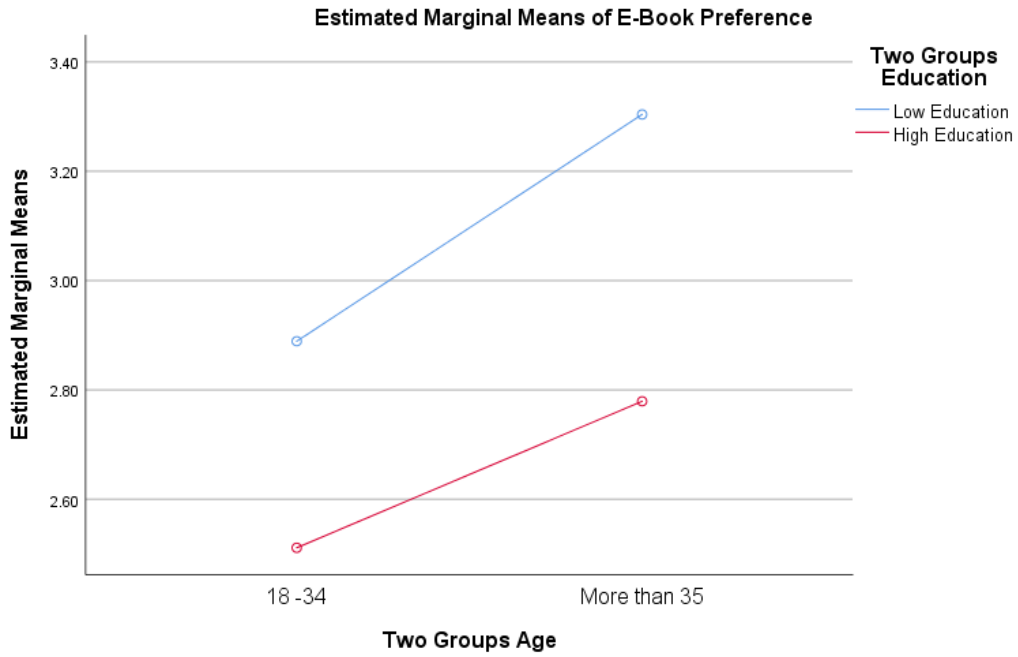
Print Book Preference



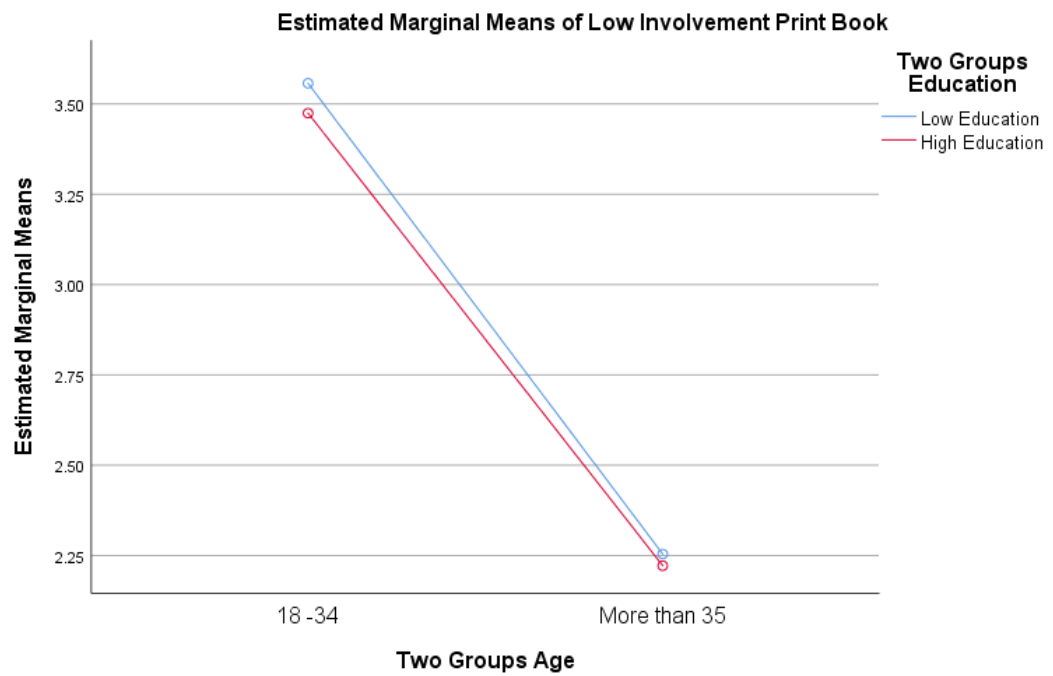
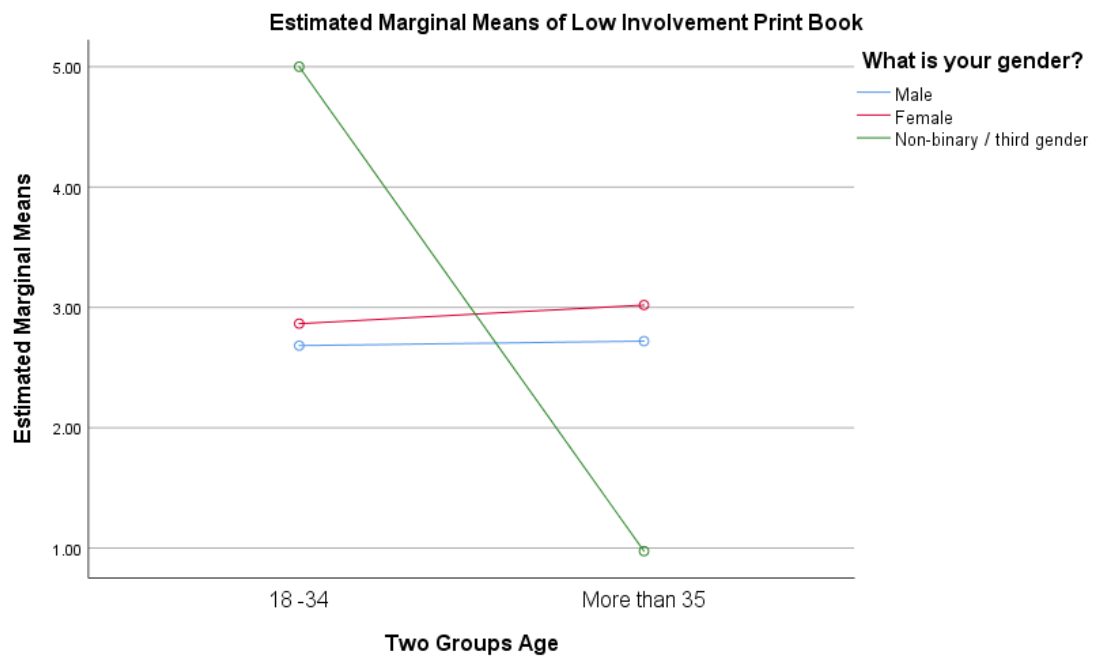


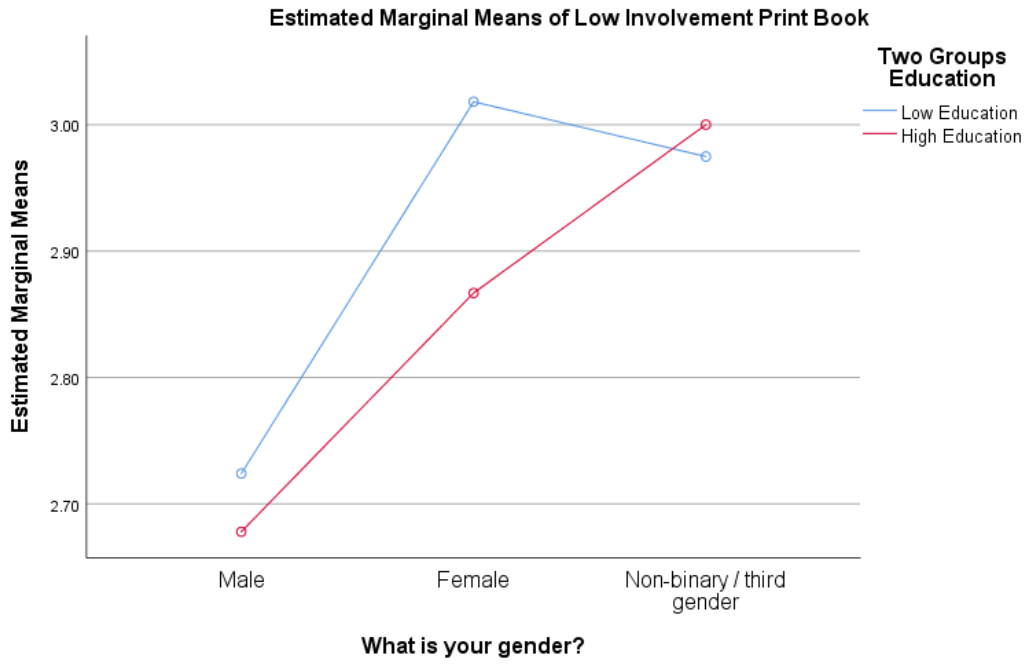
E-Book Preference



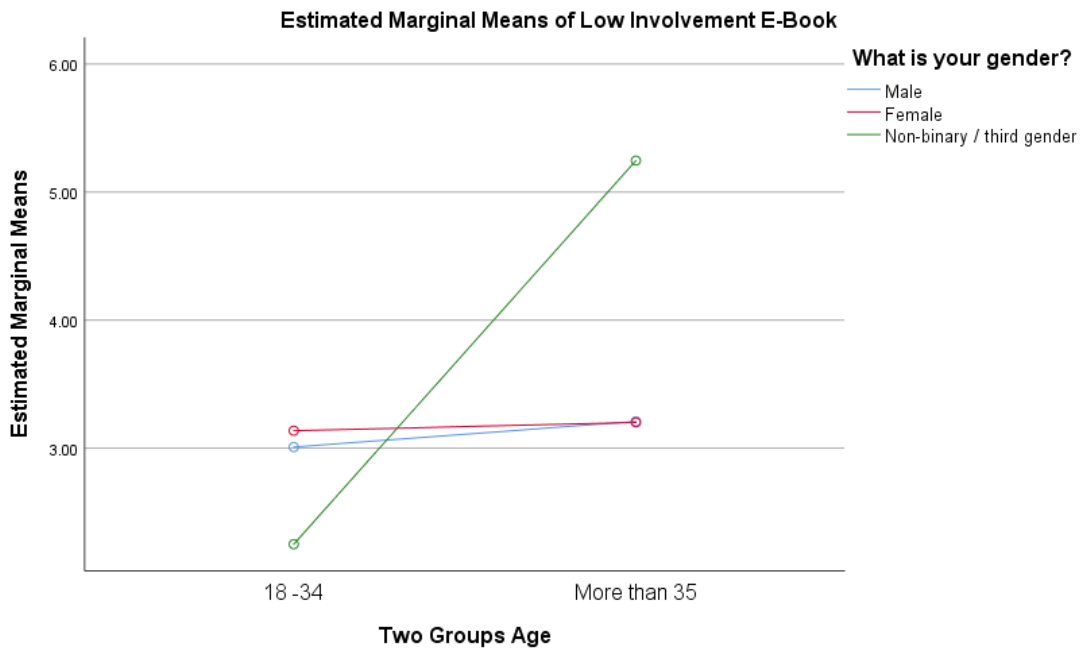


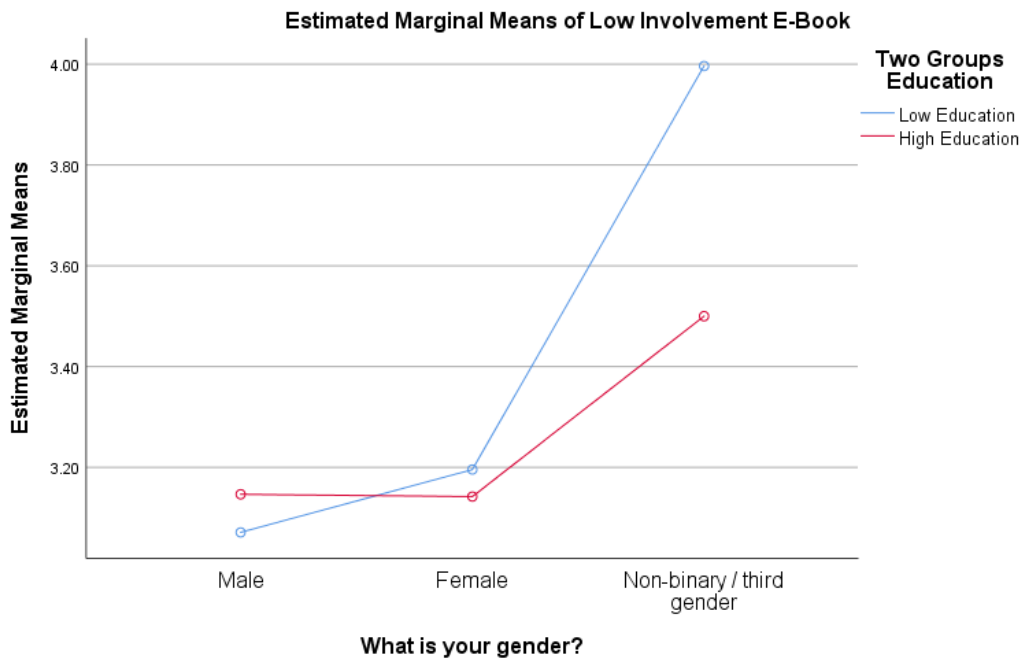
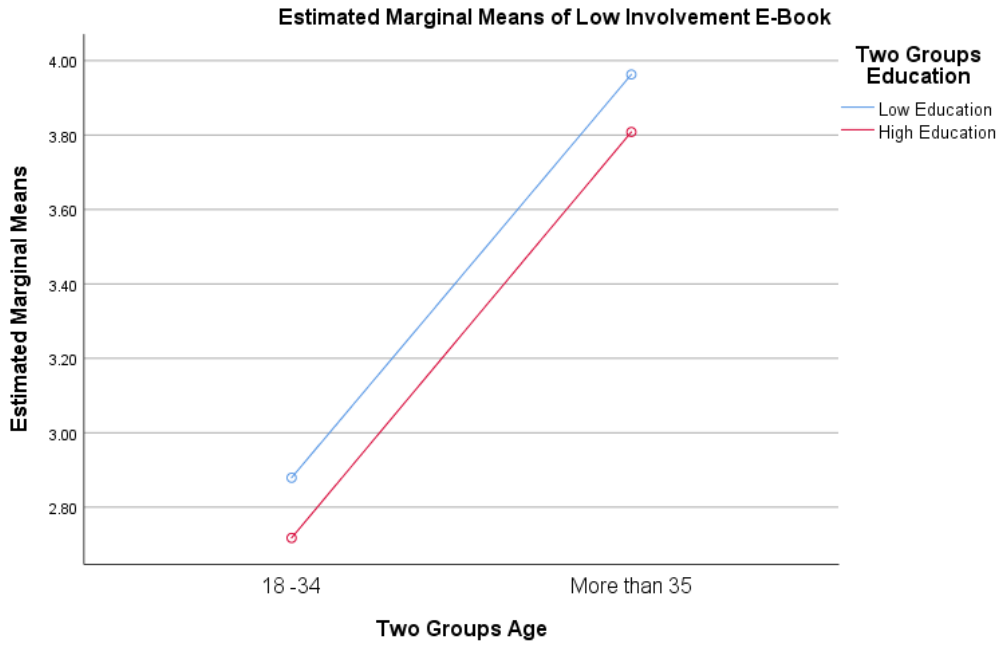
Low Involvement Print Book Preference



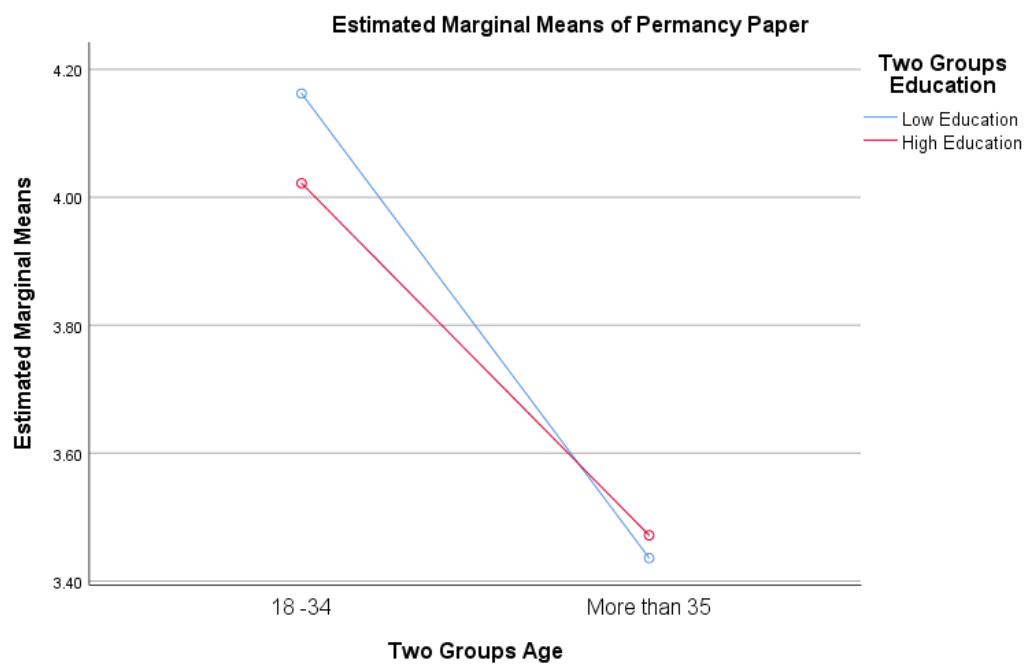
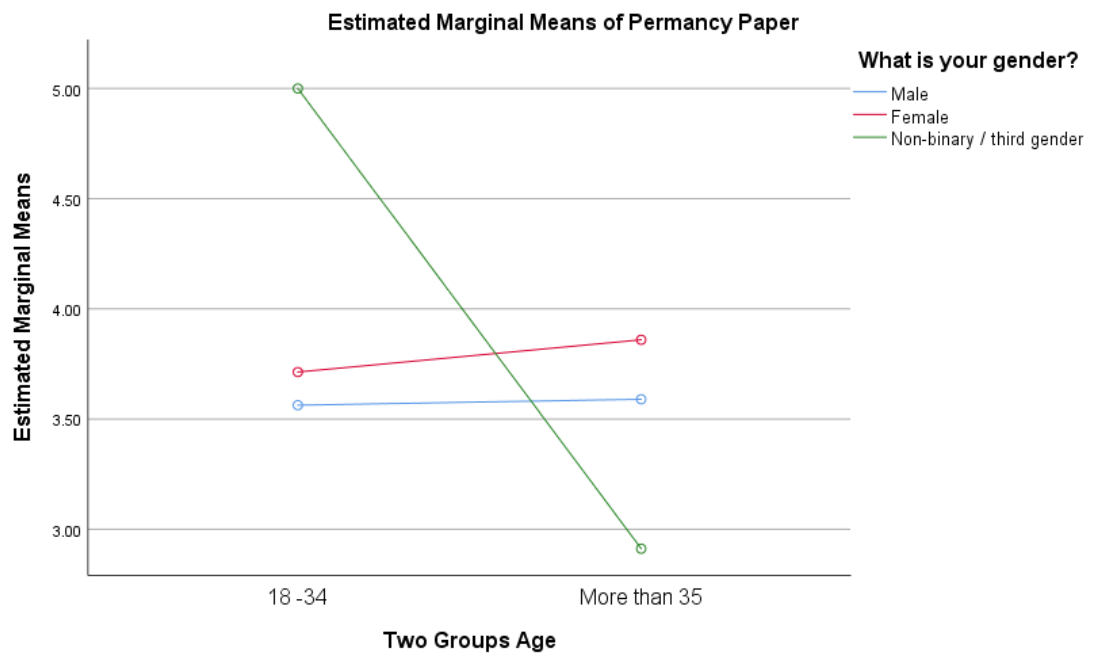


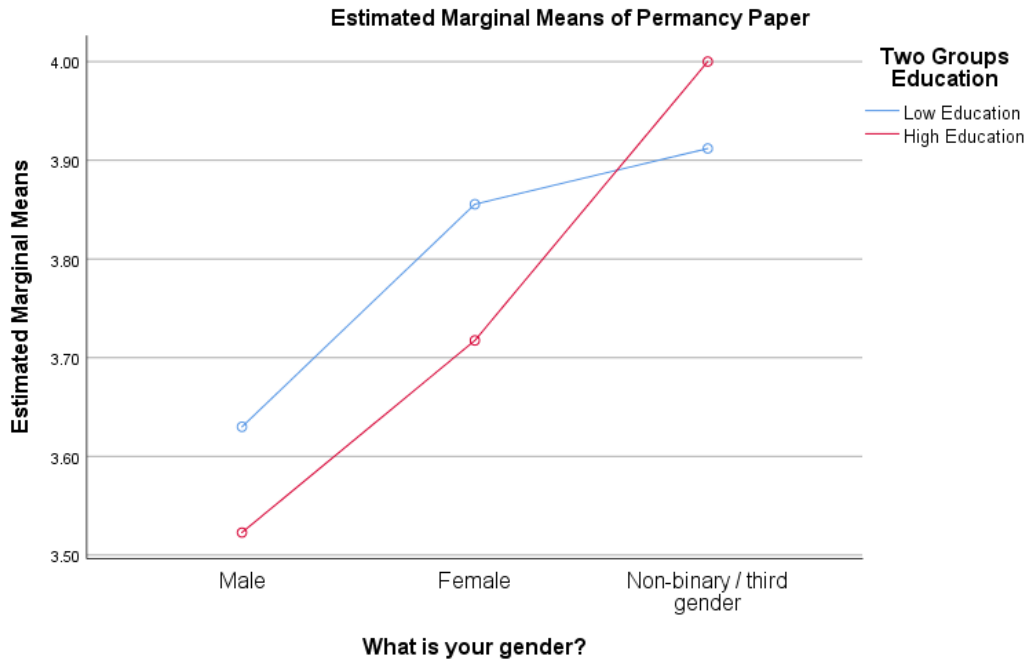
Low Involvement E-Book Preference



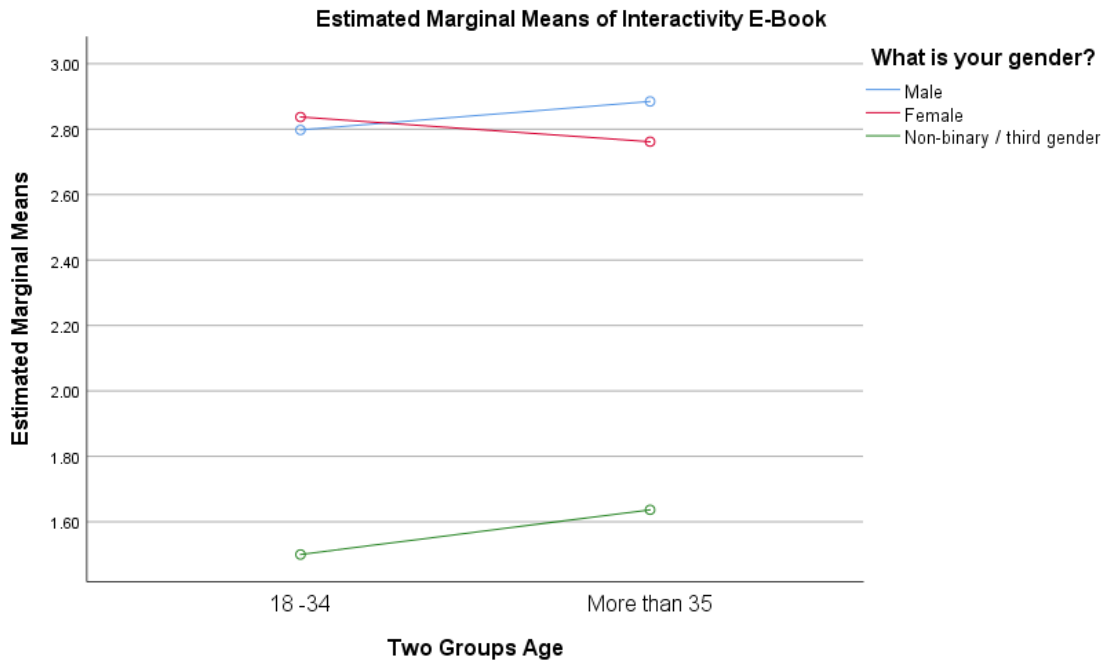


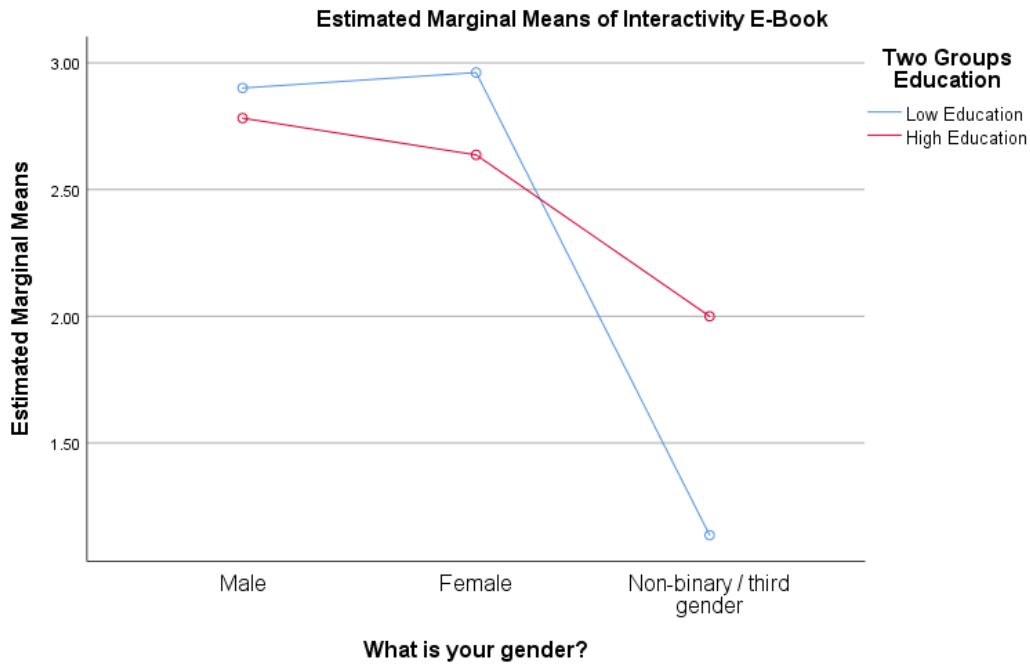
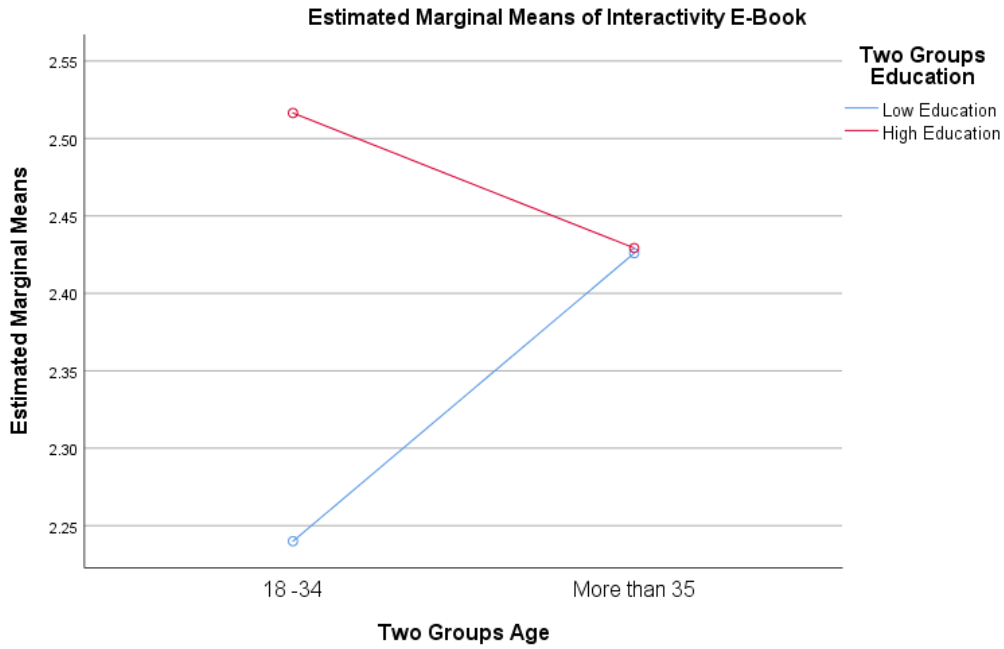
Print Book Preference Permanency Highlighted





E-Book Preference Interactivity Highlighted





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