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Exploring Perceived Value Components and Willingness to Pay: A Comparative Study of Digital and Physical Book Formats

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ABSTRACT

The study investigates the differences in perceived value between digital and physical formats of the books, specifically which value components differ and how they drive overall value perceptions and, in turn, willingness to pay for each format. 293 participants were recruited from United Kingdom through the Prolific platform. They selected a book they would consider purchasing for a short, easy, and relaxing read, and randomly assigned to two groups – digital format and physical format. Participants then rated their willingness to pay and several value components for different formats of books. Partial least squares structural equation modelling (PLS-SEM) was conducted to derive customer perceived value for digital and physical formats of the book and assess its impact on willingness to pay. The study found that cataloguing ease, overall satisfaction, perceived durability, perceived permanence, preservation ease, psychological ownership, and value retention were the significant indicators of digital value, while cataloguing ease, overall satisfaction, reading pleasure, sharing ease, and value retention were the significant indicators of physical value. Both digital and physical values significantly influence willingness to pay, with higher impact of digital value. Several studies examined the differences in customer value perception across digital and physical books, but a conceptual framework of customer perceived value for digital and physical books is still missing. The findings are useful for academicians, practitioners, readers, bookstore managers, and publishers to understand how value perceptions differs in digital and physical book market.

Keywords Digital book, Physical book, Customer perceived value theory, Willingness to pay

Introduction

The digitalization has brought remarkable growth in the publication industry over the last two decades. Books are now available in both digital and physical formats. Although digitalization has disrupted the industry, physical books still hold 66% of global book sales in 2023 (Hoffman, 2023), while digital books penetration trails behind with a sharp decrease in digital sales over the last few years (Saleh & Mashhur, 2015; Statista, 2024). In only a few countries like Denmark, Finland, and China, the penetration of digital books has been successful as the online purchases of e-books, online magazines, and online newspapers exceeds the online purchases of printed books, magazines and newspapers in 2023 (Eurostat, 2024; Statista, 2024). Due to this rapid changes in publication industry, there is a strong need to access the consumer behavior and preferences in the digital and physical books market (Stejskal et al., 2021).

Nowadays, the digital books are coupled with low prices, convenient access, and increased availability (Yoo & Roh, 2019), which results in transitions from physical to digital books (Gail & Klotz, 2024). Readers are willing to pay for digital books, and as a result, are more capable and advanced in comparing the benefits they

receive with the costs they have to bear (Chen, 2012). This experience creates a significant differences in customer perceived values among digital and physical books (Kim et al., 2021; Vendrell-Herrero et al., 2017). The primary aim of this study is to investigate the differences in perceived value between digital and physical formats of the books, specifically which value components differ and how they drive overall value perceptions and, in turn, willingness to pay for each format.

The study contributes to the literature in several ways. Firstly, it provides two separate research frameworks of value components (benefits vs. costs) driving overall value perceptions of both digital and physical books. Secondly, it investigates the differing responses of readers towards digital and physical books. This approach will enable the publishing community to better integrate those value components in the exposure of their digital and physical books to drive their sales. Thirdly, it examines differences in perceived value in digital and physical formats of books in the light of customer perceived value (CPV) theory. Such comparison will add to the existing literature of customer perceived value (CPV) theory by determining the perceived benefits and costs associated with the choice between digital and physical books. Fourthly, it explains how the overall value perceptions brings different impact on willingness to pay for digital and physical books. This will help academicians and practitioners understand that readers have differing mental schemas with regards to digital and physical books, and hence require different strategies to improve readers' willingness to pay and, resultantly, sales.

Literature Review

Willingness to Pay

Willingness to pay is an economic term that estimate the maximum amount that an individual is willing to allocate to goods and services (Miller et al., 2012). Consumers often purchase books for learning, reading and acquiring new knowledge. However, willingness to pay for a physical book is different from willingness to pay for digital copy (Kučinskas & Pikturnienė, 2021). This differences exist due to the differences in pricing and content in physical and digital books (Kučinskas & Pikturnienė, 2021). An increase in price leads to increase in willingness to pay for physical book, but when the price is fair, consumers are more willing to pay for digital books. In terms of content differences, consumers are more willing to pay classic books in physical format than in digital format (Kučinskas & Pikturnienė, 2021). Another study conducted by Vendrell-Herrero et al. (2017) stated that the content of both physical and digital books are exactly the same and price become a deciding factor in purchasing either the physical book or digital book. This differences in pricing makes digital books an imperfect substitute of physical books and requires a highly effective pricing strategy to increase willingness to pay for digital books (Gail & Klotz, 2024).

Consumers' willingness to pay is higher for physical format of the books as compared to digital format of the books (Atasoy & Morewedge, 2018). This differences is also created due to the differences in utility of physical and digital books, as physical books afford over 1.7 times the utility of digital books (Crosby, 2019). Digital books have somewhat substituted the printed books, as two-third of digital book sales has occurred as a result of the cannibalization of physical book sales, and the remaining one-third has occurred through market expansion (Crosby, 2019). Although the brick-and-mortar bookstores are affected in the era of digitalization, the digital and physical formats of book are complementary products, whose synergy leads to increase in willingness to purchase books (Sehn & Fragoso, 2015). Their co-existence has changed publishers and bookstores' approach to target consumer market and revise the way they produce and deliver content to their customers (Maxim & Maxim, 2012).

Perceived Value – Physical Books vs. Digital Books

Perceived value is referred to as "the consumer's overall assessment of the utility of a product, based on perceptions of what is received and what is given" (Zeithaml, 1988). Based on the theory of customer perceived value, perceived value is constituted with both get and give components, whereby give component is the price that a consumer sacrifice, while the get component is the benefits that a consumer receive in form of quality, emot-

ional value and social value (Sweeney & Soutar, 2001). A study conducted by Lin et al. (2005) revealed that perceived value should be considered as a formative construct rather than reflective construct.

The perceived value of physical and digital format of books increasingly differs among consumers, which in turn impact their preferences (Amirtharaj et al., 2023): students prefer e-books as they spent more time reading from e-books and are easy to carry, while physical books are comfortable to use and easy to take notes and study for exams (Amirtharaj et al., 2023). Additionally, the readers also allocate different values to two formats offered on the basis of value components such as tangible ownership and positive experience of visiting a bookstore (Vendrell-Herrero et al., 2017). Perceived value also plays a vital role in creating a value barrier in replacement of physical books with digital books, as the readers consider the satisfaction of reading a physical books that fulfills physical and nostalgic needs against the ease of storage, portability, and reading functionality of the digital books (Kim et al., 2021). Ozuem et al. (2019) also revealed that physical and digital books are different in terms of tactility (or emotion), atmosphere (or browsing), cost (or value for money), and convenience (accessibility). Sehn & Fragoso (2015) established that digital and physical books have a strong synergy, which makes them complementary to each other. Online accessibility, reading motivation, circumstances of use, intended modes of use and appropriation, emotional connection, materiality of devices, and corporeality of the readers are the important factors that creates the synergy between digital and physical books and leads to the decision to read one or the other (Sehn & Fragoso, 2015).

Consumer Perceived Value Theory

The consumer perceived value theory states that consumers trade-off benefits over sacrifices they give or get from a product that determine their perception of service value (Blut et al., 2023; Boksberger & Melsen, 2011). Here, perceived benefits include both cognitive and affective components such as service reputation and received emotions of joy, fear, rapture, jealousy, and rapture, while perceived sacrifices include monetary and non-monetary costs of a service experience such as price, time, search cost, effort, convenience, brand image, and psychic costs (Blut et al., 2023; Boksberger & Melsen, 2011).

Considering perceived benefits from theory of consumer perceived value, physical books were found to have higher psychological ownership and permanence than digital books (Atasoy & Morewedge, 2018). However, perceived value of enjoyment was the same for both physical and digital books (Atasoy & Morewedge, 2018). The study also suggests that perceived value differs across physical and digital books due to the differences in perceived benefits and perceived sacrifices. Based on this phenomenon, the study develops two separate models for physical value and digital value based on the components of perceived benefits and perceived sacrifices, and hence determines the impact of physical value and digital value on willingness to pay books. Hence, the study hypothesized that:

H1: Physical value has an impact on willingness to pay.
H2: Digital value has an impact on willingness to pay.

Method

Design and Participants

An experimental research design was employed, in which participants (n=293) were recruited from the United Kingdom through the Prolific platform. Participants were prompted to think about a book they would consider purchasing for a short, easy, relaxing read, providing examples such as fiction like Stephenie Meyer's "Twilight," thrillers like Dan Brown's "Da Vinci Code," fantasy like "Hitchhiker's Guide to the Galaxy," or romance novels by Nora Roberts, according to their interests. They were then asked to enter the author and title of the book they thought about. Following this, participants were presented with the scenario: "Imagine that you are given the book – (entered text) – in digital or physical form for free." This setup allowed for the examination of perceived value and willingness to pay for different formats of books. Participants were randomly assigned to one of the two conditions: receiving either the digital or physical format of the book for free.

Sampling Technique and Sample Size

Random sampling technique was applied to select participants for reading digital or physical format of books as it best suits the purpose of this study. G-Power version 3 was used to calculate the sample size (Kang, 2021): effect size d = 0.33, α = 0.05, power = 0.80, allocation ratio = 1 get the total sample size of 293. Since participants were recruited through the Prolific platform, the sample size of readers for digital book and physical book was 149 and 144 respectively, totaling it to 293 respondents. The study surveyed participants from the Prolific platform in October 2023.

Measures

Participants rated their willingness to pay a certain format of book with a question (Atasoy & Morewedge, 2018), "Imagine that you actually had to pay for this book. How much would you be willing to pay for this form of the book in GBP?", rated on 10-point Likert scale from 1 (Low) to 10 (High). To examine consumer perceptions of book formats, the study employed a series of measures, all rated on a 7-point Likert scale from 1 (Strongly disagree) to 7 (Strongly agree). Overall satisfaction was measured on scale (Loebbecke, 2010), "How satisfied would you be with this offer?" Adopted from Helm et al. (2018), perceived permanence, stability, durability, and longevity were evaluated using the statements, "This form of the book is permanent", "This form of the book is stable", "This form of the book is durable", and "This form of the book is lasting" respectively. Adopted from Antón et al. (2017), purchase and travel convenience were assessed with the statements, "This form of the book is easy to purchase" and "This form of the book is easy to use when traveling". The status indicator was measured on a scale (Hsu et al., 2018), "This form of the book shows my status". Adopted from Bergström & Höglund (2020), copy ease, reading pleasure, and sharing ease were evaluated with the statements, "This form of the book is easy to copy", "This form of the book is pleasant to read", and "This form of the book is easy to share or give to somebody". Adopted from Marketdata Enterprises (2019), value retention and versatility were assessed with the statements, "This form of the book will maintain its value in the future" and "This form of the book can be used in different ways". Adopted from Antón et al. (2017), Verrier et al. (2016), and Zhang & Kudva (2014), emotional connection, preservation ease, environmental impact, and cataloging ease were measured with the statements, "This form of the book helps me feel an emotional connection with the book", "This form of the book is easy to preserve", "This form of the book is ecological", and "This form of the book is easy to catalog". Adopted from Zhang & Kudva (2014), notetaking ease was evaluated with the statement, "This form of the book is convenient for highlighting and/or making notes". Adopted from Zhang & Kudva (2014), the risk of loss or damage was assessed with the statement, "It is easy to destroy or lose this form of the book", and resell ease was measured with the statement, "This form of the book is easy to resell". Adopted from Atasoy & Morewedge (2018), the psychological ownership was indicated as the extent to which they would "feel a very high degree of personal ownership of it," "feel like I own it," and "feel like it is mine" if they purchased that good (Digital Format: α = 0.919, Physical Format: α = 0.809). The comprehensive set of measures allowed for an in-depth analysis of how different book formats influence consumer perception and willingness to pay.

Data Analysis Techniques

Descriptive statistics, including frequencies and percentages, was computed on the demographic characteristics of the respondents under study for both digital and physical format of books separately. Multivariate analysis of variances (MANOVA) was conducted to determine the differences in value components across digital and physical formats of book in a single model. The significance of F-test statistics in 'test of between-subjects effects' at 5% significance level leads to rejection of null hypothesis and acceptance of alternative hypothesis, stating that there was a significant differences in a value component across digital and physical formats of book (Hair et al., 2014). Lastly, Partial Least Squares – Structural Equation Modelling (PLS-SEM) was conducted to develop the digital and physical value as formative constructs and determine their impact on willingness to pay for these format of books. To validate these formative constructs, Hair et al. (2017) suggested assessment of convergent validity, collinearity, and significant and relevance of outer weights. Once validation

was done, path analysis using 5,000-subsamples bootstrapping was conducted to determine the impact of physical and digital value on willingness to pay.

Results

Demographic Analysis

Frequency distribution was computed to describe the demographic composition of respondents across digital and physical formats of books separately. Results in Table 1 indicated that in both formats, women accounts for more than 80% of the sample. Furthermore, most of the respondents in both formats were in their 30s or 40s, with lower percentage of respondents in older age groups. Lastly, nearly half of the respondents earned less than £30,000 in digital format group, while in physical format group, nearly half of the respondents earned less than £40,000. This showed that the composition of respondents was different in terms of income only.

Table 1

Demographic Analysis

Variables	Categories	Book Format	
		Digital (n = 149) n (%)	Physical (n = 144) n (%)
Gender	Male	28 (18.80%)	22 (15.30%)
	Female	121 (81.20%)	122 (84.70%)
Age	20s	23 (15.44%)	18 (12.50%)
	30s	40 (26.85%)	47 (32.60%)
	40s	40 (26.85%)	42 (29.20%)
	50s	26 (17.45%)	24 (16.70%)
	60s	12 (8.05%)	11 (7.60%)
	70s above	8 (5.37%)	2 (1.40%)
Income	Less than £10,000	26 (17.45%)	13 (9.03%)
	£10,000 – £19,999	22 (14.77%)	18 (12.50%)
	£20,000 – £29,999	30 (20.13%)	22 (15.28%)
	£30,000 – £39,999	25 (16.78%)	28 (19.44%)
	£40,000 – £49,999	9 (6.04%)	17 (11.81%)
	£50,000 – £59,999	9 (6.04%)	17 (11.81%)
	£60,000 – £69,999	9 (6.04%)	12 (8.33%)
	£70,000 – £79,999	7 (4.70%)	7 (4.86%)
	£80,000 or more	12 (8.05%)	6 (4.17%)

Comparison of Consumer's Perception across Physical & Digital Version

The study revealed several significant differences favoring the physical format of the book: willingness to pay was notably higher ($M_{\_digital}$=4.18, SD=2.38 vs. $M_{\_physical}$=8.26, SD=5.19, $p<0.001$, η^2=0.27, F=74.05), overall satisfaction was also greater ($M_{\_digital}$=5.99, SD=1.47 vs. $M_{\_physical}$=6.79, SD=0.51, $p<0.001$, η^2=0.17, F=39.11). Participants perceived the physical format as more permanent ($M_{\_digital}$=4.54, SD=1.75 vs. $M_{\_physical}$=5.75, SD=1.18, $p<0.001$, η^2=0.16, F=48.57) and stable ($M_{\_digital}$=4.97, SD=1.49 vs. $M_{\_physical}$=5.87, SD=1.04, $p<0.001$, η^2=0.12, F=35.80), longevity perception was higher ($M_{\_digital}$=4.95, SD=1.62 vs. $M_{\_physical}$=5.63, SD=1.27, $p<0.001$, η^2=0.05, F=16.07), status indication was perceived more strongly ($M_{\_digital}$=2.91, SD=1.52 vs. $M_{\_physical}$=3.82, SD=1.60, $p<0.001$, η^2=0.08, F=24.66), reading pleasure was significantly higher ($M_{\_digital}$=4.73, SD=1.67 vs. $M_{\_physical}$=6.38, SD=0.88, $p<0.001$, η^2=0.33, F=111.76), as was sharing ease ($M_{\_digital}$=2.96, SD=1.82 vs. $M_{\_physical}$=6.49, SD=0.75, $p<0.001$, η^2=0.71, F=474.93). Value retention was higher for the physical format ($M_{\_digital}$=3.22, SD=1.65 vs. $M_{\_physical}$=4.35, SD=1.61, $p<0.001$, η^2=0.11, F=35.26) together with versatility ($M_{\_digital}$=4.28, SD=1.57 vs. $M_{\_physical}$=4.79, SD=1.45, $p=0.004$, η^2=0.03, F=8.59), emotional connection ($M_{\_digital}$=3.36, SD=1.49 vs. $M_{\_physical}$=5.88, SD=1.19, $p<0.001$, η^2=0.47, F=253.75), notetaking ease ($M_{\_digital}$=4.51, SD=1.84 vs. $M_{\_physical}$=5.91, SD=1.28, $p<0.001$, η^2=0.18, F=57.46). Participants perceived a higher risk of loss or damage for the physical format ($M_{\_digital}$=3.46, SD=1.67 vs. $M_{\_physical}$=4.68, SD=1.68, $p<0.001$, η^2=0.12, F=38.68), resell ease ($M_{\_digital}$=1.91, SD=1.37 vs. $M_{\_physical}$=5.24,

SD=1.37, $p<0.001$, $\eta^2=0.60$, F=432.73) and psychological ownership was stronger for the physical format ($M_{\_digital}=4.03$, SD=1.69 vs. $M_{\_physical}=6.39$, SD=0.74, $p<0.001$, $\eta^2=0.54$, F=244.14).

The digital format showed a significant advantage in travel convenience ($M_{\_digital}=6.28$, SD=1.07 vs. $M_{\_physical}=4.88$, SD=1.60, $p<0.001$, $\eta^2=0.24$, F=77.58), environmental impact ($M_{\_digital}=5.99$, SD=0.93 vs. $M_{\_physical}=3.59$, SD=1.29, $p<0.001$, $\eta^2=0.56$, F=332.81), purchase convenience format ($M_{\_digital}=6.17$, SD=0.93 vs. $M_{\_physical}=5.85$, SD=1.26, $p=0.02$, $\eta^2=0.02$, F=5.85). Some variables showed no significant differences between the formats. Perceived durability, preservation ease, easy of copying, cataloguing ease did not significantly differ between formats (see Table 2).

Table 2

Differences in Consumer's Perception across Physical & Digital Formats of Book

Variable	$M_{\_digital}$	$M_{\_physical}$	$SD_{\_digital}$	$SD_{\_physical}$	F(1,291)	p	Effect Size
Willingness To Pay	4.18	8.26	2.38	5.19	74.05***	< 0.001	0.27
Overall Satisfaction	5.99	6.79	1.47	0.51	39.11***	< 0.001	0.17
Perceived Permanence	4.54	5.75	1.75	1.18	48.57***	< 0.001	0.16
Perceived Stability	4.97	5.87	1.49	1.04	35.80***	< 0.001	0.12
Perceived Durability	5.45	5.32	1.39	1.31	0.68	0.410	0.00
Longevity Perception	4.95	5.63	1.62	1.27	16.07***	< 0.001	0.05
Purchase Convenience	6.17	5.85	0.93	1.26	5.85*	0.020	0.02
Travel Convenience	6.28	4.88	1.07	1.60	77.58***	< 0.001	0.24
Status Indicator	2.91	3.82	1.52	1.60	24.66***	< 0.001	0.08
Copy Ease	3.92	3.60	1.71	1.84	2.40	0.120	0.01
Reading Pleasure	4.73	6.38	1.67	0.88	111.76***	< 0.001	0.33
Sharing Ease	2.96	6.49	1.82	0.75	474.93***	< 0.001	0.71
Value Retention	3.22	4.35	1.65	1.61	35.26***	< 0.001	0.11
Versatility	4.28	4.79	1.57	1.45	8.59**	0.004	0.03
Emotional Connection	3.36	5.88	1.49	1.19	253.75***	< 0.001	0.47
Preservation Ease	5.11	5.19	1.55	1.35	0.22	0.640	0.00
Environmental Impact	5.99	3.59	0.93	1.29	332.81***	< 0.001	0.56
Cataloguing Ease	5.29	5.58	1.37	1.35	3.28	0.070	0.01
Notetaking Ease	4.51	5.91	1.84	1.28	57.46***	< 0.001	0.18
Risk of Loss or Damage	3.46	4.68	1.67	1.68	38.68***	< 0.001	0.12

Variable	$M_{digital}$	$M_{physical}$	$SD_{digital}$	$SD_{physical}$	F(1,291)	p	Effect Size
Resell Ease	1.91	5.24	1.37	1.37	432.73***	< 0.001	0.60
Psychological Ownership	4.03	6.39	1.69	0.74	244.14***	< 0.001	0.54

Creating Digital Value vs. Physical Value from Consumer's Perception of Value Components

As value components were significantly different across digital and physical format of book, the study employed formative approach to derive digital and physical value from the consumer's perception and then determine the impact of each value on willingness to pay. Figure 1 and 2 represented two separate models for digital and physical value leading to willingness to pay for both digital and physical format of book.

To derive digital value from consumer's perception, a formative construct naming digital value was created to determine the significant and relevant value components of book's digital format as perceived by the consumers. To validate the formative construct 'digital value', firstly a redundancy analysis was conducted and found a path coefficient of 0.823 between formative construct and reflective construct of digital value. Since the path coefficient of 0.823 was higher than 0.70 (Hair et al., 2017), this indicated that convergent validity was achieved. Secondly, collinearity was assessed using variances inflation factor (VIF) and found that VIF scores of all indicators were less than 5 (Hair et al., 2017), indicating no issue of collinearity among the indicators (Table 3). Thirdly, the significance and relevance of the formative indicators were assessed using outer weights and outer loadings (Hair et al., 2017). Results in Table 3 indicated that only cataloguing ease, perceived durability, and value retention had significant outer weights of 0.434, 0.550, and 0.521 respectively ($p < 0.05$) and hence considered as significant and relevant indicators of formative construct 'digital value'. The non-significance of outer weights for all other indicators leads to the assessment of outer loadings of these indicators. Results in Table 3 indicated that only longevity perception, perceived performance, preservation ease, and psychological ownership had significant outer loadings with a score higher than 0.5. Hence, these four indicators were also considered as relevant indicators of formative construct 'digital value'.

Physical value was also derived from the consumer's perception in the similar formative approach as digital value: a formative construct 'physical value' was created through the significant and relevant value components of book's physical format as perceived by the consumers. To assess the validity of the formative construct 'physical value', firstly a redundancy analysis was conducted and found a significant path coefficient of 0.766 between formative construct and reflective construct of physical value. Having a path coefficient higher than 0.70 indicated to have met convergent validity (Hair et al., 2017). Secondly, variance inflation factor (VIF) was computed to assess collinearity. Results in Table 3 indicated that VIF scores of all indicators were less than 5 (Hair et al., 2017), which suggested no issue of collinearity among the indicators. Thirdly, the significance and relevance of indictors was assessed using outer weights and outer loadings (Hair et al., 2017). Results in Table 3 indicated that none of the indicators had a significant outer weights at 5% level. This leads to assessment of outer loadings of these indicators. Results in Table 3 indicated that five indicators, including cataloguing ease, overall satisfaction, reading pleasure, sharing ease, and value retention had a significant outer loading with a score higher than 0.5. Hence, based on outer loadings, these five indicators were considered as relevant indicators of formative construct 'physical value'.

Impact of Physical & Digital Value on Willingness to Pay

Partial Least Square-Structural Equation Modelling (PLS-SEM) was conducted to analyse the impact of physical and digital value on willingness to pay. Both models is considered to be a good fit, as the SRMR of both saturated and estimated model was 0.000, which is less than the threshold level of 0.08 as suggested by Hu & Bentler (1999), Henseler et al. (2016), and Hair et al. (2017). Results in Table 3 indicated that both physical and digital value of book had a significant impact on willingness to pay (Digital Value: $\beta = 0.370$, $p < 0.001$; Physical Value: $\beta = 0.240$, $p < 0.001$), hence supporting hypotheses H1 and H2. The corresponding beta coefficients indicated that digital value of books had a stronger impact on willingness to pay than physical value of books. This was also evident from the R^2 value, as the R^2 of willingness to pay for digital books was 0.137, which was higher than the R^2 of willingness to pay for physical books (i.e., 0.058). As per rule of thumb suggested by Cohen (2013), the f^2 effect size of 0.159 and 0.061 respectively indicated a small and medium effect size on willingness

to pay for digital and physical books respectively. This suggested that when books are available in digital format after carefully considering cataloguing ease, longevity perception, perceived durability, perceived permanence, preservation ease, psychological ownership, and value retention, their willingness to pay for digital books will be higher compared to books available in physical format.

Figure 1

Model of Digital Value Leading to Willingness to Pay

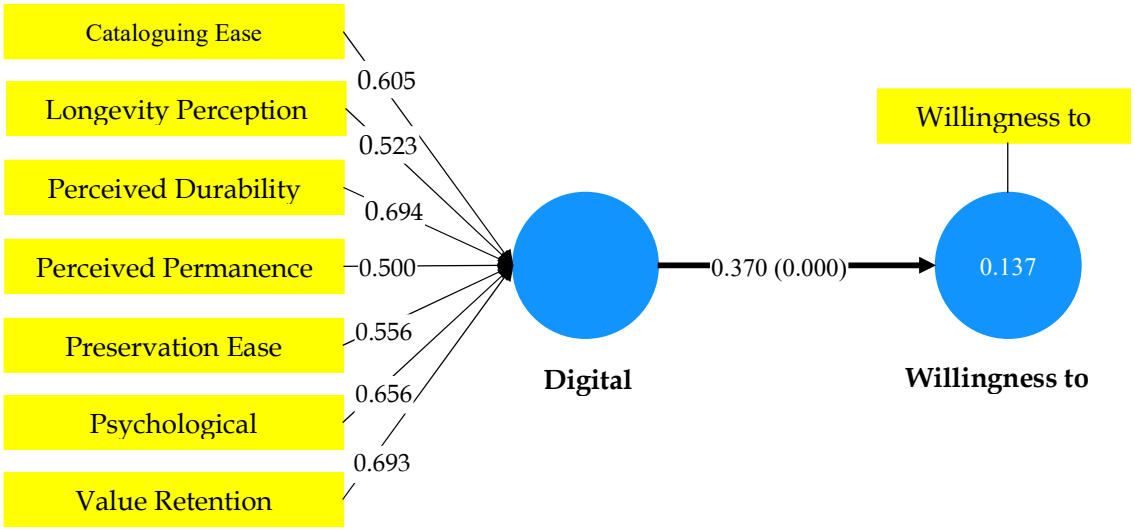

Figure 2

Model of Physical Value Leading to Willingness to Pay

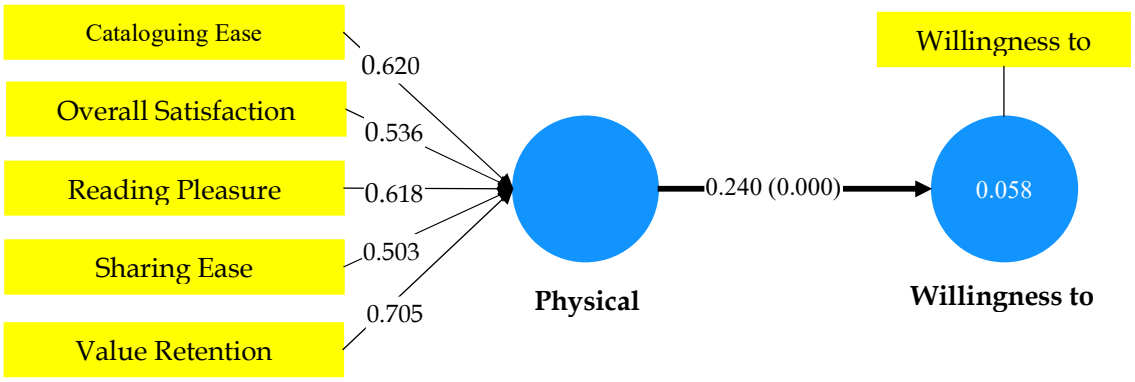

Table 3
Assessing Digital Value & Physical Value as Formative Constructs

Construct	Indicators	VIF	Outer weights	p-value	Outer loadings	p-value
Digital Value	Cataloguing Ease	1.165	0.434*	0.011	0.605***	0.000
	Longevity Perception	2.318	–0.001	0.998	0.523**	0.002
	Perceived Durability	2.143	0.550*	0.031	0.694***	0.000
	Perceived Permanence	2.454	–0.074	0.821	0.500**	0.003
	Preservation Ease	2.600	–0.181	0.537	0.556**	0.003
	Psychological Ownership	1.743	0.202	0.419	0.656***	0.000
	Value Retention	1.239	0.521*	0.013	0.693***	0.000
Physical Value	Cataloguing Ease	1.176	0.319	0.302	0.620*	0.011
	Overall Satisfaction	1.140	0.262	0.162	0.536***	0.001
	Reading Pleasure	1.212	0.276	0.181	0.618***	0.001
	Sharing Ease	1.084	0.261	0.252	0.503*	0.029
	Value Retention	1.081	0.518	0.075	0.705**	0.004

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4
Casual Relationships & Results of Hypothesis

Path	Path Coefficients	*t*-value	Hypothesis conclusion	Effect Size (f Square)
Digital Value → Willingness to Pay	0.370	4.619***	Accepted	0.159
Physical Value → Willingness to Pay	0.240	4.442***	Accepted	0.061

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Discussion

The study investigated the differences in value components as perceived by the customers between digital and physical formats of the books. The study found that consumers had higher willingness to pay for physical books than that for digital books. Readers reading physical books had higher overall satisfaction, perceived permanence, perceived stability, longevity perception, status indicator, reading pleasure, sharing ease, value retention, versatility, emotional connection, notetaking ease, risk of loss or damage, resell ease, and psychological ownership as compared to readers reading digital books. However, readers reading digital books had higher purchase convenience, travel convenience, and environment impact as compared to readers reading physical books (Table 5). These results were consistent with the findings revealed in the existing literature, as studies revealed higher level of satisfaction (Woody et al., 2010), perceived permanence (Mangen & Van Der Weel, 2016), perceived stability (Seaman & Seaman, 2017), longevity perception (Valencius et al., 2016), status indicator (Delgado et al., 2018), reading pleasure (Amirtharaj et al., 2023; Kaakinen et al., 2018), sharing ease (Chao et al., 2013), value retention (Delgado et al., 2018), versatility (Chao et al., 2013), emotional connection (Kaakinen et al., 2018), notetaking ease (Amirtharaj et al., 2023), risk of loss or damage (Chintha & Reddy, 2019), resell ease (Wang et al., 2022), and psychological ownership (Atasoy & Morewedge, 2018) for physical books. Past literature also revealed several advantages of digital books, including purchase convenience (Chintha & Reddy, 2019), travel convenience (Millar & Schrier, 2015), and environment impact (Haleem et al., 2022).

Table 5

Key Differences: Physical vs Digital Books

Aspect	Physical books	Digital books	Key difference
Willingness to Pay	Higher	Lower	Physical books command higher prices
Overall Satisfaction	Higher	Lower	Readers more satisfied with physical format
Perceived Permanence	Higher	Lower	Physical books seen as more lasting
Perceived Stability	Higher	Lower	Physical books perceived as more stable
Reading Pleasure	Higher	Lower	Greater enjoyment from physical books
Sharing Ease	Higher	Lower	Easier to share physical books
Emotional Connection	Stronger	Weaker	Stronger emotional ties to physical books
Psychological Ownership	Stronger	Weaker	Greater sense of ownership with physical books
Notetaking Ease	Higher	Lower	Easier to make notes in physical books
Resell Ease	Higher	Lower	Easier to resell physical books
Status Indicator	Stronger	Weaker	Physical books better indicate status
Value Retention	Higher	Lower	Physical books retain value better
Travel Convenience	Lower	Higher	Digital books more convenient for travel
Environmental Impact	Higher	Lower	Digital books perceived as more eco-friendly
Purchase Convenience	Slightly Lower	Slightly Higher	Digital books slightly easier to purchase
Cataloguing Ease	Lower	Higher	Digital books easier to catalogue

Considering the differences in value components for physical and digital books, the resulting creation of perceived value is also different for both physical and digital books. The theory of customer perceived value implies that perceived value is created with the combination and balance of perceived benefits and perceived sacrifices (Sweeney & Soutar, 2001). Hence, the study developed two separate frameworks of customer perceived value for both digital and physical books. In both models, the perceived value is considered as a formative construct, as Lin et al. (2005) recommended assuming a formative specification over a reflective specification for constructing customer perceived value. By applying this approach, formative constructs 'digital value' for perceived customer value of digital books and 'physical value' for perceived customer value of physical books were created and validated in this study. The study found that the relevant and significant indicators of digital value were the cataloguing ease, longevity perception, perceived durability, perceived permanence, preservation ease, psychological ownership, and value retention (Table 6). These results were consistent with the findings revealed by past literature and in light of theory of customer perceived value: digital value, or customer perceived value for digital books, can be created by an offset of perceived benefits against perceived sacrifices. The perceived benefits of digital books can be generated by providing ease of cataloguing (Jamogha et al., 2022), creating a perception of being a long-lasting product (Eschenfelder et al., 2019) and a durable product (Sun et al., 2021), and offering digital preservation (Rodrigues & Godoy Viera, 2018). The perceived sacrifices of digital book were remediation for the relative permanence (Delioglanis, 2023) and relative sense of self-ownership (Gruning, 2018) of physical book. The study also found that the relevant and significant indicators of physical value were the cataloguing ease, overall satisfaction, reading pleasure, sharing ease, and value retention. These results were also consistent with the findings revealed by past studies and based on the customer perceived value theory: physical value – a proxy of perceived value of physical book – can be created by balancing between perceived benefits that are not available and difficult to obtain in digital books and perceived sacrifices that are substituted through digital books. Physical books enable flicking, skimming, enjoyment, ease of reading, and hence overall reading pleasure for the readers (Casselden & Pears, 2020; Ketron & Naletelich, 2016). Readers from physical books exhibit respect and nostalgia for the hard copy format, which leads to higher overall satisfaction (Casselden & Pears, 2020). Physical books overcome the dissatisfaction created by digital technology used for digital books (Selwyn, 2016). Readers' and students' engagement with physical books or textbooks assure high academic achievement (Junco & Clem, 2015), hence resulting in maintaining its value in future. Physical

books can be easily shared with a simple handoff to interested readers (Ketron & Naletelich, 2016) without possibility of infringement (Gruning, 2018). However, with physical books, readers sacrifice the benefits of cataloguing ease that may occur due to lack of systematic categorization (Johnston & Salaz, 2019).

Table 6

Value Drivers for Digital and Physical Books

Digital Books Value Drivers	Physical Books Value Drivers	Common Value Drivers
Longevity perception	Reading pleasure	Cataloguing ease
Perceived durability	Overall satisfaction	Value retention
Perceived permanence	Sharing ease	
Preservation ease		
Psychological ownership		

When assessing its impact on willingness to pay, both physical and digital values have generate positive willingness to pay for either digital or physical books, as it is often considered as a strong predictor of willingness to pay (Zauner et al., 2015; F. Zhang et al., 2020). The study also found that the impact of digital value on willingness to pay is higher compared to physical value. This explains the change in user behavior in the digital and physical book market. Due to digitalization, users are more capable of making comparison between the benefits they get and the costs the have to bear. This comparison leads to higher level of willingness to pay for digital books (Chen, 2012; Stejskal et al., 2021).

Theoretical contributions. The study findings add to the existing literature of customer perceived value theory, as it derives the perceived value of consumers for digital and physical books through the offset of perceived benefits against perceived sacrifices, and then linking it with willingness to pay for each format individually. University leaders, administrators and educators would better understand and deal with the complexity and complications of digital technology use in universities so as to create better educational environment for students. The study findings also provide a comprehensive framework of perceived value to stakeholders of publication industry, including bookstore managers, e-book sellers, and publishers, who can derive effective strategies on the basis of identified relevant value components to improve readers' willingness to pay and, resultantly, sales. Lastly, readers can also learn the values (benefits or costs) provided by each format of book and make a choice between physical and digital books.

Practical implications. The findings of this study offer practical implications for various stakeholders in the book industry. Publishers should adopt a dual format strategy, offering both digital and physical books to capitalize on the distinct value drivers of each. Enhancing digital books' perceived durability and preservation could boost their perceived value, while marketing for physical books should focus on emotional connection and reading pleasure. Pricing strategies should reflect the higher consumer willingness to pay for physical books. Bookstore managers and e-book sellers should improve the in-store experience and digital cataloging systems, consider hybrid models, and educate customers on the environmental benefits of digital books. Educators and academic institutions should select formats based on the context of use, integrate digital literacy into curricula, and recognize the reading pleasure provided by physical books. Readers can make informed decisions by understanding the strengths of each format, such as using digital books for convenience and physical books for deeper engagement, while keeping budget considerations in mind. Technology developers should focus on e-reader advancements that enhance psychological ownership and reading experience. Libraries, too, can benefit from balanced collection development, user education on format advantages, and investment in digital preservation strategies.

Conclusion

The study aims to develop two separate frameworks of customer perceived value for digital and physical format of books. For this purpose, formative constructs were created as digital value for digital format of book and physical value for physical format of book. Through assessment and validation of formative constructs, the value components that are significant and relevant indicators of digital value and physical value were identified. The study found that cataloguing ease, overall satisfaction, perceived durability, perceived permanence, preservation ease, psychological ownership, and value retention were the significant and relevant indicators of

digital value. On the contrary, cataloguing ease, overall satisfaction, reading pleasure, sharing ease, and value retention were the significant and relevant indicators of physical value. Both digital and physical values had a significant impact on willingness to pay for book, with higher impact of digital value. The study have several implications for academicians, practitioners, and stakeholders of publication industry, including readers, bookstore managers, and publishers themselves.

The study encountered several limitations. Firstly, the study only focused on digital and physical format of books and did not account for different versions of digital books suitable for different forms of digital devices and online availability to purchase hardcopies. Secondly, the study did not consider socioeconomic and cultural factors that would influence one's willingness to pay for a certain format of book. Thirdly, individual factors such as personality, information literacy skills, and psychosocial skills were also not considered in the study, which would influence both perceived value and willingness to pay for a certain format of book. Future studies can be conducted to assess the impact of these factors on customer perceived value and willingness to pay for digital and physical books. Lastly, high cost of recruiting participants for experimental research design leads to a small sample size in this study. Future studies can employ cross-sectional research design to reduce cost of data collection with a significant increase in sample size, resulting in better generalizability of the study findings.

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