Effects of Purchase and Presentation Order on the Valuation of Physical and Digital Good Bundles

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ABSTRACT

Many digital goods also come on physical mediums, such as movies and games on discs. We investigate how the order of purchase (buying a digital copy of a good already owned in physical form or vice versa) and order of presentation (considering one form of the good and then a bundle of both) can affect consumer valuations of the second purchase and bundles containing both physical and digital goods. Using a series of experiments, we show that (a) physical goods are more valuable than digital goods, (b) consumers who own digital (physical) goods are more (less) willing to purchase a second, physical (digital) copy of the same good, and (c) presenting consumers a digital product for consideration first can lead to lower willingness to pay for a bundle containing both physical and digital forms of the good. Internalized reference prices and the anchoring and adjustment heuristic are used to explain these results.

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Introduction

Many industries have nearly completed or are currently undergoing the transition from distributing their products in physical formats, such as on CDs and DVDs, to purely digital distribution. A prime example of an ongoing transition is the entertainment industry, where movies and games are being sold on physical DVD/Blu-Ray formats as well as online via digital distribution services offered by a wide variety of firms, including device companies (e.g. Apple, Microsoft, or Sony), retailers (e.g. Amazon), and publishers (e.g. Steam or Electronic Arts). Amid the transition, one approach to capturing additional revenue has been the bundling of physical and digital copies of the same content. This paper investigates consumers' valuations of products when presented with the choice of purchasing the same content twice: once in physical form and once in digital form.

Buying the same product in two different forms is a unique phenomenon resulting from the transition of physical to digital goods. This is a case of buying two slightly different varieties of the same durable good, which differs from the case of buying two of the exact same good. Having an extra item in the latter case usually does not open up new use cases; it just provides a backup or something another person can use at the same time. The primary benefit of owning multiple exact copies of the same item depend solely on whether having multiple copies is useful to the consumer. In the case of purchasing both a physical and digital copy of the same good, the two copies are not completely identical, making it a more complex consideration. Due to this, we find differing valuations between physical and digital forms of the same product, and that these valuations can be affected by the order in which the two forms are purchased or considered.

Order of Purchase and Presentation

One consequence of the transition from physical to digital goods in the entertainment and media industries is the desire to sell both physical and digital copies of the same product to the same consumer. Amazon, for example, introduced a
program called Disc+ On Demand in 2009 (Roettgers 2009), consisting of movies sold on Blu-Ray or DVD that also include a digital copy of the same movie. Many movie studios have also been releasing Blu-Ray movies that include a digital copy; according to Blu-rayStats.com (2013), a Blu-Ray statistics tracking database, approximately 12.6% of the Blu-Ray movies released before October 2013 have contained either a Windows or iTunes digital copy. More recently, Amazon has introduced the Kindle MatchBook program (Amazon 2013), which provides digital copies of physical books purchased for either a discount or free. In all of these scenarios, firms are looking to either sell both physical and digital goods at the same time or provide incentives to buy both types of mediums sequentially.

We examine both scenarios: that of buying a second form of an item you already own (Order of Purchase) and that of buying both forms simultaneously, but considering them in different orders (Order of Presentation). Order of Purchase is similar to the Kindle MatchBook example, where a firm tries to sell a consumer an additional form of the same good that the consumer already owns, while Order of Presentation is akin to the bundled Blu-Ray/digital movies, where the firm must decide whether to list the offering as a physical item that also happens to come with a digital item or vice versa. In reality, physical mediums existed before digital mediums, and we see this natural order reflected in the programs mentioned above, which bundle a digital item on the back of a physical one. However, we also consider the opposite case, in which a physical item happens to be attached to a digital purchase.

The main contributions of this paper include (a) showing that purchase and presentation orders can affect consumers’ valuations of both the individual purchases and bundles under the right circumstances, (b) applications of internalized reference prices along with anchoring and adjustment heuristics to help explain these findings, and (c) an extension of these theories into a unique purchase situation brought about by the transition from physical to digital goods that has not yet been deeply explored in previous research.
Background

Transactions under both the Order of Purchase and Order of Presentation scenarios first involve the consideration of value of either the physical or digital form of the good, but not both at the same time. Once this is done, the other form of the good is then considered; for Order of Purchase, the other form is considered separately as there are two purchase transactions, but for Order of Presentation, the other form is considered together with the original form as a bundle. If the medium of first consideration (hereby known as first purchase) is physical (digital), then the medium of second consideration (second purchase) is digital (physical) or a bundle of both. In order to analyze the first purchase valuation, we can turn to reference prices.

Reference Prices

Reference prices are values that can be used as a baseline from which to compare and evaluate different prices (Biswas and Blair 1991). They can be external, such as Manufacturer Suggested Retail Prices, or internal from consumers’ memories of experiences with the same or similar products in the past. Internal reference prices may change due to new external information, however. Since we are interested primarily in consumer valuations, we wish to control for as much external stimuli as possible and thus are primarily dealing with internal reference prices in this case. Previous research has shown that consumers utilize both internal and external reference prices when considering values of goods (Mayhew and Winer 1992).

Reference prices supplied by sellers have been shown to affect value perceptions and interest by buyers (Della Bitta et al. 1981). Kamins, Dreze, and Folkes (2004) showed using an auction format that supplying a lower reference price resulted in lower bid amounts than when supplying a higher reference price. This result can be extrapolated to the valuation of movies and video games to show the differences between physical and digital mediums.

The studies in this paper use products from the movie and video game industries to investigate valuation differences between physical and digital goods. One
reason for this product choice is because these two categories of products are very similar in many ways yet have some key differences that can reveal insights on the different psychological thought processes between physical and digital goods. They are similar in that the physical forms of the goods are almost identical, consisting of a Blu-Ray or DVD disc in a case with some artwork and maybe some inserts, such as a booklet. Digital forms of movies and games are likewise similar; both are usually purchased through digital rights management (DRM) systems tying ownership to a single user and can involve fairly large downloads that take time and space.

One of the key differences between movies and games is that physical movies are usually priced higher than digital movies, whereas physical and digital games are often priced the same (Newton 2012). Apple’s iTunes Store, reported by the NPD group to hold 65% of the digital movies market (The NPD Group 2013a) as of April 2013, charges $19.99 for new releases in High Definition (Apple 2009). Only approximately 12.5% of Blu-Ray movies, which are also high definition, have had a new release list price of less than $20, while 66% fall between $25-$40 (Blu-rayStats.com 2013). New release console and major computer game titles are typically priced at $59.99 (McElroy 2013), whether they come on physical discs or as digital downloads.

Due to these differences in pricing structures, we can expect consumers in these industries to have internalized quite different reference prices. In particular, the reference prices for physical movies are higher than digital movies, while the reference prices for physical games should be the same as for digital games. Given that reference prices can influence perceptions of value, we expect that consumers should be willing to pay more for physical movies than digital movies but similar amounts for physical and digital games, leading to our first hypothesis.

H1: For the first purchase, valuation differences between physical and digital mediums should be higher for goods where the reference prices differ more substantially (movies) than for goods where reference prices are more similar (games).
Hypothesis 1 deals primarily with the initial purchase of a physical or digital good. Although the initial purchase valuation may be influenced by reference prices as shown by prior research, we also examine the case where the consumer considers purchasing a second, slightly different, form of the good (digital if the first purchase was physical, and vice versa). Having multiples of the exact same good is subject to diminishing returns on marginal utility (Clark 1899). Since the two forms in this case can be slightly different, holding first purchase satisfaction constant, the main consideration point for a second purchase should be the additional utility gained from owning the second purchase in addition to the first.

Another way in which movies differ from games is in use cases. Physical and digital games do not differ in their core content (the game itself) or the way in which that content is experienced (played on a computer or gaming console). Physical movies, however, often contain bonus specials on the Blu-Ray or DVD that is not found in a digital download, which is often just the main title. Even controlling for any content differences, movie discs can be utilized in different ways than digitally downloaded movies. Discs can easily be used in Blu-Ray or DVD players to watch movies on TV screens, while a digital download may be limited to the computer or device on which it was downloaded, especially for the less technically inclined. While it is theoretically possible to convert a physical movie to a digital file or burn a digital movie onto a disc to enable all use cases regardless of which medium was initially purchased, this takes additional time, expertise, and resources.

Besides the difference in use cases, physical movies and games both offer additional tangible discs, boxes, artwork, and sometimes manuals or inserts that do not come with digital purchases. While this paper does not try to tease apart the most important drivers of valuation for a second purchase, we expect that both movies and games should differ in value between their physical and digital forms, which cannot be explained by reference prices. This leads to our second hypothesis, which primarily applies to the Order of Purchase scenario, since consumers make evaluations of the bundle, and not the second purchase separately, in the Order of Presentation scenario.
H2: For the second purchase, valuations should be higher for the physical good than the digital good for both movies and games.

Anchoring and Adjustment

In order to analyze valuations for the bundle of both the physical and digital forms of a good, we turn to the anchoring and adjustment heuristic. Anchoring and adjustment is a method used in decision making under uncertainty where an initial value acts as a starting point, or anchor, from which the final value is adjusted (Tversky and Kahneman 1974). The adjustment is often insufficient, resulting in a bias of the final value towards the anchor value (Epley and Gilovich 2006).

Anchoring and adjustment can be used to understand the valuation of bundles in the Order of Presentation scenario. In this case, consumers first consider the value of one form of the good before being presented with a bundle of both physical and digital forms. The first purchase valuation is therefore used as an anchor during the bundle valuation process. A higher (lower) first purchase value should lead to a higher (lower) final bundle value. Since physical movies should be valued more than digital movies, we expect to see a higher bundle price if the first purchase consideration was a physical movie rather than a digital one. Games, however, should have more similar physical and digital first purchase valuations, so we do not expect to see as large a difference in the final bundle valuation.

H3: For the bundle purchase consideration, valuations should be higher (lower) if the first purchase considered has a higher (lower) value. Consequently, larger differences in first purchase valuations should cause larger differences in bundle valuations.

In the Order of Purchase scenario, consumers do not explicitly consider the bundle valuation, only the two forms separately. The second purchase value consideration in that case is of an item that has already been purchased for a specific amount, reducing the amount of uncertainty in the good's valuation. Less uncertainty
means the anchoring and adjustment heuristic does not need to be applied, so we expect that total bundle valuations (sum of the first and second purchase values) should not be affected by differences in first purchase valuations.

In order to test these hypotheses, we conducted two studies: one for Order of Purchase and one for Order of Presentation. Both studies involved both movie and game product categories.

Study 1: Order of Purchase

The goal of Study 1 is to test Hypotheses 1 and 2 under the Order of Purchase scenario. In this scenario, consumers purchase the physical (digital) form of a good before considering the purchase of the digital (physical) form of the same good. The main variables of interest are the willingness-to-pay (WTP) amounts for the first and second purchases, which reflect valuations.

The study was designed to avoid variations due to price depreciation and product satisfaction. Because movies and games often begin to drop in price a few months after release, we specifically ask participants to value products that are new releases. Furthermore, the second WTP valuation also happens immediately after the first purchase is made. While this may not accurately reflect the realities of consumers who are offered another medium for products they purchased in the past, like the Amazon Kindle MatchBook program does, it allows us to remove product satisfaction as a factor in the second WTP consideration. This scenario is similar to one where a store may ask if consumers wish to purchase a second form of the good in addition to what they have just purchased before leaving the store.

The use of physical and digital products also required some equalization of content to avoid differences in valuation due to quality. For movies, the physical good used in this study was a Blu-Ray/DVD disc set, which contained both High Definition (HD; the Blu-Ray) and Standard Definition (SD; the DVD) content. Likewise, a digital movie was also a set containing both HD and SD formats of the film. In addition, the physical and digital movies (for the first and second purchases) were described as containing the
exact same content. This does not control for content differences between physical and
digital goods offered in the initial purchase, which allows us to investigate how these
differences affect valuations. For games, the physical good was described as a
disc/cartridge (depending on platform), while the digital good was a digital download
with equivalent content.

Procedure

269 participants were recruited through Amazon Mechanical Turk for Study 1, a
2 (version order: physical first or digital first) x 2 (product category: movie or game)
between-subjects design. In an online survey, participants first underwent a product
elicitation task, where they were asked to think of a movie or game that they really like
but did not yet own. In an effort to normalize reference prices for the wide variety of
possible titles, they were also instructed to choose one they believed to be costly to
produce (over $100 million for movies and $10 million for games); these are typically
triple-A titles with reference prices on the higher-end of the scale. Participants were
asked to type the name of the movie or game along with a brief description (1-2
sentences).

Participants were then asked to imagine that the title they like has just been
released is now available for purchase either at their favorite store or digital download
service, depending on version order condition. Given this information, participants were
asked how much they would be willing to pay for this product. Afterward, participants
were told to imagine that the item was actually on sale at 20% lower than the amount
they were willing to pay. Since this sale price is lower, the item is purchased and that
amount of (imaginary) money has now been spent. A 20% discount was used in order to
avoid limiting budget effects, which may prevent participants from entering a non-zero
WTP for the second purchase.

Immediately after the purchase is completed, participants are asked if they
would like to buy a second copy of the item as well that contains exactly the same
content as the first purchase. The medium of the second purchase is the opposite of the
medium for the first purchase (i.e. digital if physical first and physical if digital first).
Participants are reminded that they paid a certain amount already for the first purchase, and are then asked how much they are willing to pay for this second purchase.

Participants were then presented with a set of three scale questions, with answers ranging from 1 (Not at all) to 7 (Very much so). These three questions asked (1) “How much would you like to own the additional purchase?”, (2) “How likely would you be to purchase the additional purchase?”, and (3) “Are there some people who would pay money for the additional purchase?”. These scale dependent variables (DVs) provide the ability to tease apart desires of ownership and purchase. All scale DV questions were presented in a randomized order.

Results

9 participants responded with 0 WTP for the first purchase of the good and rendered the rest of the manipulation ineffective, input extremely large and obviously fake entries, or failed an attention check question. These respondents were excluded from the analysis, leaving 260 usable data points. Because movies and games have very different reference prices and the variances between product category valuations cannot be assumed to be the same, we could not use a two-way ANOVA to test for interaction effects for the raw WTP variable. Instead, we analyzed the main effects of version order on WTP within a product category, and used two-way ANOVA to analyze the scale DVs.
For movies, the main WTP results are shown in Figure 1. There was a main effect of version order on first purchase WTP ($F(1, 116) = 16.11, p = .0001$) as well as second purchase WTP ($F(1, 116) = 9.475, p = .003$). In the physical first condition, participants were willing to pay significantly more for the first purchase ($M_{PF-1} = 20.12$) than in the digital first condition ($M_{DF-1} = 13.72$). For the second purchase, physical first condition participants were willing to pay significantly less ($M_{PF-2} = 4.36$) than digital first condition participants ($M_{DF-2} = 9.08$). For both purchases, the physical medium garnered the higher price. The total sum for the first and second purchases showed no significant differences ($F(1, 116) = 0.40, p = .530$), with physical first ($M_{PF-SUM} = 24.47$) being slightly higher than digital first ($M_{DF-SUM} = 22.8$).
For games, the main WTP results are shown in Figure 2. The effect of version order on first purchase WTP was only marginally significant ($F(1,140) = 3.67764, p = 0.057$) and much less so than on second purchase WTP ($F(1,140) = 7.67, p = 0.006$). In the physical first condition, participants were willing to pay only slightly more for the first purchase ($M_{PF-1} = 43.28$) than in the digital first condition ($M_{DF-1} = 38.17$). For the second purchase, physical first condition participants were again willing to pay significantly less ($M_{PF-2} = 7.30$) than digital first condition participants ($M_{DF-2} = 13.06$). Once again, the total sum for the first and second purchases showed no significant differences ($F(1,140) = 0.03, p = .866$), but this time digital first ($M_{DF-SUM} = 51.22$) is slightly higher than physical first ($M_{PF-SUM} = 50.58$).
Analyzing second purchase WTP as a percentage of first purchase WTP reveals that consumers were willing to pay a significantly (F(1,116) = 18.97, p = .00003 for movies; F(1,140) = 17.78, p = .00004 for games) greater portion of their first purchase WTP in the physical first condition (MPF-% = 76.26% for movies, MPF-% = 35.96% for games) than in the digital first condition (MDF-% = 20.69% for movies, MDF-% = 16.29% for games). These results are summarized in Figure 3.

The scale DV analysis revealed a main effect of version order on desire to purchase the second copy (p = .029); participants in the digital first condition were more likely to purchase a second copy (MDF-BuyScale = 3.05) than those in the physical first condition (MPF-BuyScale = 2.58). There were no other significant main or interaction effects of version order or product type on the other scale DVs. In general, desire to own (MOwnScale = 3.24) was significantly higher than desire to purchase (MBuyScale = 2.82; p = .008), however. Despite the low purchase scores, participants thought others generally would pay to purchase the second copy (MOthersBuyScale = 5.36).
Discussion

Consistent with our predictions, the difference in first purchase WTP for games was far less significant than that for movies, providing support for hypothesis 1. Digital WTP was only slightly lower than physical WTP in absolute magnitude, but almost three times as much as a percentage difference ($5.11 or 11.8% lower for games, $6.40 or 31.5% lower for movies).

Providing support for hypothesis 2, the second purchase results show that digital goods were valued less than physical goods for both games (by $5.76 or 44% lower) and movies (by $4.72 or 52% lower). Despite one category of product (movies) having large differences in physical/digital references prices and the other (games) having similar physical/digital reference prices, a similar difference was seen in valuations between physical and digital second purchases. This suggests that reference prices do not have nearly as strong an effect on valuations for second purchases compared to initial purchases.

These results reveal a pattern of physical movies being valued more highly than digital movies regardless of the order of purchase. The absolute difference in value seems to be fairly consistent, ranging from $4.72 to $6.40. This suggests the existence of some inherent attributes that always make physical goods more valuable than the digital goods by a flat amount, such as the disc packaging or additional use cases. The design of this study is unable to determine the specific underlying cause of the value increase, however.

The second purchase WTP as a percentage of first purchase WTP results suggest that purchasing a digital copy of an owned physical good may not be as enticing as purchasing a physical copy of an owned digital good. The physical first condition percentages were very close to or under the 20% discount savings for the first purchase provided as part of the study design, indicating that participants were unwilling to go above their initial first purchase WTP when considering the additional cost of the second purchase. However, this was not the case for the digital first condition; participants were willing to pay far higher percentages of the first purchase WTP.
The scale DVs reveal that consumers may have a higher desire to own the second copy of a good than to actually purchase it. At the same time, they believe that they are on the low end of the scale, and that other people are more likely to purchase a second copy. The significant main effect of version order on purchase desire but not ownership desire suggests that it is easier to convince someone to buy a physical copy as a second purchase than a digital copy, even though desire to own either medium is not that different. For digital goods, it is also possible that ownership through other means than purchase, such as piracy, could play a role in this discrepancy.

Study 2: Order of Presentation

Study 2 tests Hypothesis 3 and investigates the Order of Presentation scenario, where consumers first consider either the physical or digital form of a good before considering a bundle of both forms. The first purchase consideration of Study 2 is identical to that of Study 1, replicating the results and providing more support for Hypothesis 1. The main difference is in the second purchase consideration; instead of a scenario where the first purchase was completed and then the second purchase considered, participants are told that before any purchase occurs, they notice the item comes as a bundle with the second copy. It is the WTP for this bundle of both physical and digital goods that is then elicited.

Procedure

305 participants were recruited through Amazon Mechanical Turk for Study 1, a 3 (version order: physical first, digital first, or same time) x 2 (product category: movie or game) between-subjects design. The beginning of the study used the same product elicitation task as Study 1. For participants in the physical first or digital first version order conditions, the first purchase WTP elicitation was also identical to Study 1. Same time (control) condition participants were presented immediately with a physical and digital good bundle rather than just one form or the other for the initial value elicitation.
After the first purchase valuation in physical first and digital first conditions, participants were told that before they could check the price of the item, they notice that the item comes with the second, opposite form of the same good that is identical in content. They are then asked how much they would pay for this bundle of both physical and digital goods. Unlike Study 1, no imaginary purchase was completed in this scenario after the value elicitation for the first purchase.

Study 2 concludes with a similar set of scale questions as Study 1, except the third question was changed to “The bundle provides more value than just the [Blu-Ray/DVD or disc/cartridge] or digital download alone.” The words “additional purchase” from Study 1 were also replaced with “bundle” to reflect the change in what participants were being asked to consider purchasing. Answers again ranged from 1 (Not at all) to 7 (Very much so).

Results

12 participants responded with 0 WTP for the first (or bundle if same time condition) purchase of the good, input extremely large and obviously fake entries, or failed the attention check question. These respondents were excluded from the analysis, leaving 293 usable data points. Similar to Study 1, we use a series of one-way ANOVA to analyze the main effects of version order within each product category, and a two-way ANOVA to analyze the scale DVs.
For movies, the main WTP results are shown in Figure 4. The results of Study 1 are replicated for first purchase WTP ($F(1,94) = 23.41, p = 0.00001$), with physical first WTP ($M_{PF-1} = 19.83$) much higher than digital first WTP ($M_{DF-1} = 12.15$). There was no first purchase WTP for the same time condition. The bundle WTP for digital first condition participants ($M_{DF-Bundle} = 16.67$) was significantly lower than either physical first ($M_{PF-Bundle} = 20.96; F(1,94) = 5.74, p = 0.019$) or same time ($M_{ST-Bundle} = 22.46; F(1,95) = 10.07, p = 0.002$) condition participants. The bundle WTP for physical first condition participants was not significantly different from same time condition participants ($F(1,95) = 0.68, p = .412$).
For games, the main WTP results are shown in Figure 5. First purchase WTP differences were even smaller than that found in Study 1, with physical first WTP ($M_{PF-1} = 43.90$) not significantly higher ($F(1,97) = 0.59, p = .445$) than digital first WTP ($M_{DF-1} = 41.80$). Unlike the movies condition, bundle WTP showed no statistically significant differences between version order conditions, although digital first condition participants ($M_{DF-Bundle} = 46.50$) had slightly lower WTP than either physical first ($M_{PF-Bundle} = 50.65; F(1,97) = 1.29, p = .258$) or same time ($M_{ST-Bundle} = 51.02; F(1,97) = 1.60, p = .209$) condition participants. The bundle WTP for physical first condition participants was almost identical to same time condition participants ($F(1,96) = 0.011, p = .917$).
FIGURE 6.
% INCREASE FROM 1st PURCHASE TO BUNDLE BY VERSION ORDER

![Bar chart showing % increase from 1st purchase to bundle by version order.]

Movies: Physical First (0.06), Digital First (0.63)
Games: Physical First (0.18), Digital First (0.12)

FIGURE 7.
DOLLAR INCREASE FROM 1st PURCHASE TO BUNDLE BY VERSION ORDER

![Bar chart showing dollar increase from 1st purchase to bundle by version order.]

Movies: Physical First (1.13), Digital First (4.52)
Games: Physical First (6.76), Digital First (4.7)
A similar percentage statistic to the Order of Purchase second purchase WTP is the increase from the first purchase WTP to the bundle WTP for the physical first and digital first conditions. For movies, there is a significant difference, both in absolute ($F(1,94) = 14.94, p = .0002$) and percentage ($F(1,94) = 11.97, p = .0008$) terms, in how much value a second copy added to the purchase provided between physical first ($\text{MPF-inc} = 1.13; \text{MPF-\%inc} = 6.04\%$) and digital first ($\text{MDF-inc} = 4.52; \text{MDF-\%inc} = 63.14\%$) conditions. For games, the difference was not significant in absolute ($F(1,97) = 0.87, p = .353$) or percentage ($F(1,97) = 1.17, p = .283$) terms, and in the opposite direction ($\text{MPF-inc} = 6.76; \text{MPF-\%inc} = 18.32\%$ vs. $\text{MDF-inc} = 4.70; \text{MDF-\%inc} = 11.99\%$). These results are summarized in Figures 6 and 7.

The scale DV analysis in Study 2 revealed more significant and marginally significant main and interaction effects than in Study 1. Two participants did not answer the desire to purchase question, and were left out of that analysis. Significant effects include main effects of version order on desire to own ($p = .042$) and product type on desire to purchase ($p = .00002$). Participants in the same time (control) condition had a higher desire to own the bundle ($\text{MST-OwnScale} = 5.03$) than those in the physical first ($\text{MPF-OwnScale} = 4.65; p = .08$) or digital first ($\text{MDF-OwnScale} = 4.48; p = .017$) conditions. Movies had lower desire to purchase ($\text{MBuyScale} = 4.03$) than games ($\text{MBuyScale} = 4.73$). There was a marginally significant main effect of product type on desire to own ($p = .068$), with movies ($\text{MOwnScale} = 4.55$) again being slightly lower than games ($\text{MOwnScale} = 4.88$). There were no other significant main effects of version order or product type on the scale DVs.

There was a significant interaction effect of version order and product type on desire to purchase ($p = .036$). The version order affected purchase desire in opposite directions between movies and games. For movies, digital first ($\text{MDF-BuyScale} = 3.73$) was lowest, with same time ($\text{MST-BuyScale} = 4.13$) and physical first ($\text{MPF-BuyScale} = 4.25$) following. For games, however, the order was reversed, with digital first highest ($\text{MDF-BuyScale} = 5.02$), same time next ($\text{MST-BuyScale} = 4.80$), and finally physical first ($\text{MPF-BuyScale} = 4.37$). There were no other significant interaction effects.
Once again, desire to own ($M_{\text{OwnScale}} = 4.72$) was generally higher than desire to purchase ($M_{\text{BuyScale}} = 4.23; p = .001$), while participants thought that the bundle provided somewhat more value than either medium alone ($M_{\text{MoreValueScale}} = 4.51$). Unlike in Study 1, all scale DVs were slightly above the midpoint of the scale.

Discussion

Replicating Study 1, first purchase WTP differences were much more significant for movies than for games. Study 2’s results show even less significance in the valuation differences between physical and digital games on initial purchase, providing additional support for hypothesis 1.

Hypothesis 3 is also supported by these results. For movies, where there is a significant gap between first purchase physical and digital valuations, a similar gap is also seen in the bundle valuations, suggesting that participants anchored on the first purchase valuation when considering the bundle value. For games, we see a similar but much smaller and not statistically significant gap for digital first bundle valuation compared to physical first, which is consistent with the first purchase WTP gap also being smaller and not significant. For both product categories, especially games, considering the physical form first results in almost the same bundle valuation as considering the bundle from the start.

The increases from first purchase WTP to bundle WTP suggest that adding a digital movie does not add much value to the consideration of purchasing a physical good, while adding a physical copy adds a sizeable amount of additional value to the consideration of a digital movie purchase. This does not appear to be the case with games, where adding a second copy increases the value by similar amounts regardless of which form came first. In fact, digital additions seem to be slightly more valuable than physical additions in this case, although not significantly so.

The scale DV analysis showed that presenting a bundle without first presenting an individual medium resulted in higher desire to own. This suggests that participants may have felt a little put off by the change in the item offered from one form to the bundle, perhaps considering it a bait-and-switch. The desires to own and purchase were
also higher than the midpoint for Study 2, while in Study 1 they were both lower than the midpoint, indicating that it may be easier to sell a bundle to consumers upfront than a second copy of a product they already own. However, some of this difference could be due to not having the option to purchase only one medium. Because the bundle includes the first purchase medium as well, a better comparison would be to measure desires to own and purchase the first purchase medium compared to the bundle.

That the product category reversed the version order effects on desire to purchase was unforeseen. The intuitive result occurred for games, where the addition of a physical copy to form a bundle with the digital good had higher desire to purchase than the other way around. Since physical items generally have more value than digital, this is not surprising. For movies, however, the pattern was reversed, with the addition of a digital movie causing higher desire to purchase a bundle than the addition of a physical movie. One possible explanation is because movies have differing use cases between their physical and digital forms. When considering the purchase of a digital movie, consumption is usually desired immediately and on a device like a computer or tablet. Adding a physical copy to the mix interrupts those needs, as a physical good must be mailed for later consumption on a DVD/Blu-ray player. It may be more difficult to evaluate the desirability of all those use cases, resulting in lower desire to purchase. For games, use cases are very similar between physical and digital mediums, so the consumption needs being considered are not affected. The only consideration is the simple addition of a disc and box.

General Discussion

Across both studies, we find evidence that physical goods are valued more highly than digital goods and that order of purchase and presentation can have significant effects on consumers’ WTP for second purchases or bundles of both physical and digital goods. The magnitudes of these effects are dependent upon product category and the magnitude of the differences in first purchase valuations, which are affected by consumers’ internalized reference prices. These reference prices no longer have much
sway when considering a second purchase, at which point some other innate differences between physical and digital goods become salient and cause a gap in valuations between mediums.

Our results can have important implications for firms currently transitioning from physical to digital goods, such as in the entertainment and retail industries. The order in which consumers see the physical and digital forms of a good and evaluate those values can cause them to pay more or less for a bundle of both physical and digital goods on initial purchase. One example of this is how retailers like Amazon currently display their products for sale. A consumer who searches for a movie may be presented with a product page that contains several different forms of that movie, including physical and digital. However, the consumer first may evaluate the default form presented before looking at the others, and this valuation can anchor the WTP for any bundles offered.

Marketing strategies encouraging consumers to buy a second copy of a product they already own in either physical or digital form may benefit by knowing that consumer WTP is higher if the second purchase is physical rather than digital. The results from Study 1 suggest that it may be very difficult to get consumers to pay more than their first purchase valuation for an additional digital copy while it is substantially easier to raise consumer’s WTP ceilings when going from digital to physical.

Our findings suggest that reference prices can help predict differences in valuations for first purchases but do not have much effect on second purchases of already owned products on a different medium. While the differences in second purchase valuations for movies could arguably be attributed to reference price differences, it cannot explain why we see a similar difference in second purchase valuations for games, a product category where reference prices are similar. These results extend the literature on reference prices by identifying additional boundary conditions.

The anchoring and adjustment heuristic was able to predict bundle valuations in the Order of Presentation scenario. Yadav (1994) used a model of anchoring and adjustment to show that consumers evaluate bundles by anchoring on the most
important good, which is often examined first. Order of examination, which Yadav allowed participants to choose freely, was found to have a significant effect. In contrast, our study involved the evaluation of one good first before participants gained knowledge of the bundle’s existence. Yadav also tested an imperfect presentation order condition that did not fully randomize, and found no order of presentation effects. A possible explanation is that there were only two fixed orderings consisting of 6 goods from multiple bundles intermixed, with neither order having the most important anchor goods in the first or last position. Our design allowed evaluation of one bundle at a time with only 2 goods to consider, allowing for a cleaner investigation of presentation order effects.

Future Research

The studies presented here are only a starting point of investigation into how consumers think when considering the purchase of physical and digital forms of the same product. Exactly how much sway reference prices hold over second purchase considerations could be tested in future studies by eliciting and manipulating reference prices more directly. Furthermore, the method of WTP elicitation used in this paper is very basic and thus may not accurately reflect how individuals would actually act. There may be better methods to elicit more truthful or unbiased responses (Blumenschein et al. 2008; Donaldson, Thomas, and Torgerson 1997). Future studies could also place participants in a real purchasing task rather than an imagined scenario to see if behaviors match up with elicited valuations.

Further research on the innate differences between physical and digital goods could examine more product categories with varying physical mediums and use cases to assess how those factors affect the valuation gap. Movies and games both come on discs in cases, whereas something like news is generally provided on disposable paper with hardly any value. Books in particular would be an interesting product category for use cases. Some like the feel and texture of physical books, though they can take up a lot of space. Digital books, on the other hand, allow readers to carry their entire libraries with them, but provide a far different consumption experience. The type of book (e.g. novel...
or textbook) could also make a difference in which format is preferred. An increasing variety of digital products are becoming available as more industries transition from physical to digital mediums, allowing more varied research efforts to better understand how humans think about digital goods.

Results could also be different depending on how far along the product of interest’s industry is on the transition from physical to digital goods. Movies, for example, are bought in both physical and digital forms regularly. Comparing it to an industry that has almost already completed the transition to digital goods could produce interesting results. Even more so, there are new industries, such as mobile apps, that have never used physical distribution. Future research should be mindful of the progress along the physical to digital transition and see how changes over time affect consumers’ thought processes.
References


