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TECHNICAL NOTE ON BUNDLING

Rahul Kumar Sett wrote this note solely to provide material for class discussion. The author does not intend to illustrate either effective or ineffective handling of a managerial situation. The author may have disguised certain names and other identifying information to protect confidentiality.

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Bundling is the practice of selling two or more separate products or services as part of the same package for one price.[[1]](#footnote-1) Commonly available bundles include a sofa set and a coffee table; a wedding planning service that includes photography, catering, and logistics; a washing machine and refrigerator sold as a package by an electronic goods reseller; and a tax consultancy service and an investment advisory service offered together by a consultant.

Bundles differ in the way the constituent products or the bundle components are sold together or bundled. Historically, firms that have monopoly power over one component have used bundling to extend their monopoly to other competitive markets. Such a bundling strategy is called pure bundling, and is largely considered anti-competitive today.

**Pure Bundling**

Pure bundling is the practice of selling two or more different products only as part of the same package, and *not* separately.[[2]](#footnote-2)

In the past, many firms have used pure bundling to great effect. For example, Microsoft’s strategy of bundling its proprietary Windows operating system with its Internet browser, Internet Explorer, had a dramatic effect on competition in the Internet browser market. Microsoft never intended to sell Internet Explorer separately, but only as part of the Windows operating system and Internet Explorer bundle. However, given that pure bundling is considered anti-competitive and hence illegal, instances of pure bundles are currently rare. Nevertheless, pure bundling, by virtue of being the most basic and primitive form of bundling, provides a sound foundation for understanding and elucidating the working principles of two advanced forms of bundling: price bundling and product bundling. These advanced bundling strategies are defined and discussed below.

Typically, bundles are sold at a price discount, which serves as an incentive for consumers to buy the bundle, versus buying the components separately. In essence, the price discount acts as a glue that makes the bundle components stick together as part of the same package. Such a bundling strategy is known as price bundling. Price bundling does not necessitate a firm having monopoly power on any one of the components and is therefore applicable to modern-day competitive markets.

**Price Bundling**

Price bundling is the sale of two or more separate products at a price discount without any integration of the components.[[3]](#footnote-3)

In reality, most bundles conform to the price bundling strategy, wherein consumers reserve the option to buy either the entire bundle or any one of the individual components separately. A classic example of a price bundle is the McDonald’s meal combo, consisting of a burger, fries, and a drink. This combination comes at a price discount over the sum of the individual prices for the burger, fries, and the drink when bought separately. Other examples may include a bundle comprising a clothes dryer and a washing machine that are sold at a discount by a consumer goods reseller. Price bundling is also known as mixed bundling.[[4]](#footnote-4)

In the definition for price bundling, lack of integration implies the bundle components lack complementarity or interdependency. In other words, any type of product can be bundled and sold as part of the same package, as long as a price discount is offered on the bundle purchase, over and above the sum of the individual prices of each of the components. Such a strategy will work whether or not the components are integrated, so long as the price discount is offered.

However, a firm can incentivize consumers to buy a bundle (instead of buying the components separately) by integrating the components in a meaningful manner. That is, the components are glued together by the integration created by the seller among the components. Such a bundling strategy is called product bundling.

**Product Bundling**

Product bundling is the integration and sale of two or more separate products in the same package at any price.

Product bundles may include a sofa set and a matching coffee table, wherein the matching feature integrates the two furniture items by virtue of the aesthetic appeal the components jointly present to consumers. Such a strategy may allow a firm to command a higher price for the entire bundle compared with, for instance, a bundle comprising the same sofa set and a standard coffee table that does not match the design of the sofa set but is of comparable quality. The bundle consisting of the sofa set and the standard coffee table, in this case, cannot be sold at a premium over the sum of the individual components prices, but only at a price discount as an incentive to consumers. In summary, while a sofa set and a matching coffee table that is sold at a price premium constitutes a product bundle, the same sofa set and a standard coffee table sold at a price discount constitutes a price bundle. Of course, the firm may choose to sell the sofa set and the matching coffee table at a lower price; however, in that case, the firm will leave money on the table by choosing not to appropriate (for whatever reasons) the higher value created by virtue of the matching design that enhances the aesthetic appeal of the bundle.

Another example of a product bundle is an all-inclusive wedding planning service. The greater convenience associated with only one firm handling a large, emotionally charged, and—ideally—once-in-a-lifetime event such as a wedding can increase consumers’ propensity to avail the services of the firm. In this case, too, the firm stands to earn greater profit from the added value created by the convenience to the consumer, and the reduction in the consumer’s psychological cost (i.e., stress) associated with managing such an event.

Product bundles differ fundamentally from price bundles, not only in terms of the type of incentive used to bundle the individual components (i.e., price incentives for price bundles versus non-price incentives for product bundles)[[5]](#footnote-5) but also in terms of the customer segment each bundling strategy appeals to, and its working mechanism. In this context, it is worth mentioning that in all definitions of the three forms of bundling thus presented, the word *separate* (and *separately*) implies the existence of independent competitive markets for each of the bundle components—e.g., a competitive market for operating systems, and a competitive market for Internet browsers.[[6]](#footnote-6) In other words, while pure bundling necessitates a firm having monopoly power over at least one of the components in the bundle, price bundling and product bundling impose no such restrictions. In this note, these issues are addressed and elucidated, as are the working mechanism of each of the three bundling strategies, through a combination of graphical illustrations and spreadsheet simulations wherever necessary.[[7]](#footnote-7)

The following section presents the working principles of the three bundling strategies, starting with pure bundling, followed by the price bundling and the product bundling strategies. The concluding section of this note discusses the strategic marketing implications of bundling.

BUNDLING WORKING PRINCIPLES

**The Pure Bundling Working Principle**

The working principle of pure bundling relies on the mechanism of the transfer of consumer surplus (the difference between a consumer’s reservation price or maximum willingness to pay for a product, and the price charged by the firm for the product) from the bundle’s higher-valued component to the lesser-valued component(s). Pure bundling, as opposed to selling products separately (i.e., unbundling), earns the highest profit when consumers’ reservation prices for the component products are perfectly negatively correlated, as illustrated graphically in Exhibit 1A. Exhibit 1A is a scatter plot of reservation prices for two separate products, a package of jelly beans and a bar of chocolate, for three customers named Rahul, Neil, and Amber, represented by the three dots in the plot.[[8]](#footnote-8) From Exhibit 1A, we can see that while Rahul loves chocolate very much, he does not like jelly beans as much. The opposite holds true for Amber, while Neil values both products equally. Further, in this case, it is assumed that the consumption of any one of the two products does not affect the enjoyment of the other in any way, i.e., the reservation prices of each of the products are independent of each other. In the current context, it is assumed that the consumption of jelly beans neither compromises nor enhances the consumption of the chocolate for any one of the consumers, and vice versa.

In Exhibit 1A, the reservations prices for the three consumers are perfectly negatively correlated, i.e., the three dots representing the three consumers fall exactly on the same straight line AB. In this example, by setting a price of $10 for the entire bundle, the firm can appropriate all the consumer surplus from the consumers in the market, i.e., the firm can price discriminate perfectly (see Exhibit 1A). The firm maximizes profit without any “wastage” of consumer surplus. In fact, by bundling, a firm can earn higher profits as compared with selling the jelly beans and the chocolate separately (i.e., unbundling). A numerical proof of these results is presented as spreadsheet simulation exercises in the Excel workbook titled Bundling Exercise A, provided along with this note.[[9]](#footnote-9)

Further, in Exhibit 1B, for any combination of individual prices that sum up to the total bundle price of $10, or, for any partition of the total bundle price, any given consumer, say, Amber, can offset a deficit in consumer surplus on one of the two confectioneries by the consumer surplus enjoyed by her on the other. In other words, Amber compensates for her relative dislike of jelly beans by transferring her surplus desirability for chocolate in justifying her decision to consume both confectioneries. Exhibit 1B illustrates this mechanism. The famous scrumptious buffets served at Las Vegas casinos offer a real-life example. These buffets can simultaneously cater to dessert lovers (assuming these consumers despise salads) and health-conscious salad eaters (who consider desserts to contain no nutritional value), as well as those who love to eat both salads and desserts.

When consumers’ reservation prices are positively correlated, however, bundling does not provide any additional advantage over selling the components separately. Please see Exhibit 2 for a graphical illustration and refer to the Excel workbook titled Bundling Exercise A for a numerical proof and illustration.

**The Price Bundling Working Principle**

For a price bundling or a mixed bundling strategy, the price discount is the only factor motivating bundle purchase, as opposed to, for instance, the added value that consumers may find in the joint consumption or usage of the bundle components (e.g., the all-inclusive wedding service discussed earlier). However, the price discount may not be a sufficient inducement for consumers who may find greater value in purchasing only one of the components versus the entire bundle. Intuitively, these consumers have a very high valuation for only one of the components in the bundle, and a very low valuation for the other.[[10]](#footnote-10) In this case, the firm stands to gain by selling the higher valued products separately to these specific consumers. In other words, the higher the heterogeneity in reservation prices among the consumers, the higher the probability that a mixed bundling strategy, as opposed to a pure bundling strategy, will earn greater profit. Further, mixed bundling may earn more profit compared with pure bundling when consumers’ reservation prices are not perfectly negatively correlated, and/or the marginal costs of production of the components are non-zero.[[11]](#footnote-11) These assertions are explained and illustrated graphically in Exhibits 3 and 4.

For numerical proofs and illustrations, refer to the workbook titled Bundling Exercise A,[[12]](#footnote-12) which also includes a provision for comparing the efficacy of the price bundling and the pure bundling strategies on the same set of consumers. Further, the second workbook, titled Bundling Exercise B, provides the opportunity to conduct Monte Carlo simulations based on random draws from a normally distributed population of reservation prices from 10 consumers, to determine the optimal bundle and component prices for a mixed bundling strategy. The simulations can be run for different sets of population parameters (e.g., the mean and standard deviation of reservation prices). In Appendix 1, the average profitability from mixed bundling from two such simulation runs are compared for two different dispersion (i.e., standard deviation) parameter values of reservation prices.

**The Product Bundling Working Principle**

For product bundles, consumers find greater value in the joint consumption of the bundle components versus consuming the components separately; in this situation, the assumption of demand independence or independence of reservation prices does not hold. By combining products imaginatively, firms can create bundles that are valued more than the sum of their components. The higher reservation price or desirability for the bundle provides firms with the opportunity to earn greater profits than when such joint effects are non-existent (e.g., the sofa set and the standard coffee table). The working mechanism of product bundling is illustrated in Exhibit 5.

In Exhibit 5, Panel A, two consumers—Rihaan and Roshni, represented by stars—remain below a generic bundle price line AB, and hence do not buy the particular bundle as the sum of their reservation prices, for the bundle components is lower than the total bundle price. However, consumers Rahul and Amber, represented by dots, remain on line AB, and hence can buy the bundle; the sum of their reservation prices for the components equal the bundle price.[[13]](#footnote-13)

However, if all four consumers find greater value in jointly consuming the two bundle components (e.g., the consumers enjoy having milk and cookies together more than having each of the products separately), all four consumers will migrate toward the east, or the north, or anywhere in between, as indicated in Panel B in Exhibit 5, depending on their relative desirability for the components (milk and cookies). The outcome is that at least some of the consumers who were not buying the bundle thus far can buy the product bundle now, as illustrated in Panels B and C in Exhibit 5. Given this outcome, the firm can subsequently raise the price of the entire bundle to capture the value, which is created by shifting the bundle price line AB to the right to AB\*, as shown in Panel C. A significant implication is that having a consumer surplus on at least one of the bundle components is no longer a necessary condition for bundling to become a viable strategy. Panels B and C also suggest that product bundling can serve as a potent strategy to expand into a new consumer segment (Rihaan and Roshni) that, thus far, remained untapped.

DISCUSSION

In this note, the economic logic of bundling is enunciated using a basic two-product bundle under two fundamentally different assumptions in terms of the interaction between consumers’ reservation prices. Pure bundling and price (mixed) bundling assume an independence of reservation prices or demand. Under this condition, bundling can succeed through the mechanism of the transfer of consumer surplus, as discussed earlier in the note.

The mechanism of the transfer of consumer surplus opens up an interesting possibility when consumers are presented with only a single consolidated price for the entire bundle—i.e., the seller does not disclose the prices of individual components.[[14]](#footnote-14) In this situation, the consumer can mentally partition the consolidated bundle price in a manner that makes it easier to justify the act of purchasing the bundle. For instance, the consumer can purchase a bundle consisting of a hedonic product and a utilitarian one by psychologically assigning a lesser price for the hedonic product to assuage any feeling of guilt associated with the purchase (thereby justifying the purchase).[[15]](#footnote-15) The act is reminiscent of self-price discrimination, wherein a consumer pays different prices (albeit mentally construed) for the components, although the total price remains constant under all circumstances. When consumers self-segment in this manner, without persuasion from the firm in the form of advertisements or sales interactions, the cost of selling may reduce for the firm.

Further, bundling may lower costs for a firm by reducing consumer heterogeneity. Considering the entire bundle as the unit of demand and analysis, the same product (i.e., the bundle) can be sold to all consumers in the market regardless of the difference in their reservation prices for the individual bundle components, so long the reservation prices are perfectly negatively correlated. In this regard, bundling can be considered as the antithesis of segmentation, a concept that provides the basic logic behind creating consumer segments such that consumers belonging to a particular segment are homogeneous but sufficiently heterogeneous across segments. This situation is paradoxical, as on one hand, bundling reduces consumer heterogeneity (i.e., the bundle can be sold to all consumers in the market), while on the other hand, bundling thrives best under consumer heterogeneity (i.e., the greater the heterogeneity in the component reservation prices, the higher the probability that bundling will earn greater profit, compared with unbundling).

Although pure bundles are rare in practice, nothing prevents firms from creating product bundles by imaginatively combining products that provide greater value to the consumer through joint usage, purchase, or consumption. Creating such bundles is, however, not as trivial as setting prices for a price bundle; it requires managerial skill and a deeper understanding of consumer psychology and behaviour. Product bundling is thus better suited for competition. Price bundling or mixed bundling, on the contrary, being much easier to implement than product bundling, remains a highly imitable strategy.

Amazon.com, Inc. (Amazon) issues specific guidelines for sellers who use product bundling to sell merchandise on Amazon.[[16]](#footnote-16) In its product bundling policy, Amazon mandates that the bundles that sellers intend to sell must consist of products that are highly complementary—i.e., the consumer must find greater value in the joint usage of the components in the bundle. Amazon further mandates that such a bundle should be listed under a unique product identifier, and that none of the product identifiers from any of the components can be used to identify the bundle. In other words, Amazon considers product bundles as unique products in themselves. Apart from aiming to provide greater value to consumers, Amazon’s product bundling policy also serves the sellers’ interests. The assignment of unique product identifiers protects the bundle and the seller from adverse price competition by making it difficult for competitors to find and compete against the seller’s bundle listing.[[17]](#footnote-17) By virtue of its uniqueness, a given product bundle may also enjoy a greater chance of being featured in Amazon’s coveted Buy Box. (Products featured in the Buy Box have a greater probability of being purchased by a consumer.[[18]](#footnote-18)) Multiple sellers, offering the same product, simultaneously compete for the Buy Box; only one is selected from among many to be featured in the Buy Box based on a set of criteria instated by Amazon.[[19]](#footnote-19) In summary, by being unique, a product bundle enjoys a better chance of being sold.

In conclusion, understanding how bundling works, and simultaneously remaining cognizant about the limitations and applicability of the various bundling strategies thus discussed, managers can use bundling to create greater value, price discriminate, and reduce costs, thus improving profitability.

**What Is a Bundle, and What Is Not a Bundle?**

Can a car, comprising an engine, a suspension system, a chassis, and wheels, be considered a bundle? Or, can a smartphone be considered a bundle when it, as part of the same device, offers the functionalities of a personal digital assistant, a camera, and a recorder, over and above the ability to communicate with other users? Intuitively, perhaps, a car and a smartphone do not represent bundles but individual products.

The examples of the car and the smartphone have a subtle difference: while a car cannot run without any of the components mentioned, a cellular phone can still provide the basic functionality of a phone without the other components listed above. Although from this perspective the car may not constitute a bundle, a smartphone can still be considered a bundle, given that it combines separate products—a camera, a personal digital assistant, a recorder, and so on—as part of the same device. However, consumers necessarily expect and consider such features and functionalities to be integral parts of a smartphone—i.e., smartphones are not smartphones without such functionalities. Consequently, product norms set by firms, and as understood by consumers, determine what constitutes a bundle (or not). At the core of this argument lies the perceived ability to separate components, a factor that reflects the prevalent norm in the market. Such a norm is a joint outcome of a firm’s strategic marketing efforts and consumer preferences—i.e., an amalgamation of the market-driving and market-driven factors prevalent in the market fundamental to value creation.

APPENDIX 1: COMPARISON OF TOTAL PROFITS FROM MIXED BUNDLING ACROSS TWO DIFFERENT CONSUMER SEGMENTS

In this appendix, a histogram of maximum profit from a Monte Carlo simulation conducted with 100 random draws (or samples) from a population of normally distributed reservation prices, using the template provided in Bundling Exercise B. The histogram is presented in Exhibit 6A.

The average profit that could be earned from a population of consumers having normally distributed reservation prices, a mean of 400 money units, and a standard deviation of 10 money units was 6,510 money units. In this example, the average price commanded by the bundle was 693 money units, and the prices for product 1 (P1) and product 2 (P2) were 367 money units and 379 money units, respectively. The implication is that, given the demand characteristics in the population, a mixed bundling strategy would require firms to offer a 7.5 per cent price discount ([(367 + 379) − 693] ÷ 693) on the sum of the individual prices for P1 and P2.

The simulation was repeated with a lower-dispersion parameter (i.e., standard deviation) value for consumers’ reservation prices across (not along) the bundle price line. All other parameters in the model remained unchanged. Dispersion was controlled by reducing the standard deviation pertaining to the error term. While the first run was conducted with a value of 50 money units for the standard deviation for the error term, the second was conducted with a value of 5 money units for the same parameter. The histogram corresponding to the second run is presented in Exhibit 6B.

The average profit that could be earned in this case was 6,853 money units. In this example, the average price commanded by the bundle was 692 money units, and the prices for product 1 (P1) and 2 (P2) were 358 money units and 356 money units, respectively. The implication is that, given the demand characteristics in the population, a mixed bundling strategy would require firms to offer a 3.2 per cent price discount ([(358 + 356) – 692] ÷ 692) on the sum of the individual prices for P1 and P2.

An independent sample t-test conducted on the maximum profit data from the two populations returned a statistically significant difference at the 5 per cent level of significance, indicating that the average maximum profit from a population of consumers having less dispersion across the bundle profit line is greater than the average maximum profit from a population of consumers having higher dispersion in reservation prices across the bundle price line. In other words, bundling becomes a more potent method of price discrimination (and hence offers more profit) as the dispersion of consumers’ reservation prices decreases across the bundle price line.

**EXHIBIT 1A: PURE BUNDLING**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Reservation Price ($)** | | |
| Consumer | Jelly Beans | Chocolate | Total |
| Rahul | 1 | 9 | 10 |
| Neil | 5 | 5 | 10 |
| Amber | 9 | 1 | 10 |

A (0, 10)

B (10, 0)

Reservation Price of **Chocolate** ($)

0

Reservation Price of **Jelly Beans** ($)

Rahul (1, 9)

Neil (5, 5)

Amber (9, 1)

By charging a price of $10 for the entire bundle, a firm can sell the bundle to all three consumers, appropriate all the value from the market, and make a profit of $30 (3 × $10). For the sake of simplicity and exposition, the marginal cost of production is assumed to be zero.

If the firm wanted to sell the jelly beans and the chocolate separately to all the consumers, it would need to price the jelly beans at $1 and the chocolate also at $1. At these prices, the firm will make a total profit of $6 ([3 × $1] + [3 × $1]).

Therefore, by bundling, the firm can earn $24 more ($30 − $6) as compared to selling the jelly beans and chocolates separately.

Source: Created by author using hypothetical data.

**EXHIBIT 1B: THE MECHANISM OF THE TRANSFER OF CONSUMER SURPLUS**

|  |  |  |
| --- | --- | --- |
|  | Jelly Beans | Chocolate |
| Amber’s Reservation Price | 9 | 1 |
| Price Charged | 4 | 6 |
| Amber’s Consumer Surplus | 5 | −5 |

A (0, 10)

B (10, 0)

Reservation Price of **Chocolate** ($)

0

Reservation Price of **Jelly Beans** ($)

Rahul (1, 9)

Neil (5, 5)

Amber (9, 1)

(9, 0)

(0, 1)

(4, 0)

(0, 6)

Amber’s Surplus for Chocolate: −5

Amber’s Surplus for Jelly Beans: 5

(4, 6)

As Amber decides to purchase the bundle, she compensates for the negative surplus (of −$5) that she has over chocolate, with the positive surplus (of $5) over jelly beans, resulting in a net surplus of $0.[[20]](#footnote-20)

Source: Created by author using hypothetical data.

**EXHIBIT 2: BUNDLING UNDER POSITIVELY CORRELATED RESERVATION PRICES**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Reservation Price ($)** | |  |
| Consumer | Jelly Beans | Chocolate | Total |
| Neil | 5 | 5 | 10 |
| Rahul | 7 | 7 | 14 |
| Amber | 9 | 9 | 18 |

A (0, 10)

B (10, 0)

Reservation Price of **Chocolate** ($)

0

Reservation Price of **Jelly Beans** ($)

Rahul (7, 7)

Neil (5, 5)

Amber (9, 9)

(5, 0)

(0, 5)

By charging a price of $10 for the entire bundle, a firm can sell the bundle to all three consumers and make a profit of $30 (3 × $10). For the sake of simplicity and exposition, the marginal cost of production is assumed to be zero.

If the firm wanted to sell the jelly beans and the chocolate separately to all the consumers, it would need to price the jelly beans at $5 and the chocolate also at $5. At these prices, the firm will make a total profit of $30 ([3 × $5] + [3 × $5]).

Therefore, by bundling, the firm cannot earn any more than by selling the jelly beans and the chocolate separately (unbundling).

Source: Created by author using hypothetical data.

**EXHIBIT 3: PRICE (MIXED) BUNDLING**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Reservation Price ($)** | |  | **Pure Bundling** | |
| Consumer | Jelly Beans | Chocolate | Total | Buys Bundle at $10? | Profit |
| Rahul | 3 | 7 | 10 | Yes | 10 |
| Neil | 5 | 5 | 10 | Yes | 10 |
| Amber | 7 | 3 | 10 | Yes | 10 |
| Rihaan | 1 | 8 | 9 | No | 0 |
| Roshni | 8 | 1 | 9 | No | 0 |

A (0, 10)

B (10, 0)

Reservation Price of **Chocolate** ($)

0

Reservation Price of **Jelly Beans** ($)

Rahul (3, 7)

Neil (5, 5)

Amber (7, 3)

Roshni (8, 1)

Rihaan (1, 8)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Reservation Price ($)** | |  | **Price (Mixed) Bundling** | | | |
| Consumer | Jelly Beans | Chocolate | Total | Buys Bundle at $10? | Buys Jelly Beans at $8? | Buys Chocolate at $8? | Profit |
| Rahul | 3 | 7 | 10 | Yes | No | No | 10 |
| Neil | 5 | 5 | 10 | Yes | No | No | 10 |
| Amber | 7 | 3 | 10 | Yes | No | No | 10 |
| Rihaan | 1 | 8 | 9 | No | No | Yes | 8 |
| Roshni | 8 | 1 | 9 | No | Yes | No | 8 |

With a pure bundling strategy, by charging a price of $10 for the entire bundle, a firm can sell the bundle to only three consumers and make a profit of $30 (3 × $10). The marginal cost of production is assumed to be zero for the sake of simplicity and exposition.

Next, the profitability of the mixed bundling strategy is determined, as follows:

With a price bundling strategy, by charging a price of $10 for the entire bundle, $8 for the jelly beans, and $8 for the chocolate, the firm can earn a total profit of $46 ([3 × $10] + [2 × $8]), or $16 more ($46 − $30) than the total profit that can be earned using pure bundling.

Source: Created by author using hypothetical data.

**EXHIBIT 4: PRICE (MIXED) BUNDLING WITH POSITIVE MARGINAL COSTS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Reservation Price ($)** | |  | **Pure Bundling** |  |  |
| Consumer | Jelly Beans | Chocolate | Total | Buys Bundle at $10? | Cost ($) | Profit ($) |
| Rahul | 3 | 7 | 10 | Yes | 4 | 6 |
| Neil | 5 | 5 | 10 | Yes | 4 | 6 |
| Amber | 7 | 3 | 10 | Yes | 4 | 6 |
| Prodip | 1 | 11 | 12 | Yes | 4 | 6 |
| Rihaan | 1 | 8 | 9 | No | 0 | 0 |
| Roshni | 8 | 1 | 9 | No | 0 | 0 |

A (0, 10)

B (10, 0)

Reservation Price of **Chocolate** ($)

0

Reservation Price of **Jelly Beans** ($)

Rahul (3, 7)

Neil (5, 5)

Amber (7, 3)

Roshni (8, 1)

Rihaan (1, 8)

Prodip (1, 11)

(2, 0)

(0, 2)

With a pure bundling strategy, by charging a price of $10 for the entire bundle, the firm can sell the bundle to only four consumers and make a profit of $24 (4 × $6), wherein the marginal cost of production is assumed to be $2 for each of the two products.

Source: Created by author using hypothetical data.

Exhibit 4 (Continued)

Next, the profitability of the mixed bundling strategy is determined, as follows:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Reservation Price ($)** | |  | **Price (Mixed) Bundling** | | | |
| Consumer | Jelly Beans | Chocolate | Total | Buys Bundle at $10? | Buys Jelly Beans at $8? | Buys Chocolate at $8? | Profit |
| Rahul | 3 | 7 | 10 | Yes | No | No | 6 |
| Neil | 5 | 5 | 10 | Yes | No | No | 6 |
| Amber | 7 | 3 | 10 | Yes | No | No | 6 |
| Prodip | 1 | 11 | 12 | No | No | Yes | 6 |
| Rihaan | 1 | 8 | 9 | No | No | Yes | 6 |
| Roshni | 8 | 1 | 9 | No | Yes | No | 6 |

In a situation of price bundling, by charging a price of $10 for the entire bundle, $8 for the jelly beans, and $8 for the chocolate, the firm can earn a total profit of $36 ([3 × $6] + [2 × $6] + [1 × $6]), or $12 more ($36 − $24) than the total profit that can be earned using pure bundling.

Source: Created by author using hypothetical data.

EXHIBIT 5: PRODUCT BUNDLING

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Reservation Price ($)** | | **Pure Bundling** | | | **Reservation Price ($)** | | **Product Bundling** | |
| Consumer | Cookies | Milk | Total | Buys Bundle at $10? | Profit ($) | Cookies | Milk | Buys Bundle at $12? | Profit ($) |
| Rahul | 1 | 9 | 10 | Yes | 10 | 3 | 11 | Yes | 12 |
| Amber | 9 | 1 | 10 | Yes | 10 | 11 | 3 | Yes | 12 |
| Rihaan | 1 | 7 | 8 | No | 0 | 3 | 9 | Yes | 12 |
| Roshni | 4 | 4 | 8 | No | 0 | 6 | 6 | Yes | 12 |

Reservation Price of **Milk**

A\* (0, 12)

**PANEL A**

**PANEL B**

**PANEL C**

A (0, 10)

A

A

B (10, 0)

B

B

B\* (12, 0)

Reservation Price of **Cookies**

0

0

0

Rahul (1, 9)

Rihaan (1, 7)

Roshni (4, 4)

Amber (9, 1)

Rahul (3, 11)

Rihaan (3, 9)

Roshni (6, 6)

Amber (11, 3)

Rahul (3, 11)

Rihaan (3, 9)

Roshni (6, 6)

Amber (11, 3)

With a pure bundling strategy, by charging a price of $10 for the entire bundle, the firm can sell the bundle to only two consumers and earn a profit of $20 (2 × $10). For the sake of simplicity and exposition, the marginal cost of production is assumed to be zero.

With a product bundling strategy, however, the desirability of milk and cookies increases by $2, as consumers find higher value in consuming milk and cookies together. The firm’s advertising may have been effective in persuading consumers to consider the greater enjoyment possible from consuming milk and cookies together. Thus, by charging a price of $12 for the entire bundle, the firm can now sell the bundle to all four consumers and earn a total profit of $48 (4 × $12), or $28 more ($48 − $20) than the total profit possible with pure bundling. Most importantly, through product bundling, the firm is also able to sell its products to consumers Rihaan and Roshni, who consumed neither cookies nor milk to begin with.

Source: Created by author using hypothetical data.

Exhibit 6A: DISTRIBUTION OF TOTAL PROFITS FROM MIXED BUNDLING ACROSS TWO DIFFERENT CONSUMER SEGMENTS

Source: Created by author based on the data generated from simulation.

Exhibit 6B

Source: Created by author based on the data generated from simulation.

1. Joseph P. Guiltinan, “The Price Bundling of Services: A Normative Framework,” *Journal of Marketing* 51, April (1987): 74–85; Stefan Stremersch and Gerard J. Tellis, “Strategic Bundling of Products and Prices: A New Synthesis for Marketing,” *Journal of Marketing* 66, no. 1 (2002): 55–72; Rahul K. Sett, “A Product and a Price Bundle in an Efficient Choice Set: How Do Choice Framing and Goal Orientation Influence Preferences?,” *Journal of Marketing Theory and Practice* 22, no. 3 (2014): 285–298. [↑](#footnote-ref-1)
2. Stefan Stremersch and Gerard J. Tellis, op. cit. [↑](#footnote-ref-2)
3. Ibid. [↑](#footnote-ref-3)
4. Ibid. [↑](#footnote-ref-4)
5. Ibid. [↑](#footnote-ref-5)
6. Ibid. [↑](#footnote-ref-6)
7. As part of this note, two Microsoft Excel workbooks, Bundling Exercise A (Ivey product no. 7B17A048A) and Bundling Exercise B (Ivey product no. 7B17A048B), are available. These workbooks contain hypothetical data on consumers’ reservation prices on which the user may empirically test some of the propositions presented in this note. Detailed instructions of doing so are presented as part of these workbooks. [↑](#footnote-ref-7)
8. For the purpose of prioritizing ease of exposition and understanding, this example does not consider the marginal cost of production of the components (jelly beans and chocolate). Please note that pure bundling may not be an optimal strategy when marginal costs are taken into account. Real-life products that have zero marginal cost may include information goods such as video games and computer software. [↑](#footnote-ref-8)
9. To run the simulation, please refer to the Excel workbook titled Bundling Exercise A, and follow the instructions presented therein. [↑](#footnote-ref-9)
10. Such consumers could include, for instance, the die-hard health enthusiasts from the Las Vegas buffet example who despise calorie-rich desserts but love to eat salads only. [↑](#footnote-ref-10)
11. However, when the distribution of reservation prices is perfectly negatively correlated and the marginal cost of production of the bundle components is zero, pure bundling earns the highest profit possible. [↑](#footnote-ref-11)
12. Bundling Exercise A provides detailed instructions for conducting the numerical analyses and running the simulations. [↑](#footnote-ref-12)
13. Technically speaking, the sum of the reservation prices should be infinitesimally lower than that of the bundle price to complete the bundle sale. However, for the sake of ease of exposition, it is assumed that consumers buy the bundle even if the sum of the reservation prices equals the bundle price. [↑](#footnote-ref-13)
14. For example, suppose a car dealer offers to buy a consumer’s old car in exchange for a new car, at one all-inclusive consolidated price (i.e., the price of the new car payable to the dealer minus the price of the old car payable to the customer) without disclosing the price of each car to the consumer. [↑](#footnote-ref-14)
15. Uzma Khan and Ravi Dhar, “Price-Framing Effects on the Purchase of Hedonic and Utilitarian Bundles,” *Journal of Marketing Research* 47, no. 6 (2010): 1090–1099; Amar Cheema and Dilip Soman, “Malleable Mental Accounting: The Effect of Flexibility on the Justification of Attractive Spending and Consumption Decisions,” *Journal of Consumer Psychology* 16, no. 1 (2006): 33–44. [↑](#footnote-ref-15)
16. Amazon.com, “General Bundle Policy,” Amazon.com, Inc., accessed April 26, 2017, https://www.amazon.com/gp/help/customer/display.html?nodeId=200442390. [↑](#footnote-ref-16)
17. Tara Johnson, “How Product Bundling on Amazon Can Reduce Your Buy Box Competition,” CPCStrategyBlog, November 5, 2015, accessed April 26, 2017, www.cpcstrategy.com/blog/2015/11/product-bundling-on-amazon/. [↑](#footnote-ref-17)
18. Amazon.com, “How the Buy Box Works,” Amazon.com, Inc., accessed April 26, 2017, https://www.amazon.com/gp/help/customer/display.html?nodeId=200401830. [↑](#footnote-ref-18)
19. Ibid. [↑](#footnote-ref-19)
20. Technically speaking, Amber’s net consumer surplus needs to be infinitesimally greater than zero for her to buy the bundle. However, this notion is ignored in this note for the ease of understanding and exposition. [↑](#footnote-ref-20)