Group Bundling versus Traditional Bundling in e-Commerce: A Field Experiment

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Abstract

Selling in bundles has been argued to lead to more and earlier sales in promotion and clearance campaigns, which could improve inventory turnover, capacity utilization, and profitability. However, recent findings suggest that bundle promotions have limited ability in achieving such outcomes because of the quantity requirement in traditional bundling (purchasing a quantity of two or more for consumers to qualify for the bundle discount), which deter non-buyers to become buyers. A recently proposed method (group bundling) promises to alleviate the quantity requirement while maintaining the bundling benefits both to consumers (discounts) and to retailers (minimum sales volume). However, there has been neither theoretical explanation nor empirical validation of the method’s advantage/disadvantage, a gap that this paper fills. The results of a field experiment on the e-commerce operations of a gym suggests that group bundling does have a relative advantage in driving consumers’ intention to buy online bundles.

1. Introduction

Traditionally, bundling refers to the practice of marketing two or more products (goods and/or services) in one package at a discount [19]. Bundling is widely practiced in goods and services industries because it can improve inventory turnover, service capacity utilization, and ultimately profitability [35]. For example, brokers in the travel and tourism industry bundle together different services for discounted prices, such as airline tickets, hotel rooms, and car rentals. Each year, marketers spend billions of dollars to find appropriate techniques to sell in bundles (e.g., emphasizing incentives like convenient billing options and savings discounts) [22]. Given the large investment in bundle sales strategies, it is important that managers have information on how to design and communicate product bundles in a way that minimizes cost for the firm and maximizes perceived value for consumers [2].

The bundling literature in marketing and economics hinges on the fundamental premise that selling in bundles encourages consumers to buy more and earlier [16]. However, one major challenge associated with traditional bundling is that it requires consumers to buy unnecessary goods and/or services beyond their actual need just to qualify for the bundle discount. Under rational decision-making, this burden can and do deter many consumers from purchasing in bundles [16]. Bundling can be an effective method for greater and faster sales only when it does not force consumers to purchase something they do not want [45].

Recently, an innovative bundling method that we term “group bundling” has been proposed [12] as an alternative to the traditional bundling method. In group bundling, a bundle comprises a large variety of heterogeneous products (goods and/or services) where a group of consumers can collaborate in purchasing what they need from the bundle. In doing so, a consumer does not have to buy more than what (s)he needs in order to get the bundle discount. Group bundling is designed to alleviate the purchase quantity requirement while offering similar discounts and at the same time achieve sales volumes that enable retailers to offer such discounts. With the growing discounted deals industry and the increasingly popular social e-commerce trend [37], group bundling can be a promising method that could alleviate consumers’ barrier-to-purchase problem that traditional bundling suffers from.

The paper that first proposed the group bundling method [12] and also the subsequent literature are void of (1) a theoretical explanation of the advantage/disadvantage that group bundling might have over the traditional bundling purchasing method and how such advantage/disadvantage might influence consumers’ intention to purchase; and (2) an empirical evidence to validate the advantage and disadvantage of group bundling vis-à-vis traditional bundling purchasing methods. This paper addresses the above gaps by: (i) developing a theoretical framework in the form of testable hypotheses to explain not only the advantage but also the disadvantage that group bundling may have relative to traditional bundling; and (ii) empirically validating this theoretical model through an experimental field study.

We empirically evaluate the performance of the traditional and group bundling methods in a field experiment on the e-commerce operations of a major
Traditionally, bundling has been the practice of granting consumers a discount when they buy a certain number of units from a designated range of products [16]. These are arrangements of the kind of “Buy two, get X% OFF” and “Buy one, get the other at Y% OFF”. Bundling is widely practiced in today’s marketplace [27] owing to its ability to induce consumers to buy more and earlier [1,5,28]. There is evidence, on the other hand, to suggest that this is not entirely true. For example, [16] have studied bundling, and found that the positive impact of traditional bundling is limited. Apparently any quantity requirement, even as small as two units, gets in the way of converting non-buyers to buyers. Instead, bundle discounts encourages switching of already heavy consumers of other brands. The burden of buying more than actually needed in order to qualify for the bundle discount can and does deter many consumers from purchasing in bundles [16]. Thus, alleviating the quantity requirement in traditional bundling by not forcing consumers to purchase something they do not need to qualify for the bundle discount can unlock the potential of bundling to be an effective method for greater and faster sales [45].

In a recent paper, [12] proposed a novel bundling method, coined here as “group bundling”, that is designed to alleviate the quantity requirement while giving the consumers similar discounts and while guaranteeing retailers their desired sales volume. This proposed method is worthy of attention because it could unlock the potential of bundling referred to by [45]. As explained above, in group bundling, a bundle consists of a relatively large number of heterogeneous discounted products (goods and/or services) that can be collaboratively purchased by a group of consumers. Each consumer can purchase the product(s) that interests them in the bundle with a quantity that can be as low as one unit, without having to buy more than what they need in order to qualify for the discount. In group bundling, each deal in the bundle can be customized, have its own terms and conditions for redemption, and have a different discount rate than the rest of the deals in the same bundle. Once created, the group bundle is offered for sale to the public. Consumers can make pledges to buy individual deals (in any quantity they desire provided availability) from the bundle before the bundle expires. To make a purchase pledge, a consumer needs to submit an order along with credit card payment information. Subsequently, a hold that equals the purchase amount is placed on the consumer’s credit card. The aggregate dollar value of the consumers’ purchase pledges is compared to a tipping amount (i.e. the minimum dollar sales volume in the group bundle desired by the retailer). If sales in the group bundle reaches the tipping amount before the bundle expires, then consumers with purchase pledges will have their credit cards charged against the previously placed hold and they will get the voucher(s) to redeem their purchase(s). On the other hand, if the group bundle does not reach the tipping amount before the expiry date of the bundle, the pledged purchases become invalid and the credit card holds are released. Table 1 compares traditional and group bundling to clarify their distinctions.

<table>
<thead>
<tr>
<th>Table 1 Comparison: traditional bundling vs. group bundling</th>
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<tbody>
<tr>
<td><strong>Bundle size</strong></td>
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<tr>
<td>-----------------</td>
</tr>
<tr>
<td><strong>A bundle is bought by</strong></td>
</tr>
<tr>
<td><strong>Purchase method</strong></td>
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As shown in Table 1, the two bundling methods are contrasted along three dimensions. First, in traditional bundling, a bundle comprises a few products, while in group bundling, a bundle comprises many products that can be in the hundreds or thousands. Second, in traditional bundling, a bundle is purchased by an individual consumer, while in group bundling, a bundle is collaboratively purchased by a number of consumers (due to the large bundle size, it is very unlikely for an individual consumer to buy an entire bundle). Third and lastly, in traditional bundling, a consumer would realize their purchase instantaneously once an order is placed, while in group bundling an order represents a pledge to purchase if the aggregate pledges of the group reached the tipping amount (i.e. conditional purchasing).

Finally, group bundling should not be confused with the group buying purchasing model, which also enables a group of interested buyers to get volume discounts and...
lower transaction prices [23]. In a typical group-buying mechanism, the promised discount (and hence transaction) takes place only if the total number of committed purchases by buying consumers exceeds a specified threshold within a certain time period called the expiry period. Group bundling and group buying differ as follows: (i) In group buying, what is being offered is a specific product, while in group bundling it is a bundle of different products; (ii) In group buying the tipping point is the number of units group consumers buy from the product compared to the retailer’s desired quantity, while in group bundling, it is the dollar sales volume achieved in the bundle compared to the retailer’s desired amount. Nonetheless, both methods follow a conditional purchase model.

The advantage that group bundling potentially has compared to traditional bundling, namely, alleviating the quantity requirement, is clear. However, the literature is void of a theoretical underpinning for this advantage and is also void of an understanding of the potential disadvantage of group bundling compared to traditional bundling as well as the influence of such advantage/disadvantage on consumers’ intention to purchase in bundle. Furthermore, the literature is void of an empirical test of such advantage/disadvantage and their impact on consumers’ intention to purchase. These are the main gap areas where the current paper contributes to the literature.

3. Research model and hypotheses

To address the research objectives of this study, we develop the research model shown in Figure 1, which is grounded in theory. Our choice of the constructs in the model, defined in Table 2, is driven by previous research on bundling and also by the nature and characteristics of the bundling methods under study. In the existing bundling literature, consumers’ control over their purchase quantity is crucial for their perceived bundle value and ultimately for their intention to purchase bundles online [16]. That said, relative to traditional bundling, group bundling is argued to increase consumers’ Perceived Control. The path H1-H4-H7 in the research model depicts these relationships. On the other hand, group bundling is argued to be less easy to use relative to traditional bundling, which can impact transaction outcome uncertainty and intention to buy bundles online. The path H2-H5-H8 in the research model depicts these relationships. As such, the research model emphasizes a key advantage that group bundling arguably has compared to traditional bundling (greater Perceived Control) through the path H1-H4-H7 and emphasizes a key disadvantage that group bundling has compared to traditional bundling (less ease of use) through the path H2-H5-H8. At the same time, the two paths influence one another through H3 and H6.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Perceived Control</td>
<td>consumers’ control over their purchase quantity, which is a crucial variable in the study of consumers’ response to bundle promotions [16].</td>
</tr>
<tr>
<td>Perceived Ease of Use (PEOU)</td>
<td>&quot;the degree to which a person believes that using a particular system would be free of effort&quot; [9: p. 320]</td>
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<tr>
<td>Perceived Value</td>
<td>&quot;consumers' overall assessment of the utility of a [purchase] based on perceptions of what is received and what is given&quot; [46: p. 14].</td>
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<tr>
<td>Perceived Outcome Uncertainty</td>
<td>the extent to which a transaction outcome cannot be accurately predicted [29].</td>
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<tr>
<td>Behavioral Intention</td>
<td>user’s willingness to purchase a bundle while shopping online in the future [14,18].</td>
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In the research model in Figure 1, Bundling Type represents the two experimental treatments under study (traditional and group bundling). The rest of the model evaluates consumers’ perceptions about and their intention to purchase in these two bundling methods. Notably, this research model is concerned only with the research question at hand and does not aim at any generalization outside of that scope.
**Perceived Control:** In traditional bundling, while the goal of bundle promotions is to induce consumers to buy more and earlier, the quantity requirement that qualifies for the bundle discount can and does impede that goal. That is because in bundle sales settings, consumers have less control over their purchase quantities compared to per-unit sales settings. [16] find that imposing any quantity requirement (i.e., two or more units) is too stringent to convert non-buyers into buyers. In contrast, group bundling is designed to alleviate the quantity purchase requirement [12], offering it an advantage over traditional bundling in the degree to which consumers have control over their purchase quantity. That is because group bundling gives consumers control to buy only what they need from the bundle, even if it was only a single unit of a product, while still getting the bundle discount. In effect, group bundling reduces the bundle sales setting to a per-unit sales setting in which a consumer can get the same price discount while controlling the purchase quantity as needed. As such, group bundling grants consumers greater quantity alternatives to choose from, which positively impact their perception of control [24]. Accordingly, we hypothesize that,  

H1: Relative to traditional bundling, group bundling will increase consumers’ Perceived Control.

**Perceived Ease of Use (PEOU):** In this paper, we study traditional and group bundling as two e-commerce purchasing systems that comprise processes and procedures that are intertwined with online information technology. We use PEOU to explain online purchase intentions in the bundling methods under study [18]. Compared to traditional bundling, the group bundling method involves a greater number of steps for consumers to make a purchase and greater effort for consumers to understand and manage the online purchase process. In traditional bundling, consumers submit an order along with their payment information and instantaneously receive the voucher(s) against their purchase. In contrast, in group bundling, after submitting an order along with the payment information, a hold on the purchase amount is placed on the credit card and consumers have to wait for the bundle to tip. If the bundle tips before the bundle expiry date, then the payment related to the hold is captured, and consumers receive the voucher(s) against their purchase. If on the other hand the bundle does not tip before the bundle expiry date, then the hold and the purchase is cancelled. Accordingly, relative to traditional bundling, the group bundling method requires more effort for consumers to understand and manage. For example, the average consumer is not used to submitting credit card payment information without instantaneously realizing the purchase. This and other non-conventional process steps in group bundling can leave consumers wondering and gathering information to effectively learn and manage the purchasing process. So, we expect consumers to find group bundling to be less easy to use compared to the traditional bundling method, which is more familiar and well established. Thus, we hypothesize that,  

H2: Consumers will experience less PEOU in group bundling than in traditional bundling.

In extending the TAM model to e-commerce, [30] established that PEOU positively influences individuals’ perceived control toward a particular behavior. They find that perceived ease of getting information and purchasing (the two components of e-commerce) positively influences consumers’ Perceived Control. An easy to use online purchasing method removes the cognitive impediments of using it, making getting information and purchasing more accessible to the consumer. It causes the perception of these online behaviors as being under the consumer's full control. Accordingly, in this study, we test a similar hypothesis in the context of bundle purchasing,  

H3: Consumers’ PEOU is positively associated with their Perceived Control while shopping for bundles online.

**Perceived Value:** We follow Zeithaml’s widely accepted definition of value as “consumers’ overall assessment of the utility of a product based on perceptions of what is received and what is given” [46, p. 14]. In the context of our study, “what is received” represents what consumers purchase and “what is given” represents what consumers pay against their purchase, which is consistent with Zeithaml’s conceptualization of value. Consumers’ control over their purchase quantity can impact their perceived value of what they purchase. In bundle purchasing, having to purchase more than what is actually needed in order to qualify for the bundle discount can lead to waste from two standpoints. The first is a financial waste in having to spend more than what was actually planned. The second is a utilitarian waste in not fully utilizing the imposed purchases given the initial lack of need. For example, [40] find that consumers who were less sure of use were less likely to purchase bundled tickets for a series of musical performances, presumably because the risk of wasting money on an unattended performance reduced the value of the bundle. Such waste can lead to lower utility and consequently to lower perceived value [40,46]. This can explain the finding that any quantity requirement imposed in bundle purchasing (as low as two units) is too stringent to convert non-buyers to buyers [16]. Ultimately, owing to the degree of consumers’ control over their purchases, bundle purchasing is more constraining than per-unit purchasing, potentially making a bundle less valuable to consumers [21]. Accordingly, we hypothesize that,  

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H4: Consumers’ Perceived Control is positively associated with their Perceived Value while shopping for bundles online.

**Perceived Outcome Uncertainty:** As indicated in Table 2, Perceived outcome uncertainty is defined as the extent to which a transaction outcome cannot be accurately predicted [29]. PEOU positively influences an individual’s favorable outcome expectation toward the acceptance of an innovative technology [3]. This is because the perceived outcome uncertainty can be assessed with the first impression about the technology, which is positively influenced by the perceived ease of using the technology [43]. Moreover, when a technology appears to be easy to learn, understand, and use, it alleviates consumer uncertainty and overall risk [13]. In an online context, perceived ease of use of a website reduces uncertainty perceptions, as it causes the consumer to develop favorable and concrete ideas about having transactions fulfilled within that website [25]. Accordingly, in this study, we test a similar hypothesis in the context of bundle purchasing.

**H5:** Consumers’ PEOU is negatively associated with their Perceived Outcome Uncertainty while shopping for bundles online.

In contrast to the traditional bundling method, where consumers instantaneously receive voucher(s) against their purchase, the group bundling method keeps consumers waiting until the bundle tips before they receive their voucher(s) against their purchase. Whether the bundle will tip is unknown to consumers when they submit their purchase along with credit card payment information. So unlike traditional bundling, in group bundling, consumers are uncertain about the transaction outcome of whether their purchase will be realized or cancelled (i.e., if the bundle doesn’t tip before its expiry). Perceived control in a given situation can reduce perceived uncertainty about outcomes from that situation [26] and can increase people’s confidence about their judgments [42]. Accordingly, in the context of this study, increasing consumers’ perceived control over their purchase quantity in the bundle would likely counterbalance their perceived uncertainty about the outcomes of their purchase. Hence, we hypothesize that,

**H6:** Consumers’ Perceived Control is negatively associated with their Perceived Outcome Uncertainty while shopping for bundles online.

**Behavioral Intention:** Based on existing definitions [14,18], Behavioral Intention (BI) in this paper is a measure of the strength of a user’s willingness to purchase in bundles while shopping online in the future. We choose this construct as the outcome variable of interest in our research model because of its importance to evaluating e-commerce related systems and technologies [18,41]. In our research model, BI is argued to be influenced by two key determinants; Perceived Value and Perceived Outcome Uncertainty. With regard to the first determinant (Perceived Value), the value-intention framework [11] assumes that an individual’s willingness to perform a certain behavior is directly influenced by the perceived value of that behavior’s consequences. For example, consumers’ willingness to purchase is influenced by consumers’ perceived value of the offering [7]. Other studies have also provided sufficient evidence for the positive influence of perceived value on consumers’ willingness-to-buy [10,38,46]. Accordingly, in this study, we test a similar hypothesis in the context of bundle purchasing.

**H7:** Consumers’ Perceived Value is positively associated with their Behavioral Intention to purchase product bundles online.

With regard to the second determinant of behavioral intention to purchase that we propose (Perceived Outcome Uncertainty), previous research established that Perceived Outcome Uncertainty negatively influences consumers’ intention to purchase products online [31,34]. Accordingly, in this study, we test a similar hypothesis in the context of bundle purchasing.

**H8:** Consumers’ Perceived Outcome Uncertainty is negatively associated with their Behavioral Intention to purchase product bundles online.

4. **Methodology**

4.1. **Experimental design**

To test the research objectives of this study, we conducted a field experiment using online bundles of fitness and aquatic instructional classes of Carleton University’s Athletic Centre (Carleton Ravens) in Ottawa, Ontario, Canada. Carleton Ravens features tens of instructional classes and tens of leagues and camps throughout the year in addition to operating a dozen varsity sports teams with ticket sales. It is a multi-million dollar operation with tens of thousands of customers registered in its database. Prior to conducting the study, we obtained ethics approval through Carleton University’s ethics board.

To test the research model in Figure 1, we asked Carleton Ravens to offer (in limited quantities and only for a short time) a set of its fitness and aquatic classes for sale at a discount following two bundling methods (traditional and group bundling). Carleton Ravens agreed to offer 34 fitness and aquatic classes that ran in summer 2015 at different levels of discounts. The discount levels in the offered classes are chosen to be inversely related to their past year’s utilization. We offered a 70% discount on classes that have past utilization of 30% or less, a 30% discount on classes that have past utilization of 70% or more, and a range of 30-70% discount on classes that have past year’s utilization falling between 30-70%. To avoid possible
cannibalization of revenues, the offered quantities were chosen within the unsold capacity given past years’ utilization. We followed a 2x1 posttest-only control group design [36], which is a true experimental design. We operationalized the traditional and group bundling methods using two different experimental treatments. The first experimental treatment denotes a traditional bundling method. In this treatment, a consumer has to purchase his or her choice of at least two classes or two units of the same class in the offered set in order to get the discounts. This setting corresponds to a low level of consumer control over purchase quantity. The second experimental treatment denotes a group bundling method. In this treatment, a consumer can buy as few or as many units as he or she wants, even if it is an individual unit of a given class, and will still get the discount. This setting corresponds to a high level of consumer control over purchase quantity. To reinforce the internal validity of the results, the experimental design controlled for a number of factors in order to eliminate possible confounding explanations of the outcome variables of interest. First, from a systems perspective, the two experimental treatments were offered using the same e-commerce platform with the same user interface, capabilities, and features. Second, from a bundle configuration perspective, the two experimental treatments comprised the same variety and available quantities of fitness and aquatic classes as well as the same discount levels. Third, from a consumer perspective, the two samples that were given the two experimental treatments had the same size. These two samples, at 1,998 consumers each, were drawn randomly from the existing customer base of the participating organization. The sample frame included all customers who purchased an activity from the participating organization in the past three years (we deemed this period appropriate to achieve a good balance between the recency of the customer interaction with the participating organization and the resulting size of the sample frame from which to draw the study sample). Fourth, the two experimental treatments were run simultaneously (in spring 2015 for classes offered in summer 2015) in order to eliminate internal validity threats attributable to maturation and history (time-variant changes in environment and/or subjects). Fifth, the two experimental treatments were run for the same length of time (11 days) before both expired.

4.2. Experimental treatments’ implementation

We developed a fully functional e-commerce portal that is capable of offering product bundles from the participating organization following traditional and group bundling methods as explained in the two experimental treatments. This e-commerce portal acted as a third party, featuring the bundled fitness and aquatic classes on behalf of the participating organization. We created two instances of that e-commerce portal with identical user interfaces, product offerings, and regular/discounted prices. However, the two instances differed in the purchasing methods they employed, where one followed the traditional bundling method in the first experimental treatment and the other followed the group bundling method in the second experimental treatment. In the instance supporting the traditional bundling method, a consumer has to buy at least two gym classes or two units of a given class in order to get the bundle discount. Once the consumer submits the order including credit card payment information, the consumer receives the vouchers (to redeem the purchase) instantaneously by e-mail. In contrast, in the instance supporting the group bundling method, a consumer can buy any variety and quantity of the gym classes he/she wishes even if only one unit of a given class. Once the consumer submits the order including credit card payment information, the consumer receives an e-mail titled “Confirmation of Request to Purchase” assuring the consumer that the order and payment information are received; that the payment on the submitted credit card will not be captured and the voucher(s) will not be sent by e-mail until the bundle tips”; and that if the bundle does not tip before the expiry date and time of the bundle, then the hold on the credit card will be removed and the transaction will be cancelled. In order to keep the consumer informed during the course of waiting for the bundle to tip, the consumer received status update e-mails when the bundle is 25%, 50%, and 75% tipped. Once the bundle tips, the consumer instantaneously receives the voucher(s) against his/her purchase by e-mail. We hosted the two instances of the e-commerce portal offering the two bundling methods on two different subdomains, which were accessible through two different URL’s. Following the researchers’ instructions, Carleton Ravens sent a newsletter e-mail to each one of the two experimental samples (one for traditional and the other for group bundling) containing an announcement of the limited-time and limited-availability offers of “Up to 70% OFF on Summer Fitness and Aquatic Classes” and providing a URL to access and purchase the discounted bundled classes on the “third-party” website. Once a consumer clicks the URL in a given experimental treatment, he or she is taken to the associated bundle page and a pop-up window instantaneously appears explaining how purchasing in the bundle works.

4.3. Survey measurement

Upon the expiry of both bundles, and based on the researchers’ instructions, the participating organization
sent an e-mail newsletter to the study samples asking them to complete an online survey (as part of a research project) on their perceptions about the recent offer they received. The e-mail provided a URL to an online survey instrument that we designed. The e-mail indicated that a participant had a 1 in 6 chance to win a $25 gift card from a major coffee house chain. In order to ensure content validity, we used previously validated instruments to measure the constructs in the proposed research model in Figure 1. Accordingly, scales for: Perceived Control was adopted from [20]; Perceived Outcome Uncertainty was adopted from [31]; Intention to Purchase was adopted from [31,41]; Perceived Ease of Use was adopted from [9]; and Perceived Value is adopted from [6]. The scales were slightly adapted to reflect the context of this study. For example, the name of the specific system in question was changed to “bundled services” and the specific task was changed to “online shopping.” We coded bundling type as a binary variable (i.e., 0 for traditional bundling and 1 for group bundling).

5. Results

The newsletter e-mail announcing the discounted offers was sent to the two samples (of 1,998 consumers each) whose e-mail addresses are registered with Carleton Ravens. Using e-mail analytics technologies, we found that about 30% of each sample opened the e-mail and only 6% of each sample clicked the URL associated with the bundle page. At the onset of the survey, participants were asked whether they opened the URL to the bundled discount offers. Participants who reported opening the URL to the bundle page were allowed to complete the survey while those who reported not opening the URL were not allowed to complete the survey. Accordingly, the maximum number of possible responses in each one of the two samples was expected to be up to 1,998 x 0.06 ≈ 120. Following the expiry of the two bundle campaigns, the participating organization sent an online survey e-mail to the two samples and a follow-up reminder e-mail a few days later. This resulted in receiving 96 completed responses in total from the two samples (51 responses from the group bundling sample and 45 responses from the traditional bundling sample). This accounts for a 40% response rate (96/240), which is relatively high compared to a threshold of 20% in recent online survey studies [32]. This sample size exceeds n = 78 (39 subjects for each group) needed for a statistical power of 0.8 to detect a medium effect size (f = 0.25) [8].

Participants averaged 35 years in age; 83% of the participants were males; 37% of the participants utilized the Internet for more than 5 hours a day; 60% of them used it between one hour and five hours; and 3% used it for less than one hour a day. Table 3 reports the Cronbach’s Alpha (CA) reliability, correlations, and the square root of the average variance extracted (AVE) of the constructs under study in the research model in Figure 1.

Table 3 Reliability and Correlations and Discriminant Validity

<table>
<thead>
<tr>
<th></th>
<th>CA</th>
<th>BI</th>
<th>V</th>
<th>UC</th>
<th>C</th>
<th>EU</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI</td>
<td>0.95</td>
<td>0.97</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>0.94</td>
<td>0.29**</td>
<td>0.34**</td>
<td>-0.18</td>
<td>0.47**</td>
<td>0.96</td>
</tr>
<tr>
<td>UC</td>
<td>0.93</td>
<td>0.34**</td>
<td>0.38**</td>
<td>0.47**</td>
<td>0.96</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>0.96</td>
<td>0.27**</td>
<td>0.43**</td>
<td></td>
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</tr>
<tr>
<td>EU</td>
<td>0.96</td>
<td>0.35**</td>
<td>0.45**</td>
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</table>

Note: **Correlation is significant at the 0.01 level.
CA: Cronbach’s Alpha; BI: Behavioral Intention; V: Value; UC: Uncertainty; C: Control; EU: Ease of use.

In Table 3, the diagonal entries in bold font show the square root of the AVE of the constructs, which we use to judge their discriminant validity. The off-diagonal entries represent the correlation among the constructs. As can be seen from the results in this table, all constructs show high CA reliability exceeding the recommended level of 0.7 [15]. Also, all correlations among the constructs are non-excessive. All of the constructs, except uncertainty, are positively correlated, whereas uncertainty is negatively correlated to the other constructs. To have adequate discriminant validity, the square root of the construct’s AVE must be larger than the correlation between that construct and any other construct in the model [4]. As shown in Table 3, all variable pairs meet this requirement.

To test the research model in Figure 1, we used SEM to analyze the model using the survey data we collected. SEM allows for the simultaneous evaluation of both the measurement model and the structural model. We used Partial Least Squares (PLS), which has relative advantages over covariance-based SEM methods such as LISREL. For example, PLS maximizes the explained variance of endogenous variables [17] and does not make distributional assumptions regarding the data [17,44]. We used SmartPLS version 2.0 [33] to analyze the structural model to assess the statistical significance of the hypotheses in the research model. As can be seen in Figure 2, all hypotheses (H1-H8) are supported.

6. Discussion

The results of this study make important theoretical and practical contributions to the bundling literature in an e-commerce context. The theoretical model we propose to understand the advantage/disadvantage of group bundling compared to traditional bundling is
supported by the data we collected in this field study. Fundamentally, retailers demand a minimum quantity purchase requirement in order to justify the economics of discounted bundles. Whereas traditional bundling attempts to meet the quantity requirement at the level of the individual consumer, group bundling attempts to meet the quantity requirement at the level of a group of consumers.

The results suggest that granting consumers control over their purchase quantity in group bundling does result in greater perceived value of their bundle purchase compared to the case in traditional bundling, where consumers have less control over their purchase quantity, due to the imposed quantity requirement. This positive perceived value differential in group bundling leads to favorable intention to purchase outcomes compared to traditional bundling. Furthermore, while the results show that customers experience less PEOU with the group bundling method compared to traditional bundling, this is only to a limited extent, which is indicated by PEOU’s low variance of 4.5% across the two bundling methods, as shown in Figure 2. This is an interesting result because it suggests that despite the conditional purchasing process in group bundling, which is cumbersome compared to the instantaneous purchasing process in traditional bundling, consumers do not find group bundling to be all that difficult to use compared to traditional bundling. This is an important finding because according to the research model that the data supports, PEOU can negatively influence consumers’ intention to purchase through their perceived transaction outcome uncertainty.

Accordingly, it is likely that compared to traditional bundling, group bundling will ultimately have a greater positive effect on consumers’ intention to purchase online bundles, through their perceived value, than negative effect, through their perceived transaction outcome uncertainty. On the other hand, the two theoretical paths through which bundling type influences consumers’ intention to purchase in bundles show mutual influence. PEOU is positively associated with perceived control, which in turn is negatively associated with perceived outcome uncertainty. While, theoretically, PEOU is of especially critical importance as it influences both the positive and negative paths to consumers’ intentions to purchase in product bundles, practically, PEOU exerts only a limited impact as its explained variance is relatively low (only 4.5% explained). The proposed theoretical model explains considerable variance in the rest of the model’s variables (14 - 29% explained).

For practitioners, the results suggest that group bundling is a better alternative to traditional bundling in ultimately driving consumers’ intention to purchase online bundles. From a consumer standpoint, alleviating the quantity requirement removes the barriers for the consumer to take advantage of the offered discount. From a retailer standpoint, the quantity requirement is achieved albeit at the group’s level rather than the individual consumer’s level.

This study is not without limitations, which provide avenues for future research. First, the newness of the group bundling method to the sample may have contributed to their lower PEOU compared to the traditional bundling method, which is a well-understood practice. Consistent with previous findings in other contexts [39], with repeated exposure, consumers are likely to become more familiar with the group bundling method, which could produce different results on their perceived outcome uncertainty and their intention to purchase. Second, only service bundling (gym activities) is considered in this study, which limits the generalizability of the results to goods bundling. Thus, future research can replicate this study in those contexts to confirm the current results.

7. Conclusions

Research on bundling establishes that requiring consumers to buy more than what they need to qualify for the bundle discount is an impediment to consumers’ intention to purchase in bundles. Recently, a novel method (group bundling) has been introduced as an alternative to traditional bundling to grant consumers control over their purchase quantity while getting the

Figure 2 Results of Research Model
bundle discount. This paper proposes and empirically tests a theoretical model that explains the advantage/disadvantage of group bundling compared to traditional bundling in driving consumers’ intention to purchase online bundles. The results of a field experiment that compares the two bundling methods in the e-commerce operations of a gym facility reveal that compared to traditional bundling, group bundling does have a clear advantage over traditional bundling in consumers’ perceived control of their purchase quantity in bundles, which increases their perceived value and intention to purchase. While group bundling is perceived to be more difficult to use compared to traditional bundling, this is to a limited extent and hence is unlikely to result in dramatic decrease in consumers’ intention to purchase through PEOU’s influence on their transaction outcome uncertainty. Given the growing popularity of online social networks and collaborations, group bundling has the potential to thrive and help retailers increase their volume and speed of sales.

8. References


