

# **Buying bundles: the effects of bundling attributes on the value of bundling**

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## **ABSTRACT**

We consider the situation in which a buyer has to find the optimal degree of bundling for buying goods and services. From a review of the literature we develop attributes associated with bundling. Each of these attributes has an effect on the value of a bundle. Combined, the attributes determine the value of a bundle. We describe how the various attributes of a bundle contribute to the value of a bundle given the context of the buying situation. Based on interviews, a further analysis of bundle attributes and their effects on the bundle value is provided. The results of this analysis can be used to assist in finding the optimal degree of bundling.

**Keywords:** bundles value, buying decisions, degree of bundling

## **INTRODUCTION OF THE TOPIC**

When a buyer has to purchase a set of products and/or services he searches for the optimal way to buy on the market. One of the decisions the buyer has to make is whether he bundles the products and/or services or buys them in separate lots. For example, buying various products and services needed for a construction project separately is an alternative to buying a complete project (turn key). In practice these decisions are rarely taken consciously: often buyers immediately move on to selecting the right supplier for the products or services. A conscious decision about the degree of bundling is often omitted. In this paper we present a framework for making bundling decisions and we introduce the concept of bundling attributes. These bundling attributes contribute to the value of a bundle and can be used as a basis for a well-informed bundling decision. We discuss the attributes and their effects on the value of a bundle based on a number of practical bundling decisions reviewed with purchasers.

## LITERATURE ON BUNDLING

Purchasers have considered bundling options for centuries, though little academic discussions seem to be devoted to the decision problem (Schoenherr and Mabert, 2008). Most of the bundling literature has been written from a seller's perspective in either a marketing or economics literature. In the next two subsections, we discuss the buyer's and seller's perspectives in more detail.

### *Bundling from a seller's perspective*

From a seller's perspective, marketing literature on bundling has examined the firm's promoting and pricing of bundles (e.g. Ansari, Siddarth, and Weinberg, 1996; Ben-Akiva and Gershensfeld, 1998), consumer evaluation of bundles (e.g. Johnson, Herrmann, and Bauer, 1999; Soman and Gourville, 2001), and the optimality of bundling (e.g. Bakos and Brynjolfsson, 2000; Wilson et al., 1990). Economics literature has mainly focused on bundling as an entry deterrence mechanism (e.g. Nalebuff, 2004; Carlton and Waldman, 2002), bundling and efficiency (e.g. Fang and Norman, 2003), and bundling as a profit-maximizing mechanism (e.g. Armstrong, 1999; Avery and Hendershott, 2000). Stremersch and Tellis (2002) state, in their examination of the literature on bundling from a seller's perspective, that there is no integrative framework that explains what an optimal bundle is, given various factors that have an effect on an optimal bundle. Also, they state that the literature is ambiguous about definitions for bundling and key conditions for optimal bundling. This makes it even more difficult to develop a framework for making optimal bundling decisions from a buyer's perspective.

### *Bundling from a buyer's perspective*

The body of literature on bundling from a buyer's perspective is much smaller than that from the seller's perspective. Only a few topics in bundling have been covered from a buyer's perspective. The study of Mabert and Schoeherr (2001) showed that choosing the right bundle structure significantly influences the buyer's perceived performance of the bundle. This importance of the bundle structure was later confirmed by Beall et al. (2003). This stresses the importance of the decision on the correct bundle structure.

Reasons for bundling by buyers are the benefits towards lowering the administrative costs, such as ordering costs (Looman, Ruffin and de Boer, 2002). Other authors mention benefits of bundling such as an increase of buying power (Ramsay, 2001; Schoenherr and Mabert, 2006) or an increase of economies of scale (Birou, Fawcett and Magnan, 1997). However, few studies have provided variables that influence an appropriate bundling structure, or tried to construct a framework that can be used to determine an appropriate bundling structure. Perhaps Jap's (2002) suggestion of an optimal bundle structure in terms of number of items and purchasing spend comes closest. She poses that bundles should have a high number of items and a high spend. This should be weighted against the potential inability of suppliers to deliver and the loss of competition. The paper by Jap provides useful suggestions, but does not provide a framework or even a list of variables.

Other research on bundling from a buyer's perspective focuses on bundles for reverse auctions. The achievement of price reductions by increasing the number of different bundles in the same bidding event has been reported by Carter et al (2004) and Hur et al. (2006). Changing the bundle composition for repeat auctions can also help to further reduce the price (Arnold et al., 2005). Still, they do not study finding the right bundle composition itself.

This paper adds to the limited body of research on bundling from a buyer's perspective. Besides adding new reasons for bundling to the existing literature, we aim to improve the understanding on bundling

composition by combining these reasons in a framework that can be used to determine an appropriate bundling structure.

## **CRITICAL ANALYSIS**

The ambiguity in the literature on definitions of bundling, as stated by Stremersch and Tellis (2002) in the previous section, calls for a further critical analysis. Not clearly defining terms as bundling and bundling strategies would make it difficult to compare this study with the literature.

### *Bundling*

Many different definitions of bundling have been proposed in the literature. For example, Adams and Yellen (1976) define bundling as “selling goods in packages”. Guiltinan (1987) defines bundling as “the practice of marketing two or more products and/or services in a single package for a special price”, and Salinger (1995) treats a pair of shoes as a bundle. These examples do not only show that definitions of bundling are fuzzy and not consistent (Stremersch and Tellis, 2002), they are also unclear about the distinction between product and bundle (see the definition of Sallinger) and domain of the use of bundling (see the definition of Guiltinan). We propose a definition for bundling from a buyer’s perspective that tries to overcome the inconsistencies present in the literature.

We propose the definition of bundling as the buying of two or more undividable products in one package. We define the term ‘undividable’ in means as undividable for buyer’s markets. We explain this term by a short example. Consider buying a bundle of electricity for two office buildings. According to the definition this will be a bundle of two products; you can find a supplier willing to deliver electricity for one of your office locations. Buying electricity for a part of an office building would be much harder, because no markets exist for supplying electricity to parts of office buildings. So the undividable product of the bundle is one office building. Considering this example will make it clear that most of the purchasing transaction in practice do have some degree of bundling inherent to them. It is our purpose to contribute towards finding an optimal degree of bundling.

### *Bundle strategies*

Bundle strategies studied from a buyer’s perspective have not been defined very clear. Examples of bundle strategies are described as increasing leverage by size and increasing the number of items in a bundle (Jap, 2002), bundling of part families (Smeltzer and Carr, 2003), and the bundling of items in the same commodity group (Beall et al., 2003). These strategy descriptions, although suitable in their specific context, are not generic in use. Based on interviews with purchasers we identify two generic bundling strategies.

1. Homogeneous bundling strategy: expanding your bundle homogeneously is done by adding more of the same products to those that you already have in your bundle. Every bundle has a dimension, called the degree of homogeneous bundling; the amount of exactly the same products in the bundle.

Example from the interviews: That is our default, we bundle the same products over our three locations, unless [...] we have done that with catering and some IT hardware.

2. Heterogeneous bundling strategy: expanding your bundle heterogeneously is done by adding different products to those you already have in your bundle. Every bundle has a dimension, called the degree of heterogeneous bundling; the amount of different products in the bundle.

Example from the interviews: We had to build the hangars, the building for the restaurant and the platforms [...] we saw that as one job.

With the definition of these two strategies we can classify every bundle, in their degree of bundling, both homogeneously or heterogeneously. Later in this paper we will show that different bundling strategies also create different bundling effects.

### THE VALUE OF BUNDLING

In their search for the optimal bundle structure, buyers assess various bundle options, which vary in bundling degree, either homo- and heterogeneously. Each of those bundle options has several bundle attributes, which can have favorable or not so favorable effects in the eyes of buyers. For example, the bundle attribute economies of scale (Looman et al., 2001) is different for each bundle option. More bundling often generates more discounts on the price by economies of scale, although in a decreasing manner. We call this the effect of the bundle attribute. In another example, the bundle attribute of competition (Jap, 2002) could have the effect of higher prices paid with more bundling, due to constrained capacities or capabilities of the suppliers. We can visualize these effects as a function of the bundling benefits versus the degree of bundling. In Figure 1, we show how such functions could look like.

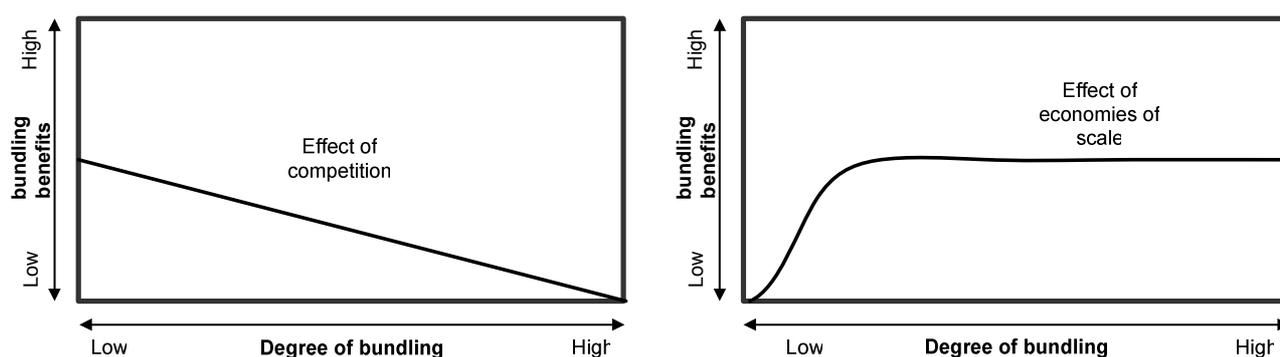


Figure 1: the effects of two bundle attributes

A buyer faces the complex task to assess the various options in bundling. He looks at the attributes of the various options; he estimates their effects and the final trade-off. We call this trade-off between various effects of the bundle attributes the bundle value. With these definitions we can describe the bundling value in terms of the various effects of the bundle attributes.

$$\text{Bundling value} = \text{effect (attribute 1)} + \text{effect (attribute 2)} + \text{effect (attribute ...)} \quad (1)$$

If we continue the example from the beginning of this section, the bundle value would be the summation of the bundling benefits of competition and the economies of scale. In figure 2, we visualize how the function of bundle value could look like. The differences in the effects show us the existence of an optimal degree of bundling, at which the bundling value is at its maximum. It is this maximum value that purchasers want to achieve with their bundling strategies.

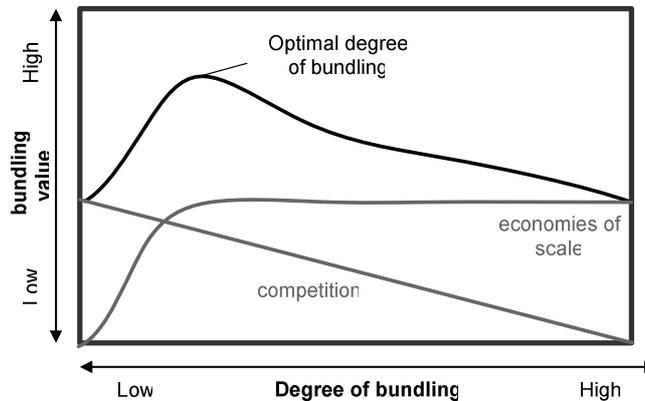


Figure 2: the bundle value

In this paper we will make a start with unraveling the bundling attributes and their effects. In the next section we will give an overview of all attributes and their effects on the bundle value.

## RESULTS

In order to get a more thorough understanding about bundle attributes and their effects on the bundle value, seven exploratory interviews were conducted. These interviews were conducted with one or two experienced purchasers at the same time, for a total of 10 interviewees. In each of the interviews we discussed a number of cases on bundling. In total we discussed 23 cases with the interviewees. The interviewed purchasers were faced with the decision how to bundle in their daily activities. The purchasers were chosen to represent a variety of organizations. This included government departments, police departments, schools, energy providers and tobacco manufacturers.

In the interviews, the purchasers were asked if they could name the various bundled options they have had in various tenders and buying situations. Also they were asked if they could elaborate on the reasons for choosing one particular bundling option. In this way we accessed the vast experience of the purchasers on decision-making on bundling. The interviews were semi-structured to enable the interviewer to pursue interesting statements and elaborate on them during the interview. The interviews took on average one hour and were taped and coded. The codes were used to find a list of unique forms of bundling attributes and their effects. These codes were created during the analyses of the tapes. In Table 1 we present the bundling attributes and their effects as they emerged from the interviews.

Bundling attribute	Description and example	Main effect on bundling value by
Dependency	<p>The components of the bundle depend on each other in time, management or planning. There is an overlap or integration of the components.</p> <p>Example from the interviews: when different components of the installation are highly dependent on each other that would be a reason for us to buy in a bundle.</p>	Coordination costs

Table 1 – the bundling attributes and their effects

<b>Bundling attribute</b>	<b>Description and example</b>	<b>Main effect on bundling value by</b>
Selection	<p>The supply of the components is passed on to subcontractors.</p> <p>Example from the interviews: why don't we split it up, then the subcontractors can place bids [...] they are cheaper.</p>	Quality of the bids
Outsourcing	<p>There is some need of coordination between the components, which can be done by the suppliers or by the buyer.</p> <p>Example from the interviews: it is the policy here to leave the coordination to the suppliers [...] we want to keep it as simple as possible here.</p>	Coordination costs
Specialization	<p>The delivery of the components is the core-business of the suppliers that can deliver the bundle.</p> <p>Example from the interviews: if it doesn't belong to the core-business of the supplier, we split it off, that makes it commercial more interesting.</p>	Quality of the bids
Competition	<p>The volume of the bundle generates enough competition, as well as on the short as on the long term.</p> <p>Example from the interviews: you can bundle, but not too much, the bundle must be interesting for small and large companies.</p>	Quantity of the bids
Purchasing effort	<p>The effort of buying the components in a bundle or separately.</p> <p>Example from the interviews: if you are going to buy all the activities separately, you do not want to know how much time that is going to take.</p>	Purchasing process costs
Economies of scale	<p>The quantity discounts that are offered on a bundle.</p> <p>Example from the interviews: with this size the bundle just had a nice volume that generated some discount benefits.</p>	Quantity discounts
Physical separation	<p>The components are not located on the same geographical location.</p> <p>Example from the interviews: because the areas of the works were adjacent to each other, we could buy it as a bundle.</p>	Logistics costs

*Table 1 – the bundling attributes and their effects - continued*

To the attributes already mentioned in the literature like competition (Jap, 2002), economies of scale (Birou, Fawcett and Magnan, 1997) and purchasing effort (Looman, Ruffin and de Boer, 2002), we add the bundle attributes dependency, selection, outsourcing, specialization and physical separation. All the bundle attributes have effects on the value of the bundle. In the decision about which degree of bundling to choose, purchasers have to combine all, or at least some of the effects of the attributes into a specific bundle value curve. Only then they will be able to find the optimal degree of bundling for their buying situation. Still there is the matter of which degree of bundling, homogenous or heterogeneous as described in the critical analysis, would be most appropriate. We propose that not all attributes of the bundle change the bundle value when a solely homogeneous or heterogeneous bundling strategy is pursued. In the interviews, we discovered when a sole strategy was pursued; some attributes were not relevant in the decision to bundle. In Table 2 we show that only 5 out of 8 of the bundling attributes have effect on both degrees of bundling. This has practical implications for the purchasers, as it simplifies the bundling decision.

<b>Bundling attributes</b>	<b>Possible change of the bundle value by</b>	
	<b>homogeneous bundling</b>	<b>heterogeneous bundling</b>
Integration	no	yes
Selection	yes	yes
Coordination	yes	yes
Specialization	no	yes
Competition	yes	yes
Buying costs	yes	yes
Economies of scale	yes	no
Location	yes	yes

*Table 2 – the influence of bundle strategy on bundle value*

The conclusion of these analyses is that we can visualize components of bundle value. In addition, we can point out differences in these components when pursuing homogeneous or heterogeneous bundling strategies. From a practical point view an assessment of bundling attributes makes it easier for a practitioner to find the right degree of bundling.

## **DISCUSSION AND FURTHER RESEARCH**

This paper has explored the various attributes of bundles from a buyer’s perspective. We add to literature by presenting an overview of attributes and their effects on the value of bundling. We also propose a framework which simplifies bundling decisions for purchasers. However, this article has several limitations that further research could address.

First, the list of attributes has been generated from the experiences of many purchasers and we tried to find as many attributes as possible, but we do not claim having found every bundling attribute. To make the list more complete, further research could focus on finding more attributes of bundles that are relevant in the bundling decisions. Second, when changing the degree of bundling, it is not yet clear how the effects of the bundling attributes change. In this paper we propose some examples how the curves of the effects could look like, but we only do this with the purpose of clarifying the concept. Further research could focus on the question how these effects influence the bundling value. For example, the effects of the bundle attribute selection on bundling (Linthorst and Telgen, 2008). Finally, we plan to further investigate how an optimal degree of bundling can be determined.

## REFERENCES

- Adams, W.J. and J.L. Yellen, 1976. Commodity bundling and the burden of monopoly. *Quarterly Journal of Economics*, 90 (August), pp. 475-498.
- Ansari A., S. Siddarth, and C.B. Weinberg, 1996. Pricing a bundle of products of services: the case of nonprofits. *Journal of Marketing Research*, 33 (February), pp. 86-93.
- Armstrong, M., 1999. Price discrimination by a many-product firm. *Review of economic studies*, 66:1, pp. 151-168.
- Arnold, U., H. Karner and M. Schnabel, 2005. Target-oriented use of strategic sourcing tools: a critical analysis creating process awareness for electronic reverse auctions. *Journal of Purchasing and Supply Management*, 11:2-3, pp. 116-128.
- Avery, C. and T. Hendershott, 2000. Bundling and optimal auctions of multiple products. *Review of Economic Studies*, 67:3, pp. 483-497.
- Bakos, Y. and E. Brynjolfsson, 2000. Bundling and competition on the internet. *Marketing Science*, 19:1, pp. 63-82.
- Beall, S. et al., 2003. The role of reverse auctions in strategic sourcing. CAPS Research, Focus study, Tempe, AZ.
- Ben-Akiva, M. and S. Gershensfeld, 1998. Multi-featured products and services: annualizing pricing and bundling strategies. *Journal of Forecasting*, 17:3-4, pp. 175-196.
- Birou, L., S.E. Fawcett and G.M. Magnan, 1997. Integrating product life cycle and purchasing strategies. *International Journal of Purchasing and Materials Management*, 33:1, pp. 23-31.
- Carlton, D.W. and M. Waldman, 2002. The strategic use of tying to preserve and create market power. *RAND Journal of Economics*, 33:2, pp. 194-220.
- Carter, C.R., L. Kaufmann, S. Beall, P.L. Carter, T.E. Hendrick and K.J. Peterson, 2004. Reverse auctions – grounded theory from the buyer and supplier perspective. *Transportation Research Part E*, 40:3, pp. 229-254.
- Fang, H. and P. Norman, 2003. To bundle or not to bundle. SSRI Working paper no. 2003-18
- Guiltingan, J.P., 1987. The price bundling of service: a normative framework. *Journal of Marketing*, 51 (April), pp. 74-85.
- Hur, D., J.L. Hartley and V.A. Mabert, 2006. Implementing reverse e-auctions: a learning process. *Business Horizons*, 49:1, pp. 21-29.
- Jap, S.D., 2002. Online reverse auctions: issues, themes, and prospects for the future. *Journal of the Academy of Marketing Science*, 30:4, pp. 506-525.
- Johnson M.D., A. Herrmann and H.H. Bauer, 1999. The effects of price bundling on consumer evaluations of product offerings. *International Journal of Research in Marketing*, 16:2, pp. 129-142.
- Linthorst, M.M. and J. Telgen, 2008. The splitting value, analyzing the value of buying in separate lots. Working paper, Proceedings of 17<sup>th</sup> IPSERA conference, Perth, pp. 461-468.
- Looman, A., F. Ruffini and L. de Boer, 2002. Designing ordering and inventory management methodologies for purchased parts. *Journal of Supply Chain Management*, 38:2, pp. 22-29.
- Mabert, V.A. and T. Schoenherr, 2001. An online RFQ system: a case study. *Practix*, 5:1, pp. 1-6.
- Nalebuff, B., 2004. Bundling as a entry barrier. *Quarterly Journal of Economics*, 119:1, pp. 159-187.
- Ramsey, J., 2001. The resource based perspective, rents, and purchasing's contribution to sustainable competitive advantage. *Journal of Supply Chain Management*, 37:3, pp. 38-47.

- Salinger, M.A., 1995. A graphical analysis of bundling. *Journal of Business*, 68:1, pp. 85-98
- Schoenherr, T. and V.A. Mabert, 2006. Bundling for B2B procurement: current state and best practices. *International Journal of Integrated Supply Management*, 2:3, pp. 189-213.
- Schoenherr, T., and V.A. Mabert, 2008. The use of bundling in B2B online reverse auctions. *Journal of Operations Management*, 26, pp. 81-95.
- Smeltzer, L.R. and A.S. Carr, 2003. Electronic reverse auctions: promises, risks and conditions for success. *Industrial Marketing Management*, 32:6, pp. 481-488.
- Soman, D. and J.T. Gourville, 2001. Transaction decoupling: How price bundling affects the decision to consume. *Journal of Marketing Research*, 39 (February), pp. 30-44.
- Stremersch, S. and G.J. Tellis, 2002. Strategic bundling of products and prices: a new synthesis for marketing. *Journal of Marketing*, 66:1, pp. 55-72.
- Wilson, L.O., A.M. Weiss and G. John, 1990. Unbundling of industrial systems. *Journal of Marketing Research*, 27 (May), pp. 123-138.