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CHANNEL CHOICE IN THE 21st CENTURY: THE HIDDEN ROLE OF DISTRIBUTION SERVICES

Abstract

Viewing a set of distribution services as one of the main outputs of retailing generates fundamental implications for online retailing. Distribution services, which are also known as attributes, marketing mix or marketing output variables, are produced, distributed and consumed just as goods or physical products or core services sold directly to consumers at an explicit price. Separability of production distribution and consumption of these services in space and time plays an essential role in the emergence, sustainability and sometimes dominance of online channels. For, in all online channels these three primitive economic activities can be separated across space and time for all of these marketing outputs. This separability of distribution services, which has not been identified in the literature, has profound implications for both the demand side and the supply side of firms in online channels. We develop in detail implications of this result with respect to: potential maximum levels of these services in electronic channels that are either substantially higher or substantially lower than in brick and mortar ones; undertaking empirical work involving online channels; and economic and managerial strategies involving online channels. We conclude with an illustration of two important economic consequences and a comparison with a similar but older retail format, i.e., mail order houses.

Keywords: distribution services, separability across space and time, maximum limits of online and offline channels, channel choice and management, assortment costs.
Introduction

Between 2002 and 2012 e-commerce grew at a rate of 18% per year and it was estimated that Internet sales were 8% of total U.S. retail sales in 2012 (MacKenzie, Meyer, and Noble 2013). The authors are a Specialist, a Director and a Principal, respectively, in different U.S. offices of Mckinsey & Company. Forrester research estimates that by 2017 Internet sales will be 10.3% of total U.S. retail sales; furthermore, they argue that by 2017 60% of US retail sales will involve the Internet in some way (Dusto 2013). Thus, the phenomenon of B2C Internet sales is important, increasing in magnitude and shows no signs of abatement in the near future.

Moreover, it is not a phenomenon limited to the U.S. In the European Union, for example, rates of turnover for e-commerce in 2012 have been reported to be as high as 31% and 26% in Ireland and the Czech Republic, respectively, (Eurostat 2013).

Most companies producing consumer services and goods are selling directly to final customers through their websites as an only channel or combined in a multichannel operation. These facts raise three broad topics in the B2C area. What’s unique about channel choice in the presence of the Internet? What’s unique about online channel management? Finally, what’s unique about multichannel management that involves the Internet? In this paper we provide insights on answers or part of answers to these three questions that go beyond existing literature.

Marketing literature has addressed related questions from a practical point of view. For instance, it has investigated using multiple channels as a customer satisfaction strategy in terms of its impact on customer loyalty (Neslin and Shankar 2009) or profitability (Venkatesan, Kumar, and Ravishanker 2007). It has also shown that these potential benefits depend on product categories (Kushwaha and Shankar 2013). Not surprisingly, given the novelty and dynamism of the Internet, it has been argued that a large number of questions need to be addressed by research
Among these questions are calls for more foundational research, e.g., Verhoef 2012 (p.137) writes “… there is insufficient research into the foundations of multichannel customer management strategies” (Verhoef 2012, p.137). Yadav (2010) has similar complaints of a more general nature.

Most recently, Yadav and Pavlou (2014) aim at remedying this lack of foundational research by proposing a framework based on a classification of computer mediated environments in terms of four types of potential interactions between firms and customers. They identify 42 articles in four leading marketing journals (JM, JMR, MS and JCR) as lying in the domain of firm consumer interactions, which includes channel choice, management and strategy. In their synthesis of this domain they present key findings divided into four broad topic categories: product decisions; integrated marketing communications decisions; pricing decisions; and multichannel management. They also discuss current research and gaps and opportunities in these areas.

In terms of our most fundamental conceptual contribution there is little or no overlap with the papers discussed in this synthesis. The reason is simple. The synthesis above focuses on the product marketed and/or on one or another distribution service provided with the product, especially information provision (through advertising) or search. In contrast, our focus is on the set of distribution services associated with any product marketed not on the product itself. While this includes information as an element in the set, it is neither the sole nor the main focus. Furthermore, we show that a unique feature of channel choice in the Internet Age is that the production, distribution and consumption of each one of a broad set of distribution services identified in the retailing literature (see Betancourt 2004, Kopalle et al 2009) is separable across space and time. No one has shown this result before.
When it comes to the implications of this result at the practical level, however, there is considerable overlap with extant literature in terms of topics although not necessarily in terms of emphasis. This includes some of the main topics identified in the above synthesis as well as others not included. Among the former the overlap is greater with respect to multichannel management than with respect to other issues, but it would also include important aspects of pricing decisions such as delivery costs. Among the latter topics those associated with channel choice in general would be most prominent.

An attractive feature of our analytical framework is that it is a common framework that can be used across online and offline channels, and the variety of formats within these two broad categories. The basis of such a framework can be viewed as the reason for being of distribution channels: namely, satisfying consumer demand for distribution services, matching needs and expectations, while consistent with the feasibility of marketing outputs that govern design and deployment of distribution channels (Coughlan et al. 2006).

Channel design and management involves long-term attention to end-users' demands for the services the channel can offer (Coughlan 2010). These services have been partially covered by different listings of channel attributes in the context of channel attractiveness (Alba et al. 1997) or choice (Blattberg, Kim, and Neslin 2008; Gensler, Leeflang, and Skiera 2012; Valentini, Neslin, and Montaguti 2011; Verhoef, Neslin, and Vroomen 2007). In a B2C context, channel attributes used in the modeling of consumer choice and satisfaction can be associated with retail attributes for which there is a long strand of research in multi-store (Berne, Mugica, and Rivera 2005; Malthouse et al. 2004) or single store analysis (Gómez, McLaughlin, and Wittink 2004). Moreover, this line of research has already linked the satisfaction of consumers
with the distribution services in retail stores and through customer satisfaction with their impact on loyalty (Betancourt et al. 2007).

Extending this distribution services approach to distribution channels provides new insights into channel management and multichannel strategy. Separability also underlies our answers to what’s unique about online channel management and multichannel strategies that involve the Internet. Compared to the service performance effectively delivered to final consumers of offline channels, the advantages and limitations of online services are seen as the primary factor driving the growth of online retail sales (Weitz 2005). They have been identified and analyzed in general terms (Verhoef, Neslin, and Vroomen 2007).

Our second contribution from a conceptual or analytical perspective relies on separability to identify more precisely advantages and limitations of specific distribution services in online channels relative to offline ones. This identification is useful for both online management and the design of multichannel strategies. For instance, when distribution services are effectively separated in time and space in the online channel, there is an impact on the supplied level of the services. When the impact is negative, the lower levels of the separated services may result in a loss of customers and/or sales volume. Hence, it is a basic requirement for distribution channel management that one knows how important is the negative effect of separation and how it may be compensated by adapting and reinforcing online services with complementary policies, which can include reliance on other channels within the firm. The outcome can be a critical competitive tool to succeed in the market.

Mention should also be made of recent literature that has addressed in general the separability issue of services (Keh and Pang 2010). The aim has been to account for evidence that many services are produced partially or to a large extent spatially separate from the
consumer (Vargo and Lusch 2004). This approach, however, considers the whole value that the consumer is purchasing and provides only indirect implications for channel choice, strategy and management. Its feasibility sometimes results from separating aspects of distribution services across space and/or time from production and consumption of the core physical product or service that is being marketed. This feasibility stems from the application of information and communication technologies to service industries (Betancourt and Gautschi 2001). While our approach is also made feasible by these technologies, it focuses on the creation of channel output as a result of how production, distribution and consumption of these services can be separated in time and space in different channels.

Summing up, our main contribution is that a fundamental feature of all online channels is the ability to separate the production, distribution and consumption of all aspects of distribution services across space and time. Our second more practical contribution is the precise identification of maximum levels of all but one of these distribution services in electronic channels relative to brick and mortar ones. Both contributions provide implications for channel choice, strategy and management as a result of demand and supply side consideration which we explore in this paper.

The rest of the discussion is structured into seven sections. The first section develops our basic result on the separability of distribution services across channels. It is followed by a discussion of the main issues of channel choice that we address which brings out an implication of separability in online channels. The third section identifies maximum levels of distribution services provided by online and offline channels and important consequences of these differences in the context of Bucklin’s (1966) approach to channel choice. The fourth section provides general implications of our analysis for empirical work including online channels. A
fifth section provides a substantive discussion of implications of our analysis for channel choice, online channel management and multichannel strategies. Subsequently, another section provides an illustration of two important economic consequence of the Internet. Finally, our seventh section compares similarities and differences between the mail order catalogue channel and the Internet channel.

Separability of Distribution Services Across Channels: Offline/Online

An early statement on the purpose of a channel is as a means to provide what consumers want in terms of marketing outputs at minimal cost (Bucklin 1966). In this view a channel is a mechanism for providing these marketing outputs, which are also referred to in recent literature as distribution services (e.g. Kopalle et al. 2009). Broadly speaking these distribution services can be described as *accessibility of location, information, assortment (breadth and depth), assurance of product delivery (in time and form) and ambiance*. An analysis of how these distribution services affect the demand and supply of retail products in general is available (e.g. Betancourt 2004, Chs. 3 and 4, respectively). From a marketing perspective, it has been shown that distribution services increase the demand for retail products by enhancing customer satisfaction (e.g. Betancourt et al. 2007).

With respect to the above mentioned services, we identify in this section the differences between offline and online channels regarding separation across time and space in the production, distribution and consumption of each of these services. This is done in terms summarized by Table 1, columns 2 and 3. The main piece of information in the body of the table for these two columns is whether or not production, distribution and consumption of a distribution service are undertaken jointly or separately in space and time. Any of these activities
that are undertaken jointly or simultaneously in space and time are indicated by their enclosure in curly brackets, separation is indicated by a slash. The rows indicate the distribution service and the space and time dimension. Column 2 identifies a typical offline channel and column 3 identifies a typical online channel for a manufacturer distributing a product.

(“Insert Table 1 about here”)

Proposition 1: A ‘typical’ online channel allows separation across space and time of production, distribution and consumption for all distribution services.

Succinctly put, this proposition contains the main novel contribution to the literature in this sub-section. Note that all row entries in Table 1 column 3 are exactly the same, i.e., the feature highlighted by the proposition applies to all distribution services and to all types of online channels. In order to show how this potential separation can take place, we describe briefly the operation of a ‘typical’ online store or channel in terms of these services. The online portal can be designed in some studio or office prior to the beginnings of operations. It is in this space and time that each of the distribution services provided in the online portal is produced. This separates production from distribution of the service for each one of them. Once the portal goes live it is placed in cyber space with whatever set of products is made available. At that time all these services are distributed for consumption. Consumption of each of these services occurs wherever a consumer is at the time he or she visits the portal.

Appreciation of what this means, however, requires a comparison with what happens in a typical offline channel as well as where the literature has been in understanding this feature. We begin with the latter issue. An important feature of electronic channels is the role played by ICT in enhancing the feasibility of separating the provision of distribution services or some of its aspects across space and/or time from the production and consumption of the core physical
product or service that is being retailed. This feature has been highlighted in the analysis of service institutions (Betancourt and Gautschi 2001).

Online channels allow service institutions such as retail firms to perform this separation across space and time with respect to each and all distribution services, regardless of whether the nature of the core product sold to end users is a good or a service. That is, online channels make feasible the separation of physical acquisition of the core product or service in space and time from a set of distribution services that normally accompany any retail transaction. The mere existence of online channels in any setting illustrates this feature. For, it implies the separation of distribution from production and consumption of the core product across space and across time.

Ignoring this fundamental characteristic of online channels is relatively common because the literature on services has traditionally emphasized simultaneity of consumption and production (e.g. Bitner et al. 1997). Nonetheless, this emphasis is beginning to change. It has been shown that customers react to service separation across space in different ways depending on the type of core service, e.g., experience versus credence (Keh and Pang 2010). They provide evidence that the higher the level of tangibility of the core service, for example restaurants meals are more tangible than medical services, the greater the perceived benefits of separation of the distribution services from the core service. The article concludes by suggesting the need to explore similar issues with respect to separation over time.

What has been neglected in the literature, however, is that distribution services or marketing outputs also need to be produced and distributed in order to be consumed by customers. Just as in the case of separation between acquisition of the final product and the provision of distribution services, however, the production, distribution and consumption of each
of these distribution services can also be separated across space and time. Proposition 1 illustrates the far more pervasive role of ICT technologies in electronic channels.

If we now think of the ‘typical’ offline channel, we have with respect to accessibility of location that production distribution and consumption of the service takes place jointly in the same location, but not at the same time. Production would be associated with construction of the store at the offline channel site, distribution with the placement of products at the site and consumption with consumer visits to the site. Information, excluding advertising, would be produced, distributed and consumed jointly in space and time at the site. Information through advertising, however, can be produced, distributed and consumed separately in space and time. Incidentally, this illustrates the continuity of current ICT with older information technologies in terms of how the information provision function is performed.

Assortment is produced separately from distribution in space and time wherever and whenever the decisions on what products to make available are made. Distribution takes place at the store jointly with consumption of the assortment. The latter can start only after a particular assortment of products is distributed to the site for sale in the offline channel. Thus, it is joint in space with distribution but separate in time. Assurance of product delivery at the desired time and in the desired form as well as ambiance would be produced separately in space and time during the design stage of the store in the offline channel. Distribution and consumption, however, would have to take place jointly in space for all three services after the placement of products at the site. Consumption of these services by customers in time, however, can happen only upon their visiting the store in the offline channel after these services have been distributed to a particular site.
Some Basic Issues in Channel Choice and Separability.

Consider the possible channel choices of a firm planning to distribute a product or set of products to consumers. The first basic choice is whether to use an internal channel or an external one, or both since the choice need not be mutually exclusive (Coughlan et al. 2006). Important considerations in this choice are the costs of setting up an internal channel, the loss of control over the levels of distribution services associated with providing the products to consumers and the demand characteristics of the market segments reached by the two types of channels (Coughlan et al. 2006, p.332).

A second basic choice is whether or not to set-up a discount channel. Advantages in doing so are the possibility of reaching different market segments and better inventory management; a significant disadvantage in doing so is the potential lowering of brand value associated with the discount channel. One way of preserving brand value is through some differentiation in the characteristics of the products or in their marketing. Indeed, it may even be possible to preserve brand value by differentiating on irrelevant attributes (e.g. Carpenter, Glazer, and Nakamoto 1994). For this purpose the external channel has the intrinsic advantage that, almost by definition through expanded assortment, it loosens the connection between the brand and the channel entailed in the internal channel (Coughlan et al. 2006). In general discount channels can be viewed as mechanisms for reaching low price market segments at a reasonable cost without diminishing brand value or avoiding brand dilution (Carroll 2012). In practice there are internal discount channels (factory outlets) and external ones (discount stores).

The above two basic issues generate four fundamentally different (but not necessarily mutually exclusive) channels for distributing a product. Associated with each one of these four
choices is the possibility of creating the channel as an online channel, which generates eight basic alternatives. Whether or not to set-up the electronic channel in each of the four contexts identified here depends on the impact for each channel of supply (costs) and demand (revenues) considerations incurred by this decision. A main advantage of online channels on the demand side is their ability to reach segments of the market unavailable to or too expensive for offline ones; a main advantage of online channels on the supply side are the substantial savings in providing any level of assortment relative to offline ones.

Just as indicated in Proposition 1, all online channels allow the same potential separation in the production distribution and consumption of the services across space and time for every distribution service. Hence, with respect to the impact of separability on the level of a distribution service that can be provided, online channels are all the same in terms of their maximum or minimum potential. Thus, the latter levels of service for online channels can only differ along the other two dimensions of channel choice: full price versus discount and external channel versus internal, which leads to

Proposition 2: In considering channel choices in terms of the maximum of any distribution services that can be provided in online channels, separability reduces the elements of choice by one dimension.

For instance, in the context just outlined channels differ with respect to three dimensions: price, externality and digitalization. This possibility generates eight possible channel choices \(2^3\). In reality, however, there are at most only two meaningful dimensions of choice over which the eight choices can differ with respect to the potential maximum levels of distribution services that can be provided (since all four online channels are the same with respect to separability). That is, the three dimensions of choice are reduced by one dimension for this purpose. We are
doing follow-up empirical work on the role of distribution services in online channels. This
work will focus on the impact of distribution services on customer satisfaction with private sales
clubs and on their impact on customer satisfaction with multichannel offerings for one particular
firm. Thus, for each of those purposes we can select the particular comparison most convenient
to facilitate empirical work in terms of one or two dimensions, not three.

In the former case we will compare the internal full price online channel with an external
discount online one, and this comparison will differ in two dimensions: price and externality. In
the latter case we will compare the internal full price offline channel and the internal full price
online, and this comparison will only differ in one dimension: digitalization. Incidentally, the
three dimensions of channel choice we discuss are important ones but not necessarily the only
ones that merit attention. They were chosen because they are important and relevant for our
subsequent empirical work. An example of a dimension that can be considered important but we
don’t discuss because we have nothing new to add here or in foreseeable subsequent work is
environmental consequences of channel choice.

**Maximum Levels of Distribution Services: Offline/Online Differences.**

In this section we focus primarily on the impact of demand considerations generated through the
provision of varying maximum levels of distribution services in offline and online channels, while noting
important features of supply side (costs) considerations with respect to accessibility of location and
assortment. These two types of channels have different abilities to satisfy demand by final
consumers for the distribution services that typically accompany provision of a core physical
product or service. Moreover, key fundamental differences in levels of services that can be
provided are related to differences in the separability of providing these distribution services to
consumer across space and/or time discussed in previous sections.
Concerns with specific technological limits of online channels have been identified in the marketing literature. For instance, that there are technological limits of online channels in providing distribution services associated with sensory products at the same level as non-sensory products has been established (Degeratu, Rangaswamy, and Wu 2000). Indeed, this distinction has been viewed as crucial for online channels (Pauwels et al. 2011). We adapt the framework on the demand for distribution services to include these contributions.

What has not been noted before to our knowledge is the extent to which these limits are expanded or reduced as a result of the separability of production, distribution and consumption of distribution services in online channels for each distribution service. We provide this connection in the discussion that follows. In Table 2 we take advantage of the implications of separability brought out in the previous sections by comparing the maximum levels of distribution services across offline and online channels, i.e., a manufacturer who distributes a product through offline stores (column 2 of Table 2) and those of a manufacturer who distributes a product through an online channel (column 3 of Table 2). Of course one can always combine both in a particular setting to generate a multichannel situation, since they need not be mutually exclusive.

(“Insert Table 2 about here”)

An entry in the body of the table for any of these two columns captures the level at which the distribution service can be provided in terms of two categories: high and low. Comparisons between columns 2 and 3 capture differences in the potential level of services provided due to the online/offline feature of the two channels as everything else is the same between the two channels. This comparison provides a useful basis for drawing inferences about online and multichannel management or strategy. They will be the focus of this section.
Following the presentation order in Table 2 we undertake the offline/online comparisons (columns 2 and 3) in terms of the levels of each distribution service provided and identified in Column 1. Consider accessibility of location (Table 2, Row 1), the offline channel provides a low maximum level of this service in comparison to online channels, since the latter can provide the product at the consumer’s home rather than at the store. This is one of the attractive features for consumers of online channels (Lewis, Singh, and Fay 2003). The maximum level of this service that can be provided by online channels is high relative to the offline channel, which is indicated by a single asterisk in the column corresponding to the online channel. This feature allows satisfaction of consumer demand for this service at its maximum level by online channels and it provides flexibility in satisfying market segments with different demands in a multichannel setting.

It must be noted, however, that the supply side yields additional considerations. In the online channels there is usually explicit pricing for the delivery service. The latter entails a shifting of the costs of providing this service to the consumer when compared to the offline channel, where the usual practice is not to price this service explicitly since the consumer normally picks the goods at the store. This cost shifting feature is sometimes ignored in literature that focuses explicitly on online channels but it can’t be ignored in a multichannel context as it provides a basis for managing distinct segments of the market. Moreover, it raises issues about pricing policy in both a single online channel and a multichannel setting.

For instance, Smith and Brynjolfsson (2001) find for books that the impact of shipping costs on choice is much greater than the impact of item price in an online setting. They view the result as difficult to understand. But, the consumer’s ability to substitute his/her time by going to the store provides a simple explanation: demand is more sensitive when there are more
substitutes (Betancourt 2004: p.104). This differential sensitivity provides a price discrimination mechanism in multichannel management.

More generally, cost shifting between consumers and retailers in providing distribution services as well as bundling of distribution services in brick and mortar retailing have been identified as two essential characteristics of retail markets having important economic consequences (Betancourt and Gautschi 1993). With respect to accessibility of location online channels in retail markets affect both essential characteristics in profound ways. In this new context the costs of providing accessibility of location are usually shifted to the consumer and this is the result of cost advantages from unbundling the provision of distribution services across space and time, especially assortment.

Moving on to information provision (Table 2, Row 2), the offline channel offers higher maximum levels of these services for products that have valuable attributes where information needs to be evaluated through the senses (Row 2.1). We identify this level as high. In this setting the maximum level of the distribution service that can be provided by online channels relative to the offline one is low for what are labelled sensory dependent items, which is indicated by a double asterisk in Table 2, Row 2.1, next to the online channel. Incidentally, this is more important for tact, taste and smell (at least with current technology) which favor on site evaluation more than hearing and sight.

Notwithstanding, online channels can offer more detailed information not especially dependent on the senses (Row 2.2) such as variety and prices of features of electronic products or appliances or reviews by experts or other consumers of product performance (e.g. Degeratu, Rangaswamy, and Wu 2000). Similarly social networks such as Facebook or Twitter enable a direct channel of communication with customers having similar tastes that can allow online
channels to build brand recognition more easily for products where heterogeneity of tastes is less of an issue. Thus, online channels can offer a higher maximum level of this service than offline channels for non-sensory items, which we indicate by a single asterisk next to the online channel in this row. We also identify this level as high.

A comparison of assortments between channels (Table 2, Row 3) requires differentiation between breadth (Row 3.1) and depth (Row 3.2). The offline channel provides low breadth and high depth by definition when it is a single type of product brand. The online channel can provide higher levels of both on the basis of costs considerations alone. For, it does not need stores; it only needs warehouses or distribution centers. On this basis alone one can assign a single asterisk to the online one.

Savings associated with storage costs provide one of the greatest sources of differentiation between offline and online channels leading to broader and deeper assortments in the latter channels. Namely, storage costs savings are overwhelmingly favorable to online channels creating the potential for their providing much higher maximum values of this distribution service. An illustration of this feature has been provided in the literature for the case of books. The internal online channel for Barnes and Noble carries 3 million books; a Barnes and Noble superstore carries 175,000 books (Brynjolfsson and Smith 2000). The value to consumers of increased depth provided by the online channel is estimated to be between $700 million and $1 billion in 2000 (Brynjolfsson, Hu, and Smith 2003).

Since the fourth distribution service, assurance of product delivery, has two very distinct elements (desired time and desired form), each one is explicitly represented by different rows in Table 2 (4.1 for time; 4.2 and 4.3 for form). The need for two rows stems from the same source
as in the case of information. That is one needs to differentiate between sensory and non-sensory products in ascertaining whether the product is delivered in the desired form or not.

We begin with assurance of product delivery at the desired time (row 4.1). This service attains a lower maximum value for the online channel than for the offline one, which is indicated with a double asterisk for the online channel. The simple rationale for the double asterisk is that the online channel can never provide a level of this service comparable to the offline one when the product is in stock. For, in this case the consumer can always acquire the product when desired by going to the store and purchasing it at that time. This feature is useful in designing multichannel management strategies for communicating with consumers relying on either or both channels to deal with out of stock situations.

Considering assurance of product delivery in the desired form (rows 4.2 and 4.3) it is worth noting that information and assurance of product delivery in desired form have one feature in common that leads to joint provision. That is, by providing information you are also providing one aspect of assurance of product delivery in the desired form. Hence, it is not surprising that the maximum level attainable by the online channel for sensory items is low and for non-sensory items is high as in the case of information. The rationale is also simple: the possibilities that what one receives differs from what one expects is far greater for items dependent on the senses when one does not have the opportunity to touch, taste, smell, hear or see them at the store. For items that don’t depend on the senses, however, the advantages in communicating item features cheaply over the Internet are likely to dominate any advantages of actual inspection by the customer at the store. Thus, this is indicated by a double asterisk for the online channel in row 4.2 and a single asterisk for the online channel in row 4.3.
Ambiance (Table 2, row 5) is a difficult distribution service to generalize about for a variety of reasons. First, it can be sensitive to the product or item being distributed. For instance, retailers such as Tiffany’s provide their most expensive products only offline (Zhang et al. 2010). Second, ambiance is especially context dependent with respect to aspects other than the product being distributed. For instance, the consumer’s physical condition or geographic location can matter in ways that even reverse rankings of level of services provided by ambiance. When safety problems or mobility impediments in accessing an offline site are relevant issues for a consumer in his or her purchasing activities, online channels can become more attractive than offline ones as they avoid concerns about these issues.

More generally, ambiance is the one distribution service where it often becomes difficult if not impossible to separate the purely functional aspects of purchase activities from their consumption or utilitarian aspects. Thus, there are no rankings in Table 2, row 5, about relative maximum levels between offline and online channels and the actual evaluations presented about each channel are our judgment for a ‘normal’ setting in which the patronizing of a channel involves primarily a purchasing activity rather than a consumption one and it takes place under conditions where neither safety issues associated with a location or physical impediments of a consumer play a role.

Our theoretical framework has two unambiguous implications with respect to maximum levels of distribution services in the context of channel choice stemming from separability, i.e., Proposition 3A: Online channels provide lower maximum levels of distribution services than offline ones with respect to assurance of product delivery at the desired time as well as information and assurance of product delivery in the desired form for sensory dependent items. Proposition 3B: Online channels provide higher maximum levels than offline ones with respect
to accessibility of location, information and assurance of product delivery in the desired form for non-sensory dependent items as well as assortment breadth and depth.

**Broad Empirical Implications**

Unambiguous implications with respect to limitations of online channels are useful by bringing attention to distribution services requiring special attention if they are to increase demand in an online channel through their impact on customer satisfaction. Moreover, consumers may lower their expectations in what is to be attained in some of these cases. In other cases, however, they may be more sensitive to deviations from expected levels. These considerations stemming from the previous sections are useful for interpreting future empirical work focusing on customer satisfaction with multichannel offerings or with private sales clubs.

Just as indicated in the introduction the levels of distribution services provided by retailers can be viewed as attributes that determine customer satisfaction. In this context, the impact arises as a result of the gap between the levels retailers choose to supply, as perceived by their customers, and the levels these customers want or demand. In turn customer satisfaction affects a variety of performance variables relevant for managerial decision making. For instance, in some settings the focus is on profits (e.g. Anderson and Mittal 2000); in other settings the focus is on retention (e.g. Rust and Zahorik 1993); and there are other less frequently chosen performance variables, (e.g. Tobin’s q by Anderson, Fornell and Mazvancheryl 2004). Whatever the performance variable that is the focus of the analysis, however, our conceptual framework provides a basis for estimating the first link in a chain, the attributes or distribution services-satisfaction link.
Furthermore, when considering the second link in the chain, some of the implications of our conceptual framework stressing separability are useful in guiding empirical work. For instance, the intrinsic limitations of online channels in providing some distribution services direct attention to unusual problems and remedies that arise in the online setting. More specifically, the online setting introduces a level of uncertainty with any transaction that leads to qualitative differences across online/offline channels in their impact on any performance variable. These differences are reminiscent of distinctions between risk and uncertainty in economics. Incidentally, these issues can also have an impact within channels and/or interact with customer satisfaction in determining the performance variable. Three of these issues suggested by the previous sections are: return policies, payment methods and privacy and security policies.

Return or devolution policies are associated with an intrinsically higher level of uncertainty for online channels than for offline ones. To wit, there is no possibility of inspection prior to purchase; and there are considerable lags associated with devolution. Indeed, even governments have recognized this qualitative issue through special consumer protection legislation for online purchases, e.g., goods that have not been seen before purchase or the Direct Marketing Cooling-Off Period (Hall 2011).

Similarly, the issue of fear due to payment form is associated with an intrinsically higher level of uncertainty in the online channels than in the offline one. In the offline channel one can always pay with cash. Separability in the online channels requires payment through the Internet and raises fears about security of financial information. While these fears can be overcome through positive experiences (Frambach, Roest, and Krishnan 2007), for extreme cases the cash payments feasible in the offline store might be lexicographically superior. More generally,
privacy and security policies are also associated with an intrinsically higher level of uncertainty in online channels than in offline ones.

Our conceptual framework brings attention to the need to address this special role of uncertainty in online settings with respect to these three issues in the empirical analyses of any performance variable. It also brings out an important difference between strictly online channels and multi-channel settings. In a multi-channel setting that includes offline and online channels a retailer can always provide the option of returning items or paying at the store; this option is not available in a strictly online channel. Customers with extreme fears about privacy or information security, other than financial ones, in online channels, however, have no option to avoid these fears but exclusive use of an offline channel.

Economic and Managerial Implications

Our propositions have relevant implications at different levels of the three issues raised in the introduction: channel choice strategy, online channel management, and multichannel management. At the channel choice strategy level, Proposition 1 provides a powerful analytical framework to understand the economics underlying the overwhelming advance of online channels as a new technology in ways similar to those identified for services in general (Betancourt and Gautschi 2001, p.178): “Technological change allows the emergence of service institutions that 1) separate primitive economic activities across space and time 2) provide variety and novelty in satisfying given consumption aims 3) redraw the boundaries of various markets.” At the channel choice level the implications of this framework are the basis for understanding 1) the natural predominance of online channels in some markets, 2) the steady gain in competitiveness of online channels in other markets, and 3) the ability of online channels
to reach a substantial number of market segments more effectively than brick and mortar channels.

An important first implication is the role of separability of primitive economic activities in distribution services as a corner stone upon which innovators distributing products exclusively online are able to undercut the dominance of brick and mortar distribution channels. For instance, in Amazon’s case separability of primitive economic activities across space and time in two distribution services, assortment and accessibility of location, played a critical strategic role in the emergence and survival of the new exclusive online format while competing with the existing brick and mortar one. This was accomplished through a substantial lowering of assortment costs in inventory holdings and a shifting of costs of providing accessibility of location to customers through delivery pricing. In both cases separability allowed the provision of substantially higher levels of each distribution service. These levels were far higher than any brick and mortar establishment could offer in the old format and allowed consumers to enjoy much broader and deeper levels of assortment while taking possession of the product at home.

Separability of distribution services also played a critical strategic role for innovators distributing services. In this case, however, the advantages of separability affected all basic distribution services, which are effectively demanded and appreciated by a majority of consumers. As a result online channels have become either the dominant distribution alternative, e.g., travel agencies, or an important one in other service industries, e.g., tourism and entertainment. This intrinsic link between separability of distribution services in online channels and strategic decisions about channel choice applies in principle to all industries. Of course the profitability of exploiting the link and whether to do so as an exclusive online channel or a multi-channel one varies with the industry at any point in time.
A second important implication of our analytical framework at the channel choice level stems from an interaction between the pervasiveness of ICT among households and/or individual consumers and advances in the applications-devices duo. This interaction improves the level of distribution services provided separately in online channels across all economic activities. An example of how these advances have altered the differences in the service level between online and offline formats can be discerned from the comparisons made by Alba et al. (1997) at the initial steps of emergence by the online channels.

Continued progress of applications-devices and/or increasing pervasiveness of ICT lead offline channels to yield market share, since any gaps with levels of distribution services provided separately by online channels are diminished by these improvements and their market penetration. While the upper limit of the market share of online channels is dependent on the consumer-product interaction for which the distribution services are designed and delivered, one would expect a future scenario in which the online-offline multichannel operation becomes unavoidable in most instances.

Beyond the previous two broad strategic implications, our framework is also useful in bringing out a third more narrow strategic implication at the channel choice level, i.e., for segmentation in markets where the online operation does not have a natural predominance. This would be the case of the apparel market where online channels seem to face severe obstacles, due to its needs for customized fitting. For instance, in the case of the sample sales segment, the advantages of separability are such that they allow emergence of strictly online formats such as private sales clubs in segments previously dominated by brick and mortar channels.

Online private sales sites are similar to the traditional sample sales in that sites are organized utilizing a limited time format (Martinez and Kim 2012), but have clear advantages
both for the manufacturer and for themselves relative to the sample sales sites. Thus, sample sales channels in the apparel sector are migrating to the online alternative. For manufacturers, separability allows them to control exposure of the brand in terms of time, accessibility, and ambiance while disposing of stocks. In this scenario, the discretionary feature provided by separability in online channels becomes a critical differentiation tool for pursuing competitive advantages. For online sites, including private sales clubs, separability of accessibility of location from the core product or service substantially enlarges the potential market in terms of the number of consumers reached and provides a competitive advantage over traditional sample sales sites that fail to become multichannel firms by going online.

At the channel management level, a straightforward implication of Proposition 3A and 3B is as a practical guide for managing distribution services in online channels. For, it identifies those distribution services where online channels have a natural advantage or a natural disadvantage. A second practical implication of these propositions follows from their interaction with the broad implications for empirical analysis mentioned in the previous section. By providing a basis for empirical analysis of customer satisfaction in a multichannel context or in a strictly online context, one can identify which of the distribution services identified here matter for customer satisfaction as well as how much in specific contexts. One can also assess which of the three online policies that have an intrinsic impact in raising uncertainty for customers matter for any specific performance variable of interest to managers.

At the multichannel strategy level, Propositions 3A and 3B provide the basis for a final implication. Differences in levels of distribution services attainable through online and offline channels can become the core of channel design in a multichannel customer strategy that
generates synergies between these channels. Thereby, it can lead to a mix of distribution services in both types of channels that result in an effective competitive advantage.

Synergies are attained by empowering customers to obtain an efficient use of distribution services provided by a firm’s online and brick and mortar channels. For instance, when customers can alternate their purchases between online and brick and mortar channels, a multichannel strategy can be devised to increase the firm’s share of the consumer’s wallet by using one channel to supplement the service level of the other one. That is, the strategy can be oriented towards the reinforcement of subsequent purchases in the firm’s channels.

For example, in apparel shopping, when customers have a recent experience browsing or purchasing at the physical store, they might have acquired a precise idea about desirable garments, styles, and sizes. This experience mitigates limitations on assurance of product delivery in the desired form associated with the online channel in subsequent shopping experiences. An example where these considerations were important is provided by Inditex’s decision to open Zara’s online channel (Web document 2009).

Similarly, when customers are shopping at one specific channel, a multichannel strategy can generate synergies by harmonizing distribution services among the firm’s channels. For instance, harmonization lets customers combine services in ways that mitigate a channel’s inability to provide a high level of a particular distributions service. For example, in grocery retailing an online channel may allow delivery of a shopping basket to any of the retail stores that customers can patronize in one area. Hence, consumers can visit the store most accessible to them and attain high levels of assurance of product delivery in the desired form by resolving any doubts or discrepancies for sensorial products, e.g., produce, at a store in their neighborhood.
Two Important Economic Consequences of Online Retailing: An Illustration

We illustrate with a simple example how the separability of two distribution services online modifies the costs of providing a given set of products to any type of representative consumer in as general a setting as possible. The costs of providing a given level of output and distribution services in an offline setting can be described, in general, for any brick and mortar store in terms of a cost function of the following form

\[ C_i (B&M) = C_i (v_i, Q_i, D_i), \]  

(1)

where \( C \) is a cost function that depends on input prices \( (v) \) faced by store \( i \). \( Q_i \) is an index of the quantity of items sold by the store in a given calendar period and \( D_i \) is an index of the level of distribution services provided by the store over this period. This equation provides a standard description of cost functions in economics that one can find in any microeconomics textbook, e.g., Deaton and Muellbauer (1980).

To account for the multi-establishment nature of retail firms, one can modify equation (1) by adding the costs of \( j \) warehouses and/or distribution centers, \( C_j (u_j, Q_j, D_j), (j < i) \), facing \( u_j \) prices and producing \( Q_j \) levels of outputs and \( D_j \) levels of distribution services. These warehouses and their contiguous locations have played a critical role in Wal-Mart’s expansion, Holmes (2011). The costs of every warehouse and those of every store will be assumed to be the same, for simplicity, but they can differ between warehouses and stores. This generates the following cost function for the brick and mortar retailer

\[ C (B&M) = \Sigma_i C_i (v, X, Q_i, D_i) + \Sigma_j C_j (u_j, Q_j, D_j). \]  

(2)

For any given level of output and assortment per store, the costs for this retailer after becoming an exclusively online retailer would be given by the following cost function.
\[ C \text{ (Online)} = \sum_j C_j (u_j, Q_j, D_j) + F(\text{online}), \]  

where \( F(\text{online}) \) are the primarily fixed costs of setting up the website and the logistics of delivery, including its pricing. The greater the number of stores that can be satisfied by a given distribution center the greater the savings from an exclusively online operation satisfying the same number of customers as before. That is, the greater the savings from the first term in (2) going to zero in the online setting.

More generally, the greater economies of scale in the cost functions of any warehouse and the less online costs increase as a result of providing broader and deeper assortments the more attractive it is to expand assortments as well as to reach an increasing number of customers relative to the offline operation. In the brick and mortar case expanding assortments increases both each \( C_i \) and each \( C_j \). Furthermore, increasing the number of customers requires adding stores \( (C_i) \) and at some point also adding warehouses \( (C_j) \). Part of the reason for the larger cost increases of the brick and mortar stores is that they share with customers the costs of providing accessibility of location by adding stores closer to where they are. The online operation can shift these costs entirely to the customer through delivery pricing and attain higher accessibility of location through home delivery, for example. Hence, online retailing through separability modifies two essential characteristics of brick and mortar retailing by unbundling distribution services, shifting the costs of providing accessibility of location to consumers, and as a result enjoying substantial costs savings in providing much higher levels of assortment.

**A Comparison: Mail Order Houses and Catalogues**

Non-store retailers have been around for a long time. For instance, mail order houses were one of the most prominent business innovations associated with 19th century retailing (Chandler
This retail format resembles online retailing as a channel in a number of ways, which makes a comparison of similarities and differences between the two formats an interesting question. It facilitates the comparison to proceed in terms of the same set of distribution services we have used before. Fortunately, this task is simplified by a contribution that focused on comparing this organizational form to retail stores (Michael 1994). It views these two organizational forms as “…the two dominant retailing institutions in the United States during 1910-1940…” (p.269).

Michael identifies two of the distribution services we have discussed as basic functions of a channel. What we call accessibility of location he calls transportation and what we call assurance of product delivery in the desired form he calls ‘breaking bulk’. He views the mail order channel from the point of view of a merchant seeking to distribute his product as eliminating a number of costly transactions by shipping in bulk to a centralized inventory where it is broken down into smaller units and shipped directly to customers at home relying on the railways and the mail. By contrast, a merchant relying on retail stores as a channel has to break bulk twice: at the factory and at the retail store. He posits a transportation cost technology that is linear in distance but concave in packages. The resulting model shows that at low population densities the mail order channel has a cost advantage whereas at high population densities the retail store channel acquires the cost advantage. It also generates the result that as consumer’s transaction costs change the retail channel costs are affected but the mail order costs are not.

Both of these features also apply to online retailing. It has a cost advantage over retail stores in reaching difficult to reach or low population density areas, since the consumer can be made to bear the cost of delivery. It also benefits relative to retail stores when consumer transaction costs increase either as a result of traffic congestion or increases in the opportunity
cost of time for purchase activities. Michael’s model assumes assortment is the same for both channels and is silent on the role of this distribution service in channel choice. Nonetheless, his simple model identifies clearly cost implications for channel choice in the Internet age of the two distribution services it highlights.

An interesting feature of his analysis is an assessment of the two channels with respect to information. It is not explicitly included into the above model. He classifies goods into categories that can be used to differentiate the two channels. One category are goods having attributes that can be determined by description in words or pictures; another category are goods that can be determined by inspection through physical handling. These categories correspond to the non-sensory and sensory dependent items, respectively, that are commonly used in the marketing literature for online retailing. He finds the mail order channel to have an advantage for the former type of good, which was reinforced by the significantly lower costs of providing descriptive information for these goods through catalogues rather than through stores. As a consequence he argues mail order specialized in providing this category of goods. In the case of online retailing, there is a similar advantage but the specialization is far less complete.

Finally, he generates three propositions based on the above model and analysis which are confirmed by econometric analyses of times series and cross-section data on sales from two mail order firms of the period: Sears and Spiegel. More interesting from the point of view of a comparison with online retailing, however, is his concluding discussion on the evolution of the mail order channel. In the 1920’s it saw two firms operating exclusively in the mail order channel that controlled over 60% of channel sales, Sears and Montgomery Ward, open retail stores. He calls this multi-channel evolution “… one of the great transformations of American business history…” (p.284). We are also observing a multi-channel evolution in the 21st
century, but in the opposite direction: namely, brick and mortar retailers are adding online
channels.

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TABLES

TABLE 1. Summary of Separation Across Channels

<table>
<thead>
<tr>
<th>Services</th>
<th>OFFLINE</th>
<th>ONLINE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Space</td>
<td>Time</td>
</tr>
<tr>
<td>Accessibility of Location</td>
<td>{P,D,C}</td>
<td>P/D/C</td>
</tr>
<tr>
<td>Information*</td>
<td>{P,D,C}</td>
<td>(P,D,C)</td>
</tr>
<tr>
<td>Assortment</td>
<td>P/{D,C}</td>
<td>P/D/C</td>
</tr>
<tr>
<td>Assurance of product delivery</td>
<td>P/{D,C}</td>
<td>P/D/C</td>
</tr>
<tr>
<td>Ambience</td>
<td>P/{D,C}</td>
<td>P/D/C</td>
</tr>
<tr>
<td>Advertising</td>
<td>P/D/C</td>
<td>P/D/C</td>
</tr>
</tbody>
</table>

* Excluding advertising

TABLE 2. Potential Levels of DS in Different Channels: Offline/Online

<table>
<thead>
<tr>
<th>OFFLINE</th>
<th>ONLINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility of location</td>
<td>Low</td>
</tr>
<tr>
<td>Information</td>
<td></td>
</tr>
<tr>
<td>Sensory items</td>
<td>High</td>
</tr>
<tr>
<td>Non-sensory items</td>
<td>Low</td>
</tr>
<tr>
<td>Assortment:</td>
<td></td>
</tr>
<tr>
<td>Breadth</td>
<td>Low</td>
</tr>
<tr>
<td>Depth</td>
<td>Low</td>
</tr>
<tr>
<td>Assurance of product delivery:</td>
<td></td>
</tr>
<tr>
<td>At the desired time</td>
<td>High</td>
</tr>
<tr>
<td>In desired form sensory</td>
<td>High</td>
</tr>
<tr>
<td>In desired form non-sensory</td>
<td>Low</td>
</tr>
<tr>
<td>Ambiance (‘normal’ setting)</td>
<td>High</td>
</tr>
</tbody>
</table>

* indicates that online channel attains substantially higher maximum level of this distribution service relative to offline channel
** indicates that online channel attains substantially lower maximum level of this distribution service relative to offline channel.