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METHODOLOGICAL PAPER

A descriptive model of the consumer co-production process

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Abstract
Purpose This article presents a model of consumer engagement in co-production.
Method A theoretical paper which develops a five-stage dynamic model of consumer involvement in co-production.
Results and Conclusions The article discusses the basic linkages between co-production and customization and presents co-production as a dynamic process which is composed of five distinct stages. It also specifies five distinct phases of the production activity chain where consumers can become involved in co-production. The model offers researchers an analytical framework conducive for more advanced studies of the phenomenon from both descriptive and analytical points of view. Managers can use it to segment consumers according to their tendencies to engage in co-production and suggests bases for developing corresponding offers of co-production possibilities which focus on diverse consumer benefits.

Keywords Co-production · Co-creation · Customization · Risk reduction · Activity chains

Introduction

Co-production has recently become a major topic of discussion in marketing literature, for example articles by Benpaudi and Leone (2003), Solveig (1996), Lusch and Vargo(2006a, 2006b), Prahalad et al. (2000), Pralahad and Ramaswamy(2004) and Vargo and Lusch (2004).

In spite of the increased interest in co-production, several issues remain outstanding. First, there is a clear need to understand the linkages between the values created in consumption acts when co-creation of values takes place (Lusch and Vargo(2006a) and the production operations involved in the creation of what Lusch and Vargo (2006b) describe as "the core offering itself" and which they define as the domains where co-production occurs. Though Lusch and Vargo define them as two separate constructs, they acknowledge that the two are linked as "nested concepts with the co-production being a subordinate concept to that of co-creation of value". Consumption activities are not separate from production activities but connected to them. Second, many studies of co-production focus on the implications of co-production for the supplying firms, discussing its contribution to firms' productivity gains (Mills et al. 1983), or to their business strategies (Lehman 2006; Lambert and Garcia-Dastugue (2006). Researchers studying customer participation in provision of services have even defined consumers as "partial employees" of the service providers and have discussed ways of managing such consumers (Bitner et al. 1997; Kelley et al. 1990). However, one must recognize that co-production is an explicit result of decision making by consumers reflecting their own preferences.

While some consumers may decide to adopt modes of co-production, such as using self service in gasoline stations, others may not. A deeper understanding of how consumers decide whether or not to engage in co-production, and the corresponding decision processes is imperative. Thirdly, even a random review reveals that co-production is prevalent in some product categories and in some consumption situations but not in others. Thus, it

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can be found among consumers purchasing computers or travel services but is less notable in the purchase of detergents or of branded luxury goods, such as cosmetics or whiskey. Therefore, a greater in-depth understanding of the various conditions which are conducive for generating co-producing activities is called for. Fourth, consumers are rational decision makers who want to gain maximum benefits. The decision to engage in co-production activities is not different from other decisions. Such decision making can be better understood when clarifying the benefits which co-production can generate for consumers. Fifth, there is a need to recognize that co-production is a dynamic process with several distinct stages which must be identified.

The purpose of this article is to provide an integrative framework of analysis of co-production that addresses these issues. The article first discusses several important issues in the study of co-production, and then it presents a framework and its components, explains their definitions and impact and, finally, discusses some of the implications. The model has the potential to contribute in both the theoretical and managerial realms. It presents a coherent analytical framework which can help managers and researchers to better comprehend co-production situations and analyze them as distinct consumer-led strategies. The article also links this specific and relatively novel aspect of consumer behavior to several theoretical developments in marketing, and shows its connection to diverse novel conceptual frameworks. Managers can use the model to design appropriate marketing strategies and, specifically, to segment market segments according to their propensities to engage in co-production, to select appropriate segments, and to design appropriate different marketing offers of co-production opportunities.

The meaning of co-production

This study accepts the differentiation made by Lusch and Vargo (2006b) between co-creation of value, which takes place in the usage/consumption stage, and co-production, which may take place within the production process which precedes the usage stage. The production process is defined as a chain of sequential bundles of operational activities linked in a network chain (Achrol and Kotler (1999) with each set of activities leading to the next (Porter 1985), and which is defined as the *activity network chain*. The various activities involve intellectual work of initiating and designing, resource aggregating and processing activities which lead to creation of outputs that serve as platforms for delivery of values used/consumed later on, up till ensuring delivery and executing use (consumption). Co-production implies that consumers participate in the performance of the various activities performed in one or more of these stages.

Co-production encompasses all cooperation formats between consumers and production partners. Thus, consumers may cooperate with public and government bodies in providing education, maintaining clean environments and providing local security (Whitaker 1980). They may also cooperate with other consumers, accessing their resources (as is the case when downloading music from their computers), or co-working to create joint intellectual outputs, such as a collaborative event calendar, in which individuals enter events they attend and comment about them (http://www.upcoming.org), or the open encyclopedia (Wikipedia) written and edited by the users themselves (http://www.wikipedia.org).

Co-production and customization

Pralahad and Ramaswamy (2004) propose that, in co-creating values, "the co-creation experience depends highly on individuals. Each person's uniqueness affects the co-creation process". Co-production is thus directly linked to *customization*. This way, co-production helps to fragment market offers and assists the operation of one-to-one marketing. It follows that co-production should be viewed as being concerned with the expansion of the choices facing consumers. Consumers who buy computers from the Dell Company may create unique configurations of PCs by their choice of component parts. The BTO (Build to Order) system of ordering cars allows consumers to order the cars they want (Oracle 2004). The Learning Co., which develops educational software for children, adapts the level of difficulty and tasks to the skills of each child using it (Pralahad and Ramaswamy 2004).

An alternative strategy for achieving customization is by *information provision*, whereby consumers first convey relevant information about their preferences to firms which then proceed to produce the relevant products according to these specifications and dispatch them to the customers who have provided this information. Such a strategy demands only marginal use of consumer operand and operant resources (Arnould et al. 2006), does not require that consumers learn new skills, nor does it expose them to the risks of poor self-performance in the process. A major drawback of this strategy is that it exposes consumers to the risk of *mismatching*, i.e., of receiving products that do not fit their preferences. Information about consumer preferences may not be transmitted correctly due to "noise" in the communication system (Duncan and Moriarty 1998) or due to the high costs of transmitting more accurate information. Agency theory suggests that cases of mismatching may reflect the potentially high costs of *monitoring* the actual execution by the various firms engaged in the production and of "*policing*", namely, rewarding or punishing them for their performance (Axelrod 1984; Bergen et al. 1992). Finally, the

transaction costs economy theory suggests that the transfer of requests from consumers to producers may often encounter high transaction costs associated with the structural and behavioral characteristics of the interactions between consumers and producers (Williamson 1979 and 1985; Stern and Reve 1980; Heide 1994). These disadvantages encourage the use of the co-production strategy as a vehicle for achieving customization.

The model

The co-production process includes five distinct stages as follows: (1) *development of antecedent conditions*, (2) *development of motivations* which prompt consumers to engage in co-production, (3) *calculation of the co-production cost-benefits*, (4) *activation* when consumers become engaged in the actual performance of the co-producing activities, (5) *generation of outputs and evaluation of the results of the process*.

First stage: Emergence of antecedent conditions

In order that consumers will be willing to engage in co-production, certain prior conditions should be established. Those include *macro-environmental conditions*, *consumer linked*, *product linked* and *situationally linked* conditions.

Macro environmental conditions

These encompass *economic*, *cultural* and *technological* preconditions. *Economic preconditions* refer to the stage of economic development reached by pertinent societies. Co-production takes place mainly in mature economies and not in emerging or in growth markets (Johansson 2006). In *emerging markets*, when societies are at an early stage of economic development, the focus is on consumption of basic products required for survival and consumers are less concerned with customizing these products according to specific idiosyncrasies. In *growth economies* the process of economic growth sets in motion developments which create mass markets of consumers who strive to improve their standard of living by purchasing low cost, mass produced and standardized consumer goods (Levitt 1983; Arnold 2004; Achrol and Kotler 2006). Only once consumers reach the level of maturity and higher per capita incomes of the *mature markets* of Western countries and of some East Asian countries, they are ready to attach greater value to customization.

Cultural preconditions The consumer culture theory (CCT) points to the importance of the socio-cultural, symbolic, and ideological aspects of consumption (Arnould and Thompson 2005: Arnould et al. 2006). It proposes that consumers use a variety of operand resources (material objects on which consumers can operate) and operant resources (competencies which consumers can use, which constitute more virtual resources), each linked to a cultural schema that helps consumers to enact their social life (Arnould et al. 2006).

In the mature economies of Western Europe, North America and the Far East, several broad changes in consumer culture encourage customization and co-production. One such change is the shifting of a greater part of consumers' expenditures from purchasing of goods to paying for the performance of various services in communications, health maintenance, education, entertainment, etc. (Lovelock 1991; Gronroos 1994; Palmer 2005). This trend converges with an increased demand for *experiences* rather than for products as major avenues for need satisfaction. While the notion that consumers seek experiences is not new (Holbrook and Hirschman 1982; Holbrook 2006), the emphasis on experience-seeking is growing (Arnould and Price 1993; Mano and Oliver 1993; Pine and Gilmore 1998; Pine and Gilmore 1999; Schmitt 1999). Demand for experiences requires individual tailoring and that increases the applicability of co-production. Furthermore, there is a growing recognition that *creativity* is an important way to generate personal satisfaction (Hirschman 1980). Many self experiential consumption services, such as performing arts, writing, painting, sports and physical exercise, require that the consumers themselves be involved in the creative tasks (Rahn 1989).

Consumers also shift the format of their interactions with the providers of products from a single exchange transaction type to a relationship type of exchange over time (Donaldson and O'Toole 2002; Gronroos 1990). Relationships define exchanges as open systems where value is created in the process of the interaction itself (Gronroos 1990; Selnes and Johnson 2004). Therefore, in these situations, the potential for a more direct involvement of the consumer in production activities is greater.

Technological changes Prahalad et al. (2000) claim that "spurred by the web, digitization of content, high speed wired and wireless networks and new consumer devices and appliances, there is an unprecedented number of touch-points between the firm and the end-consumer". The major contribution of technological changes is their ability to allow rapid and low cost interactions between consumers and suppliers and among consumers themselves leading to tremendous reduction in the economic costs, time and effort required for consumer participation in value creation (Walker et al. 2006). Thus, according to Prahalad et al. (2000), in 1999, over 70% of auto sales in the US were made by consumers who researched their purchases over

the Internet. In a similar vein, Rust and Lemon (2001) argue that the "advent of the Internet offers true interactivity with the consumer, customer-specific, situational personalization, and the opportunity for real-time adjustments to a firm's offering to customers, as well as changes in consumer expectations regarding firm service strategies that flow from these developments". All this implies that co-production will flourish with the growth of new types of communications such as blog writing, production of home videos for wide broadcasting (You Tube for example), e-distribution (E-Bay for example) and use of VOD (video on demand).

Consumer linked factors

Some consumers are more prone to engage in co-production than others, the major reason being that co-production requires the use of specific "consumer's operand and operant resources" (Arnould et al. 2006). A similar argument is put forward by Lusch et al. (1992) when they discuss household *resource capacities* that may impact consumers' preference for internalizing activities within the household. For example, possession of a car would affect a consumer's willingness to engage in co-production activities that require hauling products over some distance. More affluent consumers with access to capital might be more willing to finance inventories than less affluent consumers.

A major resource that consumers use in co-production is their time. While the amount of time used in each case depends on the tasks involved and the dexterity of the consumers in the execution of the relevant tasks, time is still a scarce resource for all individuals and its use in co-production reflects economic, social and psychological costs for the consumers (Etgar 2006). Consumers who enjoy more discretionary time will be more prone to engage in co-production.

Access to a variety of skills linked to the specific tasks at hand and defined as expertise *capacity* (Lusch et al. 1992) or *customer efficiency* (Xue and Harker 2002) can facilitate co-production. Pralahad and Ramaswamy (2004) propose that many skills improve through a process of *evolvability*, namely by repeated use, indicating the importance of experience in developing such skills. Besides technical skills, co-production requires access to several psychological skills. Because co-production implies participation in networking structures, it requires possession of *coordinative skills* which involve knowledge of how to coordinate activities, overcome cultural differences between partners, motivate partners, and sidestep potential conflict-generating situations (Palmer 2005; Gutterman 2002). An important component in the arsenal of such skills is *dialogical capability*, defined by Ballantyne and Varey (2006) as a process of learning together rather than just an exchange of information. Pralahad and Ramaswamy (2004) suggest that access to *computer and electronic communications technology based skills* are today crucial for dialogs with firms and other partners. Consumers who are more skilled in them are therefore more likely to engage in co-production. This has obvious macro implications, as it implies that the propensity to engage in co-production will be higher in societies with higher levels of general education and computer linked communications and in societies where there are fewer social or political barriers to the use of such technologies.

Product linked factors

Even a cursory review of various product categories suggests that co-production is not evenly distributed among all product groups. This leads to a conclusion that co-production is linked to the characteristics of the relevant products themselves. As the major motivation for engaging in co-production is to achieve customization, co-production will take place mainly in those product categories where there are *large and noticeable differences of product attributes among different items or brands*, whether physical or perceived. Products such as washing machines, with a limited number of possible permutations of relevant product characteristics, will offer limited incentives for consumers to attempt to achieve customization and therefore to invest in co-production. On the other hand, the technological permutations in the composition of a personal computer (PC) are much greater and expand continuously. Therefore, consumers' involvement in the planning of the configuration of a computer they order is highly beneficial (Hartley 2005 http://www.dell.com).

This raises another issue; the *importance of such differences to the consumers*. When these differences are perceived to be of little importance (such as in the production of salt) consumers will not be willing to invest resources for creating customization. On the other hand, consumers will be willing to be more involved in co-production of products where potential differences have greater impact, such as better equipped computers or a better planned summer trip to Europe.

A third important factor is the existence of *powerful brands*. Co-production is used to adjust supply to the idiosyncrasies of demand. However, in many product categories, such as designer clothing, clothing accessories and cosmetics, manufacturers develop brand *personalities* to convince consumers that a specific product attribute mix fits best the consumers' needs (Ries and Trout 2000; Aaker 1996). Consumers will then not be interested in changing or individualizing a famous brand out of fear of losing its major advantage—the social or the psychological benefits of using or wearing a famous brand. Few consumers will

want to adjust and change a Louis Vuitton bag, a bottle of Glenmorangie whisky, or an Armani tie.

Situational factors

The fourth group of prerequisites refers to the nature and the conditions of the interactions consumers may find in their cooperative operations with their production partners and their impact on the quality of such cooperation. In general, consumers will tend to participate more in activity networks when the nature of consumer-partner interactions and the behavior of partners facilitate such cooperation. One major factor is the extent of *management's belief* in the advantages of such relationships with consumers (Venkatraman and Subramaniam 2002). Consumers will also tend to engage more in co-production when several emotional preconditions are realized. Geyskens et al. (1998 and Lusch et al. (1992) point out the importance of *trust*, i.e. the ability of consumers to believe that their production partners will perform the required tasks and activities as promised, and will provide consumers with the outcomes that were requested. For example, consumers who order airline tickets over the Internet need to trust that the e-tickets will be honored when they board the plane. Williamson (1979, 1985) and John (1984) refer to a similar construct of *lack of opportunistic behavior*, namely, consumers' expectations that their partners may not terminate their cooperation to pursue better offers or attempt to change the conditions of the exchange. Again, consumers will avoid purchasing airline tickets over the Internet if they suspect that the supplier may overbook and sell their seats to other customers. In a similar vein, Gundlach et al. (1995) point out the importance of *evidence of long run commitment* by the business partners, i.e. their willingness to continue the cooperation over time, as a major prerequisite.

Research into the successes and failures of business joint ventures (Gutterman 2002) also points to the importance of *cultural compatibility* between consumers and the non-consumer partners, a term that refers to the values, norms, and patterns of behavior which all participants in the cooperative effort bring along. Differences in any of these may lead to conflicts over time among participants and eventually may lead to a possible dissolution of the cooperation effort.

Successful cooperation between consumers and production partners depends also on personality dynamics. It involves personalities and is somewhat similar to the relationship between a customer and a service provider. Research into customer participation in service provision carried out by Gronroos (1983) and Kelley et al. (1990) shows the importance of the concept of *empathy*. Consumers will tend to engage more in co-production when they expect to find empathetic partners (Gronroos 1983).

Second stage—development of the dominant logic and of the motivation drives

Consumers engage in co-production to achieve preset goals which reflect diverse consumer values and serve as motivational forces—psychological drives that encourage consumers to participate in such activities. A list of potentially relevant drives is developed from economic and behavioral models of consumer behavior. It includes *economic*, *psychological* and *social drives*. The rest of this section is devoted to their discussion.

Economic drives are defined by Lusch et al. (1992) as *economic rewards*. Etgar (2006) suggests that *cost reduction* of the performance of a given activity can be a major motivator. Cost reduction may be achieved by replacing utilization of the more expensive resources of the non-consumer partners with the use of the lower cost resources of the consumers. For example, consumers may purchase airline tickets themselves directly through Internet-based web sites using their own discretionary time slots instead of 'using' the more expensive working hours of travel agents for the performance of the same activity.

Consumers may decide to engage in co-production also in order to *reduce risks* associated with receiving inappropriate products (Taylor 1974; Dowling and Staelin 1994). Perceived risks include *physical*, *financial*, *psychological*, *performance*, *social*, and *time-related* risks (Stone and Gronhaug 1993). Physical risk refers to the possibility of bodily harm to the consumer, as when an allergic person receives medicines with allergy-causing components. Financial or economic risks are defined as the danger of a net financial loss to a customer, including the possibility that the product received may need to be repaired or left unused. Performance risks define potential losses incurred when a brand or a product does not perform as expected and thus not deliver the benefits promised. This may happen for example, when a newly purchased computer does not perform well with a consequent damage to files. Psychological and social risks refer to instances where product consumption may harm the consumers' self-esteem or how they are perceived by others ("will the restaurant I picked for the birthday party suit the taste of the picky mother-in-law?"). Time risk suggests that the product purchased may deteriorate over time. To these could be added the risk of *lack of consistency* (the fear that the quality of the output might change from one purchasing event to another).

Also, many consumers may dislike the high levels of anxiety that delivery uncertainties bring to their psyche and use risk reducing mechanisms throughout a wide spectrum in their behavior (Bauer 1967; Dowling and Staelin 1994). Co-production can reduce such risks by enabling direct control over the production process. However, at the same

time, co-production can create its own risks. Those might reflect the dangers of misperformance of relevant tasks by the consumer due to lack of the required skills, the threats of potential conflicts with the performance partners, or dangers of legal entanglements and complications. Thus, consumers may botch the plumbing or carpentry in their homes and find out later on that they have to hire professionals to repair the work, creating both performance and financial risks as well as harming their self-esteem.

Level of customization and differentiation achieved As detailed above, a primary goal of co-production is customization. Consumers will therefore strive to make products match their preferences as closely as possible, subject to the obvious budgetary and physical constraints. In some consumption situations, this may imply that consumers will want delivery of products which are distinctly different from those delivered to other consumers. Thus, teenagers desire unique hairdos or a dress no one else will wear at the school prom. In such cases, the actual degree of customization achieved will therefore always be compared to this ideal level of differentiation.

Psychological motivations

Consumers may decide to participate in production activities also because the very act of participation and performance of the relevant tasks can yield experiences that provide psychological benefits independently of the nature of the goods or services created in the process. To create a list of such potential benefits, this study has relied on research into interpretive marketing and on consumer culture theory. It has specifically drawn from Holbrook's list of *consumer values* (Holbrook 2006), the works of Lusch et al. (1992), Thompson et al. (1989), Thompson et al. (1994), Benpaudi and Leone (2003), Holbrook and Hirschman (1982) and on the works of consumer culture theorists summarized by Arnould and Thompson (2005).

Intrinsic values Holbrook (2006) suggests that consumers' values could be divided into two types: intrinsic and extrinsic. Intrinsic values imply that an experience is appreciated for its own sake, while extrinsic values serve as means to an end. Among potential intrinsic values he includes a desire for *play* and fun which is defined as (p.214) "an experience enjoyed by oneself and actively pursued for its own sake", and a search for *aesthetics* (when a co-productive experience ensures a self-oriented appreciation of the aesthetic value of such activity). He also lists (p.214) a drive for *ethics* (activities pursued for their own ethical values, such as growing one's own vegetables), and a drive for *spirituality* (activities pursued for reasons of spiritual values). To this list one can add the value placed on *excitement and variety seeking* (McAlister and Pessemier 1982; Kahn 1995; Ratner et al. 1999). Consumers may want to participate in various production activities also simply because these offer *deviation* from their daily routines. Thus, office workers who do carpentry work in their homes may appreciate the exercise.

Extrinsic values Co-production may offer consumers opportunities to search for values such as *excellence*, where an experience is appreciated for its capacity to enable consumers to perform well (Holbrook 2006), and for *autonomy* defined as "a situation that fosters choices and a sense of freedom" (Knee and Zuckerman 1996). Co-production may be attractive if it allows consumers to learn and master new skills and techniques posing new challenges not unlike solving crossword puzzles (Hirschman 1980). Consumers may also decide to participate in production activities to satisfy their need for *self expression and uniqueness* (Tian et al. 2001), for exercising and using their *personal inherent capabilities* not exercised in their daily routines, and to realize hidden fantasies (Holbrook and Hirschman 1982). A similar approach is suggested by Arnould and Thompson (2005), who propose that, in post-modern culture, individuals are engaged in a constant task of negotiating meanings from lived and mediated experience as they endeavor to construct and maintain their identity. As part of the resources for this task they utilize the symbolic meanings of their experiences. It is presumed that co-production experiences can be a pre-eminent source of mythic and symbolic resources through which people construct narratives of identity. For example, an accountant may be able to show his true identity as a cook by preparing a gourmet dinner for friends. Lusch et al. (1992) offer the additional psychic benefits of *enjoyment* and *self-confidence* which stem from the psychic reward of "being able to get things done".

A more generic but interesting psychological motivation driver can be identified in the *self-serving-bias theory* (Benpaudi and Leone 2003) which is based on attribution research and refers to (p.27) "a person's tendency to claim more responsibility than a partner for success and less responsibility for failure in a situation in which an outcome is produced jointly". In essence, it suggests that individuals gain psychological remunerations for participation in any activity: the very act of participation in joint creation situations with partners rewards consumers. The issue of whether the payoff is positive or negative and leads to consumer satisfaction or dissatisfaction depends very much on the quality of the outcome. Benpaudi and Leone (2003) have also shown that self-serving-bias is lower when consumers have a

choice in whether or not to participate in the performance of a specific activity.

Social benefits

Co-production can also offer social benefits. Holbrook (2006) suggests *that seeking of status and social esteem* may be an important motivation, an example being the case of teenagers who gain status among their peers if they fix their own cars. Co-production can also provide consumers with skills of maintaining communications and dialog with their co-production partners (see the *dialogue* concept developed by Ballantyne and Varey 2006). Participation in activity networks also creates *social contact values*—the enjoyment of sharing some activities with persons of similar interests and desires (Berthon and John 2006). Co-production allows consumers to join actual or virtual *co-production communities* and social networks (Achrol and Kotler 2006) with co-producers and other consumers. Similar to *brand communities*, (Muniz and O'Guinn 2001) such as Harley-Davidson bike riders (Fournier et al. 2002; Teerlink and Ozley 2000), these are organic, non-commercial communities organized around particular experiences to be marked by a shared consciousness, rituals and traditions, and a sense of moral responsibility.

Lusch et al. (1992) propose another important social drive—consumers' desire for *control*, which refers both to the inherent feeling of being able to dominate one's own environment as well as to the need of being able to determine what will be the final outcome of products and services one is about to use. The importance of the control drive was exhibited by Lee and Allaway (2002) in the adoption of self service technologies, and by Xue et al. (2005) in e-service designs.

Third stage—evaluation of costs and cost–benefit analysis

At the next stage in the process, consumers perform a cost–benefit analysis evaluating the benefits (detailed above) they expect to accrue from co-production, and weighing them against the relevant costs of engaging in such activities. The end result of this analysis is a conscious decision either to move into and engage in co-production or else to avoid such involvement.

Participation in production activities is not costless and consumer costs include both economic and non-economic costs. *Economic costs* include the costs to the consumers for the use of their operand material resources and for the time they will use in the co-production process. The cost of the use of some material resources can be evaluated objectively through their market prices, while the costs of time used and of other operant resources may need to be evaluated subjectively by the relevant consumers.

Non-economic costs involve the possible psychological and social losses co-producing consumers might incur in their co-production effort. This includes the *loss of freedom of choice* of different brands and suppliers that results from linking up with particular production partners. Other factors are the risks of *misperformanc*e of tasks by unskilled consumers, exposure to *risks of opportunism* by the linked partners, and potential *social stigmas* associated with the performance of some tasks (if you use self-service outlets, neighbors may think you are stingy). The elderly or people with heath problems may also find the *physical effort* required by some co-production activities to be too exhaustive, such as those linked to home maintenance. Some consumers about to engage in co-producing activities may also be wary of the *psychological effort* embedded in the very need to make decisions, learn new skills, and actively search for information (Kahneman and Tversky 2000). Finally, co-production may demand cultural and behavioral adjustments from consumers, including what Kelley et al. (1990) define as the *organizational socialization process* and the need to adjust to the cultures of the co-production partnering firms.

Fourth stage—activation

Once consumers decide to engage in co-producing activities, they move to the next stage in the process—*activation*. Activation demands, first of all, that consumers choose the levels of the production–consumption activities chain in which they want to participate. The various stages are summarized below.

The consumption stage

Consumption is the last stage in the process. It can also be broken down into distinct sub-steps. Womack and Jones (2005) report that a consumer passes 16 different steps in her "car repair path". Following Berthon and John (2006) and Berry et al. (2002), the model breaks down the consumption stage into three sub-steps: *before use*, *during use*, and *after use*. Consider a case of a family with children eating (consuming) a dinner. The before-use activities include getting items from the cupboards and the refrigerator, preparing the required ingredients, cooking and baking, or just heating up ready-to-eat foods, clearing the table, perhaps rearranging the dining area by adding chairs and putting out flowers, setting out cutlery, glassware and other accessories on the table. During-use activities might involve putting food on the plates, serving dishes, supervising the process, serving additional portions when required, and replacing dishes and courses. After-use activities might include clearing and cleaning the table, washing the dishes, and getting rid of the waste. The last

task might require family members to travel to special waste disposal bins for plastic bottles, aluminum cans and paper waste.

Some of these consumption activities may be shared with partners or delegated to non-user individuals and organizations. The notion of *surrogate consumption* (Gabel 2005) defines consumption decisions made by non-users such as school boards and school managers (for schoolchildren), prison wardens (for prisoners), and hospital administrators (for patients in hospitals). Another example is that of soldiers, and the employees of other organizations that require use of specific uniforms. Solveig (1996) suggests that *producing firms* may play a role in the consumption and usage stage by providing a supplier support system for solving problems in "real time". Nestle provides a customer support service that allows consumers to talk on a free helpline to a licensed dietitian about a baby's eating nutritional needs. In Sweden, some retailers of electronics and of sports equipment provide a "value check" with the product, which entitles consumers to take part in a special training course in the use of advanced cameras, in one case, and, in another case, of skis. The provision of real time support systems to accompany usage is at the basis of on-line, real time support by suppliers of Internet access and of cellular phone services.

The interpretative marketing research literature (see for example Thompson et al. 1989 and Thompson et al. 1994) suggests that acts of consumption such as shopping, buying, and using a product carry deep cultural and psychological meanings. These researchers suggest that consumption behavior occurs within a multifaceted network of cultural influences, social settings, rituals, mass media images, product symbolism, cultural ideals, gender roles, and religious and ethnic traditions. Consumer cooperation with partners in the consumption phase is linked to such cultural factors and must be analyzed in that context.

Distribution and logistics

This phase, which precedes consumption (Porter 1985), has been defined as "that part of the supply chain processes that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customers' requirements" (Flint and Mentzer 2006). Distribution and logistics are designed to generate consumer benefits such as convenient lot sizes, spatial and temporal convenience, and appropriate product assortment selection (Alderson 1957; Bucklin 1966). The generation of these benefits involves activities such as transportation and storage of products, packaging, bulk breaking, and assortment building. Etgar (2006) has presented an economic calculus that indicates that consumers will participate in the performance of such activities if it allows them to reduce their overall costs.

The idea of customer participation in the performance of distribution linked activities led to the *partnership* concept of IKEA, where consumers take responsibility for the collection of unassembled pieces of furniture from the warehouse of the retailer, deliver the sets to their own homes, and afterwards self-assemble the various components into a complete sofa or table. Novel retail approaches follow this logic with the development of self check-outs for groceries, petrol, and even for large ticket items (Diamond 2006). Other retailers, such as Stew Leonard's supermarkets (http://www.stewleonards.com), partner with consumers with the intention of generating unique retailing experiences by transferring activities traditionally performed by retailers or manufacturers to the consumer. In the service industries, consumers can now bypass travel agents and order their airline tickets and hotel vouchers on-line directly from the suppliers, bypass their brokers and buy stocks and bonds on-line, and manage their own supply channels for movies and TV programs by ordering them directly using the VOD (Video on Demand) technology (http://www.vod.com).

The assembly phase

The stage generally preceding distribution is the assembly stage. Manufacturing of many products, such as cars or computers, involves assembling diverse components into a set which is then organized as a product, a box, or a package and then offered to the consumer. Traditionally, all such activities were performed by business firms (the suppliers). Today, consumers also can get involved in the assembling.

Examples include consumer participation in the planning of the assembly of computer components when buying computers from the Dell Company (http://wwww.dell.com), consumer involvement in paint color preparation in DIY (Do It Yourself) stores using the paint mixing machines located in their paint departments, and photo self-developing machines which allow consumers to be involved in the printing of pictures taken with digital cameras. Music lovers use peer-to-peer technology to pick and mix their favorite songs and "burn " their own albums. The Lego toy company has produced a "Mindstorms Robotics Invention System" that allows children, as well as grown-ups, to combine and construct their own robots by individual operation of user-created computer based planning (Pralahad and Ramaswamy 2004).

The manufacturing/construction phase

The manufacturing stage precedes or runs parallel to the assembly stage, and is concerned with operations through which raw materials are processed and changed into usable items. Technological developments encourage consumer involvement in the construction of "virtual" products, such as writing blogs or producing home videos for broadcasting on the web for free. The website "YouTube" http://www.youtube.com) offers consumers the opportunity to broadcast videos and films that they prepared themselves on the Internet. Consumers also develop their own web sites with special web constructing programs such as http://www.webaffairs.ca/portfolio/home_services.

The drive for co-manufacturing has created some novel commercial concepts. In the Build-A-Bear Workshop chain, children build their own stuffed toys: they select the relevant materials, stuff the toys, program the computerized response on a chip to be inserted into the stuffed animal, and sew and stitch the toys in the stores themselves http://www.buildabear.com).

The participation of consumers in the assembly and the manufacturing stages requires the integration of their behavior and cultures with those of the non-consumer partners. It raises issues about the impact of the *technical quality* of what they do, and of the *functional quality* of how they do it on the output of the total activity network (Gronroos 1983). It has led some researchers to suggest that consumers should be treated as "partial employees" of the organization of the non-consumer co-producers, and to suggest that there is a need to socialize such consumers with the organizational cultures of the latter (Kelley et al. 1990).

The design phase

The design phase precedes the manufacturing phase. In it, the features and characteristics (or attributes) of the products to be produced are planned. In many situations, consumers perform only the design activities and use the production partners as consultants providing information (Achrol and Kotler 1999). A family and an architect might plan the family home together, a family and a garden designer might plan the garden in the same way. Patients, armed with up-to-date medical knowledge, might plan a "wellness program" to treat particular illnesses in consultation with their physicians (Pralahad and Ramaswamy 2004). Investors with Citicorp Investment Services submit inputs about their risk and return preferences to help construct suitable investment portfolios http://www.citibank.online.com; http//www.investotwords.com). Elderly consumers might design investment trusts for their children at one time and, at another, design their Christmas Holiday cruise to the Bahamas.

The initiating phase

This phase begins the whole activity chain which ends up in the creation of some good or service. It may involve defining a new need to be satisfied and /or determining the format through which such a need can be fulfilled. Traditionally, firms were the only entities which initiated such a process. A firm decided to produce a new car, to manufacture cereals or develop an investment fund and offered it to potential customers. However, today, consumers also participate in this phase. They may decide to plan a vacation, redecorate their home, or produce family events such as weddings or bar-mitzvahs. In some situations, consumers are satisfied to limit their involvement to the initiation state, thus operating as "script writers" who leave execution to specialists (Rook 1985). In other situations, the initiation leads consumers to engage in other phases of the activity chain as well.

Fifth stage—evaluation

The end result of the activation stage is creation of several outputs in terms of various benefits which consumers receive and need to evaluate. Consumers compare the values received with the goals set up in the second stage of the process. For that purpose, consumers may apply various decision making calculus methods, define the relative importance of the various benefits and determine how to measure success or failure, and which metrics should be used for that purpose. To decide whether the effort was worthwhile, they need to compare the effectiveness of a co-production strategy in terms of a cost–benefit analysis with that of alternative strategies where there is no consumer involvement in production activities. Thus, consumers will compare the effectiveness of ordering air travel tickets through the Internet (where they perform all the search activities by themselves) with the effectiveness of ordering the same flights through a travel agent. While working with a travel agent does require some cooperation with a service provider, working with an Internet search engine implies much greater involvement of the consumer in the creation of the required service. Another example is when consumers compare use of a self service aisle in a gasoline station with using a full service aisle.

Discussion

The framework developed in this article adds to the existing discussion of the co-production phenomenon by treating it not as a deterministic development but as an *explicit consumer strategy* designed primarily to achieve

customization of marketing offers. The model developed presents co-production as a dynamic process that extends over time and which includes five distinctly different stages through which consumers who consider engaging in co-production must pass. It elaborates on the necessary preconditions, presents potential benefits which may motivate consumers to use such a strategy as well as the corresponding costs. Both are required for the cost–benefit effectiveness analysis which consumers perform to determine whether to engage in co-production or not. The model also presents and elaborates on the concept of activity network chains and it discusses the various activity nodes in this chain in which co-production may take place.

The article has substantial research and managerial implications. It allows integration of co-production with other patterns of consumer behavior, such as the desire to reduce risk and costs, and variety and experience seeking. Its major contribution is that it allows researchers to analyze co-production as a distinct area of consumer behavior and to apply tools of strategic consumer behavior analysis in analyzing it. Future research should extend this model by integrating additional internal mental and emotional consumer processes into the proposed framework.

The framework developed in this study provides also a starting point for empirical research about co-production and be used for developing testable research hypotheses. Thus research should determine empirically the relative importance of each of the various preconditions presented in the first stage, or of the various motivational drivers that induce firms to engage in co-production presented in nthe second stage.

For managers, the model provides a basis for developing appropriate co-production based marketing strategies. It can be used for segmenting customers according to their tendency to participate in co-production activities or according to the characteristics of their co-production preferences. It can help them to determine within which product categories and use situations co-production offers may succeed more. Finally, it may also help to design diverse bundles of co-production offers and stipulate the values that such offers may provide to consumers in terms of economic, psychological and social benefits.

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