

ECONOMIES OF INTERACTION AND ECONOMIES OF RELATIONSHIP:
VALUE DRIVERS IN A CUSTOMER CENTRIC ECONOMY

Frank T. Piller*

Technische Universität München
Department of General and Industrial Management
Leopoldstrasse 139
80804 Munich / Germany

Ph: +49-89-36078-216
Fax: +49-89-36078-222
e-mail: piller@ws.tum.de
<http://www.aib.ws.tum.de/piller/>

Kathrin M. Moeslein

Technische Universität München
Department of General and Industrial Management
Leopoldstrasse 139
80804 Munich / Germany

Ph: +49-89-36078-231
Fax: +49-89-36078-222
e-mail: moeslein@ws.tum.de
<http://www.prof-reichwald.org/moeslein/>

** corresponding author*

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Abstract:

Strategies like agile manufacturing, focused factories, mass customization, flexible manufacturing, or customer relationship management are being seen as viable weapons in today's competitive landscape. These approaches follow a new view of value generation based on a strong integration of the customers. Their objective is differentiation by understanding better each customer's needs. However, today's competitive pressures prevent that higher levels of differentiation lead to much higher prices, the traditional competitive advantage and mean to counterbalance the higher costs. Competitive advantage today often results from a hybrid position combining the benefits of differentiation with a moderate cost position. Traditionally, hybrid positions were argued to be possible due to the capabilities of modern flexible manufacturing systems or modular product structures like a platform strategy. These capabilities, however, are supplemented by a new set of economies arising not from new possibilities in the fulfillment system but from a better knowledge position and switching costs arising from the direct interaction with each customer. Economies of interaction and economies of relationship are discussed as new value drivers in a customer centric economy. They can be seen as the original enablers of a hybrid competitive position.

Keywords:

customer integration, customer relationship management, economies, cost and value drivers

NEW FORMS OF CUSTOMER INTERACTION

Many companies are revising their overall strategy due to new technologies, products, techniques and systems that are intensifying international competition. A major pattern of reaction are efforts to differentiate by understanding better each customer's needs and to increase customer loyalty. Strategies like agile manufacturing, focused factories, mass customization, flexible manufacturing, or customer relationship management are being seen as viable weapons in today's competitive landscape (Sahin, 2000). While these approaches are characterized by different manufacturing philosophies and/or fulfillment systems, they share a new, intense customer centric view. The consumer is seen as a partner of value creation, products and services are not being mass produced for an anonymous market but provided after a process of interacting with the customer. These new customer centric approaches are based on some distinctive common principles (Milgrom and Roberts, 1990; Piller, 2001; Pine, 1993; Sahin, 2000; Ramirez, 1999) like *modularization* of product architectures and process building blocks and use of product or service platforms following the concept of reusability, a *build-to-order approach* (value creating activities are performed to a specific extent only after the customer's order is placed), and *splitting the fulfillment system* into a standardized and a customer specific part (decoupling or postponement point).

However, the major new common principle of these new approaches is a mechanism for interacting with the customer and obtaining specific information in order to define and translate the customer's needs and desires into a concrete product or service specification (Zipkin, 2001, p. 82). The customer is integrated into the value creation of the supplier. Every transaction implies information and coordination about the customer specific product design and is based on a direct communication between the customer and supplier as the result of a divided construction process (Hibbard, 1999). This breaks with the traditional view of value creation in a firm (Ramirez, 1999). Industrial value production is most often conceptualized in the terms of the value chain (Porter, 1980). In this concept, value creation is sequential. Value is added from one step to the other (as reflected also in most of today's taxation systems). The customer is not part of the value chain. Value is finally realized only in the transaction between the customer and producer (purchasing of the final good).

In contrast, within approaches like customer relationship management, one-to-one marketing, mass customization, or agile manufacturing, value is mutually created among the actors on different levels. Customer integration can be defined as a form of industrial value creation where "the consumers take part in activities and processes which used to be seen as the domain of the companies" (Wikström, 1996: 360). The result is a system of co-production, i.e. a company-customer interaction (social exchange) and adaptation for the purpose of attaining added value (Milgrom and Roberts, 1990; Normann and Ramirez, 1994). The customer becomes a "co-producer" respectively "prosumer" (Toffler, 1970). While this view is not new (see Ramirez, 1999: 53-54 for an overview), only today we see a broader application of this principle in practice (and here especially in business-to-consumer markets and not only business-to-business markets). However, as the main part of the interaction with the customer takes place during the configuration and therefore design of the customer specific product, we want to call the customer more a co-designer than a co-producer.

Traditionally, customer integration was connected with the possibility to charge premium prices derived from the added value of a solution meeting the specific needs of a customer (Porter, 1980). To meet today's competitive pressures, however, higher levels of differentiation can not lead to much higher prices. Overcapacities and steadily increasing international

competition leads to a growing market pressure which has transformed many sectors from sellers' to buyers' markets. Standards of technology and quality are constantly leveling out. The cost-benefit relation alters because buyers demand relatively high standards of quality, service, variety or functionality even when the sales price is favorable or, vice versa, suppliers have to meet additional requirements in pricing when a product is markedly differentiated.

Competitive advantage needs a hybrid position combining the benefits of differentiation by high levels of customer intimacy and simultaneously a good cost position. Companies which wish to operate successfully under these conditions apparently have to start out from both the cost as well as the differentiation position at the same time. However, this is in conflict with the classical generic competitive strategies according to Porter (1980) – i.e. *differentiation, cost leadership, and focus strategies* – which became the precepts on which countless companies based their operations (Kotha, 1995). In his conception, Porter follows the fundamental postulate of the incompatibility of differentiation *and* cost leadership. A company must clearly decide on one type of strategy, otherwise it runs the risk of getting "stuck in the middle" (Porter, 1980:16). However, empirical studies (e.g. Kekre and Srinivasan, 1990; Miller and Dess, 1993) and a detailed theoretical argumentation (e.g. Faulkner and Bowman, 1992; Hill, 1988; Wright et al., 1991) demonstrate that competitive strategy does not necessitate choosing between cost leadership *or* differentiation. Rather the simultaneous attainment of both strategic positions should be pursued within the context of a hybrid competitive strategy.

The objective of this paper is to set a framework for value generation in new business models based on a strong integration of the customer. Therefore we will explore in the main part of the paper customer integration specific new cost saving potentials. Traditionally, hybrid positions were argued to be possible due to the capabilities of modern manufacturing technology like flexible manufacturing systems or modular product structures like platform strategies. Here, strongly reduced set-up costs made lot sizes of one economically feasible. We will argue that these capabilities are supplemented by a new set of economies arising not from new possibilities in the fulfillment system but from a better knowledge position and switching costs coming up from the direct interaction with each customer. These new economies, described as economies of interaction and economies of relationship in the following, shall be discussed as new value drivers in a customer centric economy. opposed to economies of scale in a traditional mass production system, which involve making and moving volumes of products or services and then selling them often at ever decreasing margins, these new economies can generate increasing returns. They can be seen as the original enablers of a hybrid competitive position.

By examining and structuring the underlying economic principles of customer centric approaches, their limits and constraints, but also benefits shall be better understood. For better planning mechanisms, the value respectively costs of a single processes have to be known. Until today, no accounting system measures these economics. In this context, we want to provide a starting point for further exploration. The organization of the remainder of the paper is as follows: First, we will briefly discuss the additional costs of customer intimacy. In the main part of the paper we will show how a new kind of economies complements traditional economies of scale and scope. We will further discuss some of the main influencing factors of the extent in which the new economies can be realized. The paper concludes with implications and directions for management and further research.

PRICE PREMIUM VERSUS ADDITIONAL COST

The individualization of product and service attributes to customer-specific needs and requirements holds the potential to increase customer satisfaction. The firm enters a quasi monopolistic status as its offer is unique and, at least on a certain degree, not comparable with the other products in the market segment. A firm could be able to charge prices representing the price sensibility of each single customer, capturing the whole consumer rent (Chamberlin, 1962). However, this option is more of theoretical nature as in practice neither the price sensitivity of each customer is known nor do mechanisms exist to prevent cognitive dissonances of customers realizing the different price levels. Thus, managers have to find a way to bundle customers into segments according to their value perception and then fence off these segments from one another. Instead of customized prices for each customer, an open approach based on modular pricing is more promising.

The extent of a price premium depends on the heterogeneity of customers in regard to specific attributes of a product. Products that require matching different physical dimensions have often a lower price sensibility than products that are customized just by the possibility to change colors or design patterns. In the sport shoe market, *Adidas* can charge higher premiums (up to 50%) for its customized sport shoes brand “mi adidas” compared to the customized sneakers of *Nike* (NikeID brand, 5% premium). *Adidas* allows not only to choose between some colors and put a name on the shoe, but also customizes the shoes in regard to comfort, fit and functionality.

These additional premiums connected with customer centric value creation compared to traditional mass production and mass marketing are challenged by additional costs connected with this system. The major cost driver is the process of elicitation, costs accounted for by the investigation and specification of the customers’ wishes, the configuration of individual products or services, the transfer of the specifications to fulfillment, an increased complexity in production planning and control, coordination with the suppliers, and so on. All these activities are characterized by an high intense of information compared to traditional mass marketing and mass production (Duray et al., 2000; Lee, Barua and Whinston, 2000).

While the customer can be seen from the supplier’s perspective as a production factor fulfilling tasks that in a mass production system are done internally (Ramirez, 1999), the firm has to establish additional, cost driving mechanisms to minimize the burdens of customization for the customer. This includes investments in customer service centers, highly qualified staff, trust building promotion activities, and investments in configuration systems and other equipment -- leading to additional costs, often seen as the “natural” costs of differentiation (Porter 1980). Further cost surpluses are resulting from a loss of economies of specialization and economies of standardization. Higher set up costs, a more complex and detailed quality control, costs for higher qualified labor and the complex manufacturing planning increase the cost level. Additionally, inventory of components may rise and higher capital investments in more advanced flexible production units are needed. Additional costs may also be the costs connected with changing the processes (Agrawal, Kumaresh and Mercer, 2001; Zipkin, 2001). The build-to-order approach assumes that a company has to idle its plants during periods of low demand, though unionized labor would still have to be paid.

The argumentation up to this point can be summarized as shown in Figure 1. As more and more customers express a desire for products or services fitting exactly to their needs (including rather hedonistic motives of customization like the wish to express individuality),

companies can charge a price premium reflecting the customers' value added. However, competitive pressure and additional risks and efforts faced by the customers during the buying process reduce possible surpluses in a larger extent. From the firm's perspective the possibility to gain higher margins is also challenged by additional costs in fulfillment and on the elicitation level and the loss of economies of scale and standardization in comparison to mass manufacturing. Therefore a firm has to seek new economies to counterbalance the additional costs. These savings and benefits are not only connected directly with the customization process, but can be transferred often to other (mass) operations as well. This demands to survey the total costs and profits of customer centric value creation. The profits gained have to be partly reinvested in keeping the relationship to the customers active and to gather feedback in-between sales in order to intensify the knowledge of the customer.

<< *Insert Figure 1 about here* >>

ECONOMIES OF INTEGRATION

Economies of integration describe cost saving potentials as a result from the direct interaction between each customer and the firm. They go beyond the differentiation advantages of customized manufacturing which are expressed in the price premium. They represent the efficiency when a firm establishes value processes that eliminate waste on all levels. More concrete, economies of integration are formed by a bundle of cost saving potentials in two classes. First, they are the result of the build-to-order approach connected to the most new system of customer centric manufacturing. B-to-o means postponing some stages of fulfillment until the order is placed. Here, economies of integration occur due to the following categories:

- *inventory*: reduction / elimination of inventory in distribution chain and reduction of safety stock;
- *planning*: reduction of planning complexity, adaptation costs (of planning decisions), fashion risk and over stocks, development costs (product flops);
- *capacity utilization and stability*: no bull-whip-effect, stable processes, reduction of the over capacity required in made-to-stock systems to adapt to short-term changes of trends,
- *sales*: avoidance of lost sales in retail due to out-of-stock items, prevention of discount at the end of a season; opportunities for better channel management, reduction of error costs.

The savings from these effects can be huge. Industry analysts estimate for example for the car industry that if customers bought a majority of cars built to order, the industry could capture as much as 70 percent of the capital locked up in the present system – lost when inventory becomes obsolete following a change in models, production processes, and assembly structures, or locked up in metal and components kept on the shelf to meet unanticipated demand. By capturing this up capital and by reducing discounts offered to move inventory, carmakers could realize total savings (reckoned by capital spent) of \$65 billion to \$80 billion a year. *Nissan Motor* has estimated that this could amount to a savings of up to \$3,600 a vehicle (Agrawal, Kumaresh and Mercer, 2001). In the computer industry, network equipment provider *Cisco* reported a \$2.2 billion write-down in excess inventory in May, 2001, although the company is widely acclaimed for its lean manufacturing capabilities (Stewart, 2001). But given the precipitous drop in demand at that time, even the most flexible variant manufacturing system couldn't react fast enough along the supply chain. A pure build-to-order approach can hold here enormous savings.

The second class of economies of integration is based on the aggregation of customer knowledge to more perceive market information. Peppers and Rogers (1997) call this principle the “learning relationship” between a company and its customers. The self configuration by the buyer allows access to „*sticky local information*“ (v. Hippel, 1994, 1998). Sticky information rises when the costs of information exchange between two different actors are higher than processing this information within one unit. They originate in location specific costs like technological and organizational activities of decoding, transmitting and diffusing the information. We can argue that often customer specific information is sticky in that sense. Tastes, design patterns, and even functionalities are rather subjective and difficult to describe objectively. Many customers are not able to describe their needs precisely and transfer their wishes into a concrete product specification that allows the company to build a customized product or deliver a customized service. By integrating the customer into the design of a product or service, economies of integration represent the saved costs of getting easier access to the sticky information. Note that this argument is only true as long as the information the customer needs from the supplier to execute the co-design has a low stickiness. This condition is given in systems where configuration engines or design tools and a modular product architecture provide an open and easy to understand platform for interaction and co-design. Using these tools, a customer can often specify her product implicitly.

By transferring customer needs and wishes into customized products, the company gains access to the sticky information and can transfer it to explicit knowledge usable within the firm. Aggregating this knowledge, a company can generate better market research information and more accurate forecasting on customer needs. This is especially true when the firm operates next to the customized business (still) a mass production for anonymous markets (Kotha, 1995, p. 34; Peppers and Rogers, 1997, p. 233). This is the case for almost all large pioneering companies of the new customer-centric business models like *Adidas*, *Nike*, *Lego*, *Procter&Gamble*, *National Panasonic Bicycle*, *Sandvik*, *Ford*, *Levi Strauss*, just to name a view. For the portion of business that is manufactured on inventory, the customized segment provides panel alike market research information without the common panel effects biasing the results. The information gained here can be used to plan and control better existing variants of products made to inventory. Additionally, new product development and continuous improvement of existing products can benefit deeply from such user driven innovations. Note that this class of economies of integration results from the sheer possibility to interact. The information gains are partly not based on actual sales but just on tracking the information from interacting with the users on a configuration tool.

A premier example for these kind of economies of integration provides *reflect.com*, a sister company of *Procter&Gamble*, offering customized cosmetics on the Internet. Using interactive software, visitors to the site can create their own cosmetic line, mix and match various options like colors, scents, and skin-care preferences to create an unique product. A P&G facility in upstate New York manufactures the product, and a "conciierge service" in Cincinnati handles follow-up interaction with customers. Reflect allows customers to redesign a product as many times as they want. The site acts as a “life panel” for all P&G cosmetics operations. Its customer base contains more than one million buyers creating their own cosmetics and thereby formulating dermatological needs, evaluating new scents, bundling products, choosing packages, and developing new products. The customized order specifications are matched with the socio-demographic profiling information of each customer and the feedback or change of specifications after the sale. For P&G, *reflect.com* is reported to be one of the most efficient market research tools (Warner, 2001).

ECONOMIES OF RELATIONSHIP

Economies of relationship are closely connected with economies of integration and are based on the same source (degree of customer interaction). However, while economies of integration describe capabilities to improve the efficiency of fulfillment activities and are based either on the postponement of value creating activities until a specific order is placed or on aggregated knowledge from fulfilling these orders and interacting with the customers, economies of relationship relate to cost savings connected with the loyalty of one specific customer. If one interprets the number of different customers of a firm as cost driver, then does a high customer loyalty not only decrease transaction costs during configuration, but also marketing efforts and can eliminate inefficiency in advertising. Economies of relationship reflect in this sense the experience of a company with a customer (Vandermerwe, 2000).

To increase customer loyalty is one of most often quoted objectives of managers implementing new customer centric business models. The prerequisite for economies of relationship is the ability to establish long lasting customer relationships. Riemer and Totz (2001) describe customer loyalty as a result of switching costs, opportunity costs, and sunk costs based on psychological obligations of the customer (other sources of switching costs are technological and contractual obligations, see Jackson, 1985). The major sources of switching costs are trust and investment specificity. Direct switching costs rise due to established trust towards the supplier, vendor or service provider and its capabilities to meet promised quality levels. Finding alternatives is made difficult by specificity of products or services. Additionally, if customer satisfaction is positively influenced by personalization, then uncertainty and opportunity costs rise as a defecting customer risks to lose the net-benefits of the current relationship. Relationship specific investments of the customers could be based on the experience of a customer with a configuration tool, the knowledge about the modular structures of an offering, or the familiarity with a visualization tool. Can customers be persuaded to invest significantly into a specific relationship, sunk costs are increasing (Riemer and Totz, 2001). Once the customer has successfully purchased an individual item, the knowledge acquired by the supplier during the product configuration represents a considerable barrier against switching suppliers. Even if a competitor possesses the same customization skills and offers a lower price, a switching customer would have to go again through the procedure of supplying information for product customization. Also, she is once again faced with uncertainties in regard to the quality and the producer's behavior.

Once lock-on has been achieved, the enterprise can stretch its brand into other revenue-generating opportunities with relatively low cost. The company has no acquisition cost and low marginal cost, because information, knowledge and relationships are already established (Vandermerwe, 2000, p. 35). Cost saving potentials arise additionally from using the information from a first sale for further sales. While often the first sale process is rather time consuming and of high intense of information exchange, thus cost intensive, additional sales can be performed smoother and faster. The resulting cost saving potential of economies of relationship can be seen as a special form of economies of scope. They result from a better "utilization" of the customer base (versus a better utilization of manufacturing resources in the case of traditional economies of scope). Using new Internet technologies to keep expenses level, the firm can draw on its existing customer base to produce additional value for customers at little or no extra cost. The flexible capabilities and the better knowledge of the needs and desires of every customer provide the possibility to serve existing customers by new activities (Vandermerwe, 2000). From a transaction cost perspective, the expenditures and efforts

resulting from interacting and communicating with a customer during the first buy (configuration, gain of profiling information etc.) can be used for further sales as well.

THE OPTIMAL EXTENT OF CUSTOMER INTEGRATION

Three major factors influence the ability of a firm to profit from economies of interaction and relationship: the degree of interaction between the firm and the customer (respectively the degree of integrating the customer into the value creating activities), the extent of the relationship between the firm and the customer, and the point of postponement. The factors are connected with each other and will be discussed briefly in the following.

(1) The *degree of interaction* depends on the firm's infrastructure and its ability to interact with the customer efficiently. This is influenced foremost by the configuration system available, but also by the degree of modularity offered and therefore the possibilities to react on the customer's interaction. The higher the expenditures and risks of the customization and configuration are perceived by the customer, the higher is the required degree of interaction. The characteristics of the product or service being individualized have to be taken into account. The degree of customer interaction required is influenced by the relative price of the products and services, the possibility to use instruments to prevent bad investments (e.g. warranties, exchange policy, time of delivery, screening possibilities), the customer's experience with a product (e.g. second buy, product specific knowledge) and its complexity (customization possibilities; product structure).

(2) *Extent of relationship*: The better a company manages to build relationships with its customers, the larger will its customer knowledge become – resulting in better possibilities to use this knowledge to foster efficiency and plan new activities more purposefully. An important influencing factor is the ability of the company to establish switching costs for the customer. Practices for this purpose include the use of proprietary (non transferable) user profiles, the establishing of network effects, the capability to impart trust, the ability to react on new needs, or the use of marketing communications to express the benefit of that relationship.

(3) Defining the *point or degree of postponement* settles somehow the trade-off between the advantages and draw-backs of customer integration. The postponement point defines the transition between order specific activities and pre-fabrication and thus the point customer integration. Postponement expresses the number of stages in development, production, and distribution/sales that are delayed until a customer specific order is received (Duray et al., 2000; Waller et al., 2000). Postponement is not restricted to manufacturing activities or product components respectively, but includes all activities of the relationship between the buyer and the firm (Wind and Rangaswamy, 2001). Doing so, we can differentiate several archetypes of customization in contrast to the traditional system of made-to-stock with only an anonymous customer-supplier-relationship (see Figure 2; other approaches are described by Lampel and Mintzberg, 1996; Mintzberg, 1988). Capabilities to meet customer's expectations increase with an early point of postponement. While economies of integration due to reduction of inventory, elimination of capacity redundancy, reduction of fashion risk and distinction of over stocks rise with an early point of postponement, economies of scale are decreasing, and additional costs of coordination, complexity, and transaction are increasing.

<< Insert Figure 2 about here >>

MANAGEMENT IMPLICATIONS

While more and more companies are seeking competitive advantage by offering customer tailored goods and services in order to get relief from price competition and variety seeking behavior of customers, a more detailed assessment of the cost and value drivers of the connected business models is needed. In this paper we have deployed new kinds of economies connected with these new kinds of value creation. Economies of integration and economies of relationship complement traditional economies of scale and scope.

From a managerial perspective, the new economies urge managers to conceptualize and implement strategy in new ways. Much like the dichotomous choice presented by Porter's (1980) low cost and differentiation framework, managers have not to be "stuck in the middle" by trying to reach for old economies without understanding the full new cost and profit structure arising from customer integration. It is very important to remember that "economies" express cost saving *potentials*, but are not given by per-se. Managers therefore have to understand the processes and try to identify these cost saving potentials. This implies to deal with a set of new trade-offs (being an essence of successful competitive strategic behavior, see Porter, 1996). Companies have

- to determine the optimal extent of variety and customization in order to find a balance of the trade-off between additional costs and saving potentials of customized fulfillment activities along the value circle, and
- to find the optimal degree of customer integration in order to balance the trade-off between configuration possibilities, the ability to express personal needs and desires and the growing complexity and risks from the customers' point of view.

Many practitioners still think of customization and customer centric value creation only in terms of manufacturing and operations without considering the effects on the whole value chain. We agree with Wind and Rangaswamy (2001:17) that until now much attention has been given to the impact of customization on manufacturing. However, the impact of customization on other functions like marketing or design is just beginning to be explored. Here, more attention of management is needed. This is especially true in regard to the nature of capabilities and competences of a firm. The new systems of customer centric value creation require a dynamic organization respectively network composed of flexibly operating units. Process modules (specific processes or tasks) have to interact with each other or come together in a different sequence for every product or service demanded by customers (Sahin, 2000).

A firm offers no longer products or services but the capability to interact with a customer in order to co-produce an individualized solution. This view corresponds with the recent discussion on core competencies or strategic capabilities (see Fowler et al., 2000 for an overview). However, core competencies are seen mostly as preconditions to react efficiently and dynamically on changing market environments. In addition, the concept of capabilities has to get a further meaning: Firms have to be able to create "dynamic capabilities" (Teece et al., 1997) which enable them to adapt, integrate, and reconfigure the firm's skills and competences in order to adapt more sufficiently to new customer's request (in a short term) or a changing business environment (in a long term). This demand corresponds to the growing academic and practical attention of processes of collective learning (e.g., Prahalad and Hamel,

1990). However, there is still a lot of research needed in order to transfer the tools and principles from the area of collective learning and knowledge management to a company that is not any more based on the manufacturing of products but on interacting with each single customer. Further intention has to be paid to establish tools and instruments to transfer the knowledge gained during the integration process into new competencies.

Also, today's accounting and controlling systems are still dominated by the calculation of the "product costs" (Darlington, 1999: 19). While already set-up changeovers do not traditionally receive a lot of attention from managers in practice, savings and additional costs coming from different degrees of interaction with the customers are not included in most accounting systems. Activity-based accounting and the balanced score card approach provide some first solutions. However, approved ratios to calculate for example the value of a customer relationship or parameters to evaluate the extent of the market research information gained by aggregated customer knowledge are still missing.

REFERENCES

- Agrawal, M., Kumaresh, T.V., & Mercer, G.A. 2001. The false promise of mass customization, The McKinsey Quarterly, 2001(3).
- Chamberlin, E.H. 1962. The theory of monopolistic competition, 8. ed., Cambridge.
- Duray, R. et al. 2000. Approaches to mass customization: configurations and empirical validation, Journal of Operations Managements, 18: 605-625.
- Faulkner, D., & Bowman, C. 1992. Generic strategies and congruent organizational structures, European Management Journal, 10(4): 494-499.
- Fowler, S. et al. 2000. Beyond products: new strategic imperatives for developing competencies in dynamic environments, Journal of Engineering and Technology Management, 17: 357-377.
- Hibbard, J. 1999. Assembly online: the web is changing mass production into mass customization, Information Week, April 4, 1999: 85-86.
- Hill, C.W. 1988. Differentiation vs. low cost or differentiation and low cost, Academy of Management Review, 13(3): 401-412.
- Jackson, B.B. 1985. Build customer relationships, Harvard Business Review, 63(6): 120-128.
- Kekre, K., & Srinivasan, K. 1990. Broader product line, Management Science, 36(10): 1216-1231.
- Kotha, S. 1995. Mass customization: implementing the emerging paradigm for competitive advantage, Strategic Management Journal, 16, special issue 'Technological transformation and the new competitive landscape': 21-42.
- Lampel, J. & Mintzberg, H. 1996. Customizing customization, Sloan Management Review, 37(1): 21-30.
- Lee, C.-H., Barua, A., & Whinston, A. 2000. The complementarity of mass customization and electronic commerce, Economics of Innovation & New Technology, 9(2): 81-110.
- Milgrom, P., & Roberts, J. 1990. The economics of modern manufacturing: technology, strategy, and organization, The American Economic Review, 80(6): 511-528.
- Miller, A., & Dess, G.G. 1993. Assessing Porter's model in terms of its generalizability, accuracy and simplicity, Journal of Management Studies, 30(4): 553-585.
- Mintzberg, H. 1998. Generic strategies: towards a comprehensive framework, Advances in Strategic Management, 5: 1-67.
- Normann, R., & Raminez, R. 1993. From value chain to value constellation, Harvard Business Review, 71(4): 65-77.
- Peppers, D., & Rogers, M. 1997. Enterprise one to one, New York: Doubleday.
- Piller, F. 2001. Mass customization, 2nd ed., Wiesbaden: Gabler.
- Pine, B.J. II 1993. Mass customization, Boston: Harvard Business School Press.
- Porter, M.E. 1980. Competitive strategy, New York: Free Press.
- Porter, M.E. 1996. What is strategy?, Harvard Business Review, 74(6): 61-78.
- Prahalad, C.K., & Hamel, G. 1990. The core competencies of the corporation, Harvard Business Review, 68(3): 79-91.

- Ramirez, R. 1999. Value co-production: intellectual origins and implications for practice and research, Strategic Management Journal, 20(1): 49-65.
- Riemer, K., & Totz, C. 2001. The many faces of personalization, In M.M. Tseng & F.T. Piller (Eds.), Proceedings of the 2001 world conference on mass customization and personalization, Oct. 1-2, 2001, Hong Kong: Hong Kong University of Science and Technology.
- Sahin, F. 2000. Manufacturing competitiveness: Different systems to achieve the same results, Production and Inventory Management Journal, 42(1): 56-65.
- Teece, D.J., et al. 1997. Dynamic capabilities and strategic management, Strategic Management Journal, 18(7): 509-533.
- Toffler, A. 1970. Future Shock, New York: Bantam Books.
- Vandermerwe, S. 2000. How increasing value to customers improves business results, Sloan Management Review, 42 (1): 27-37.
- von Hippel, E. 1994. Sticky information and the locus of problem solving, Management Science, 40(3): 429-439.
- von Hippel, E. 1998. Economics of product development by users, Management Science, 44(5): 629-644.
- Waller, M.A., Dabholkar, P.A., & Gentry, J. 2000. Postponement, product customization, and market-oriented supply chains, Journal of Business Logistics, 21(2): 133-160.
- Warner, F. 2001. Girl, interpreted, Fast Company, August 2001: 134-139.
- Wikstroem, S. 1996. Value creation by company-consumer interaction, Journal of Marketing Management, 12: 359-374.
- Wind, J., & Rangaswamy, A. 2001. Customerization, Journal of interactive marketing, 15(1): 13-32.
- Wright, P. et al. 1991. Comparing three different strategies of competitive advantage, Industry Management, 6: 12-16.
- Zipkin, P. 2001. The limits of mass customization, Sloan Management Review, 42(3): 81-87.

FIGURE 1

Fig. 1: A model of value creation with customer integration

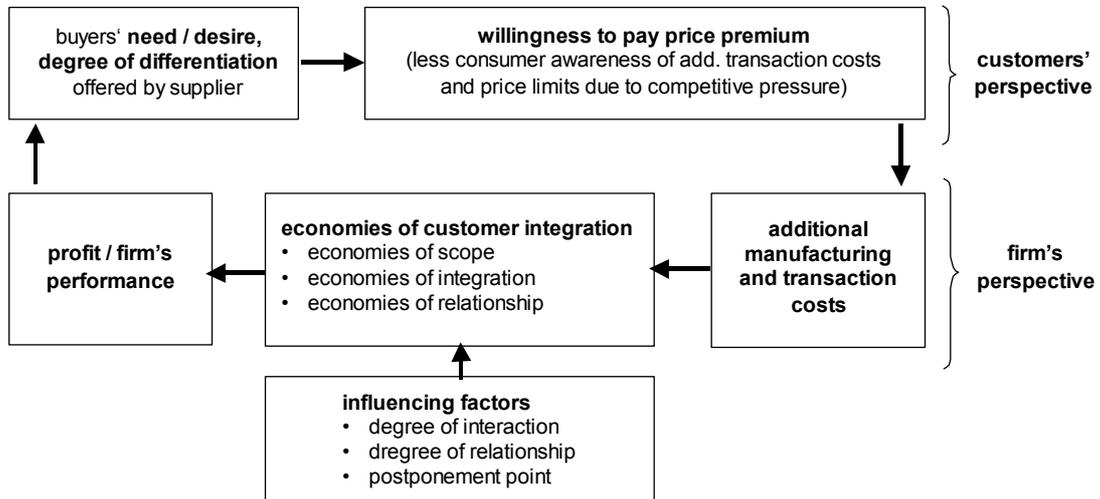


FIGURE 2

Fig. 2: Archetypes of customer integration

system of customer integration	interaction Point	degree of customer integration		
match-to-order / locate-to-order: Selection of existing (standard) products or services according to customer requirements	sales, retail			
bundle-to-order: Bundling of existing products/services to customer specific product	sales, retail	<i>degree of customer integration into value chain</i>	<i>number of customer specific value chain activities</i>	<i>potential to establish economies of interaction and relationship</i>
assemble-to-order: Assembling of products/services from standardized components / process blocks	final assembly			
made-to-order: Manufacturing of customized products including component manufacturing	manufac- turing			
engineer-to-order: Customer co-design of product/service, followed by customized made-to-order	design, develop- ment			