

Mass Customization and Beyond – Evolution of Customer Centricity in Financial Services

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Abstract

For about a decade, mass customization is discussed as a generic methodology to individualize products and services while preserving cost-efficient production processes. Particularly for information-oriented industries like financial services, the advent of electronic business may create new opportunities to individualize products and services. In this paper, a product-oriented and a process-oriented approach to individualization of financial services are presented: On the one hand, by adopting configuration methods from mechanical engineering, insurance (and banking) products can be generated due to specific customer needs. On the other hand, by separating a production-oriented ‘factory’ layer and a customer process-oriented ‘integration’ layer in value-added networks, consumer processes can be supported holistically.

1. Introduction

Mass customization means “that the same large number of customers can be reached as in mass markets of the industrial economy, and simultaneously they can be treated individually as in the customized markets of pre-industrial economies” [4, 169]. It is often attributed to the post-industrial or information age, that consumers set the rules and that, as a consequence, even more individualization could be realized in an efficient form [9]. “Being truly customer focused is not possible if the organization is not, first, information intensive” [3, 9].

In this paper, directions of customer centricity and service individualization for financial services in the information age are analyzed. Based on a short analysis of emerging business models and business architectures of the information age (Section 2), a product-oriented approach to individualization (Section 3) and a process-oriented approach to individualization (Section 4) are presented. The paper closes with conclusions and a short outlook in Section 4.

2. Business in the Information Age

The most important business potential of IT innovations is that an advanced technical networking infrastructure together with an organizational business networking infrastructure allow to broaden the transformation scope from an isolated company (or a company-centric view including direct customers and direct suppliers) towards entire value networks.

Parallel to the networking sophistication in the business arena, internet literacy and internet access are available to a growing portion of end consumers. By communicating directly with producers / service providers via electronic channels, end consumers can be integrated into value networks more closely, and product / service design can be influenced more directly. Particularly for products bound to electronic media (e.g. information, music, movies, games, software) or financial products (e.g. loans, investments, insurance), the value network can be separated into a production-oriented ‘factory’ and a consumer process-oriented ‘solutions’ portion [15]. Since missing physical restrictions allow for a flexible combination / aggregation of such products / services, business models can be tailored to specific needs of customer segments instead of having to follow the structure of production processes.

Hence, two arenas contribute to the transformation to electronic business: [15]

- Business-to-business arena (‘business networking’): inter-company business processes, shared services and flexible sourcing, electronic marketplaces
- Business-to-consumer arena (‘electronic commerce’): direct access and direct response to products and services by end consumers via electronic channels, separation of (mass-)production process oriented portions of value networks and individualized combination / aggregation of products and services

In Figure 1, the general business architecture of the information age is illustrated.

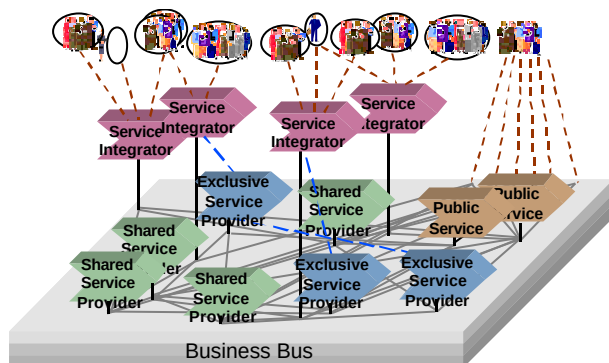


Figure 1. Business Architecture of the Information Age [2]

The business architecture of the information age comprises components that implement certain roles which do not exist in traditional business architectures or at least are not pronounced to that extent: [15]

- Customer processes become the focus of the value network design. **Service integrators** aggregate product / service components produced by several service providers to create solutions that are tailored to a specific, holistic customer process or a specific life event. In most cases, information components become a more important solution component than in traditional products.
- While most products / services are used by several service integrators, some products / services may be produced for only one or few service integrators (or service providers in later production stages). By providing such services, **exclusive service providers** contribute to a unique selling proposition.
- While exclusive service providers are focussing on exclusivity, **shared service providers** produce large amounts of standardized products / services for use by a large number of service aggregators. Shared service providers focus on mass customization and economies of scale. While it may be useful for exclusive service providers to maintain direct, exclusive networking links to service integrators, shared service providers need to use a common networking infrastructure for doing business with a large number of other service providers and service aggregators.
- The **business bus** is a flexible networking infrastructure that allows (shared) service providers and service integrators to exchange electronic products, electronic services, and information. To allow for efficient business networking, a large number of standards is defined not only on the lower, commu-

nication oriented layers of the business bus (e.g. EDIFACT, XML based standards), but particularly on the higher, business oriented layers (e.g. contracting standards, service level agreements).

- The business bus is complemented by several basic (electronic) services that are industry independent and process independent (e.g. certificates, payments, creditworthiness information). These **public services** are closely linked to the business bus.
- Most **end consumers** have access to products / services using service integrators. However, if end consumers wish to aggregate products / services by their own, they can access the business bus, too.

All types of service providers optimize their business models with regard to their production processes. In contrast, service integrators optimize their business models with regard to customer processes or customer life events, respectively. Business networking and the utilization of the business bus allow to separate production- oriented and customer process-oriented portions of the value network, thereby allowing different business models to exploit their respective core competencies.

3. Mass Customization for Financial Services – A Product-oriented Approach

If complex products are manufactured, a model-based configuration of product variants has many benefits with regard to product data management, production flexibility, and systematic resource management. Hence, product models and product configurators have been incorporated into standardized production management software packages (e.g. SAP R/2 or R/3) and are also a common feature in individual production and / or sales support solutions of most investment goods manufacturers. An overview of configuration concepts can be found in [7]. Although complex products are also created by banks and insurance companies, a model-based configuration of product variants can only be recently found in standardized software packages (e.g. FJA's or Alldata's solutions [1]). In individual software solutions and even some standardized software packages, product data are usually 'hard-coded', i.e. product structures and feature dependencies are hidden in tariff systems, 'individual' surcharges or reductions, and sales bundles [12]. An important reason for the lack of product-orientation of most current software solutions is that product handling is distributed over numerous business unit related application systems (e.g. life insurance, health insurance, car / home insurance) and / or over numerous business process related application systems (e.g. policy management, claim management, premium management). During the last decade, model-based configuration of products has been adopted by many financial

service companies to separate business unit support and / or business process support from product data (and tariff) management, thereby enabling companies to implement product (and tariff) innovations more consistently, more flexibly and, what maybe most important, in much less time [17].

The conceptual basis for configuration of individualized products in financial service industries is presented in subsection 3.1. Subsection 3.2 illustrates the configuration process using an example from the insurance industry. To create product variants (and standard products) from general product models, a certain set of production rules is applied. If these rules are inverted, it should be possible to link product variants (or standard products) back to the underlying, generalized product models. Such an ‘inversion’ of the configuration process allows for linking product variant related information (e.g. profitability) to the underlying product model, thereby guiding the product innovation process to focus on profitable products and to avoid unprofitable variants. The ‘inverse’ application of configuration rules is described in subsection 3.3. The contents of this section

have been initially developed in [12] and been elaborated in [13].

3.1. Configuration of Product Variants

Product configurators are usually utilized to derive product variants as a combination of product components and / or by checking the feasibility of given combinations against a generalized product model [7]. A more powerful concept that underlies state-of-the-art standardized software packages for mechanical engineering companies is the concept of open variants [19, 124-128]: Product variants are specified by certain values for a set of attributes that depends on the respective product type. This results in a three-level hierarchy: Product types are assigned to attributes, and attributes are assigned to attribute values. Attributes may be compulsory or optional. Moreover, attributes may be single-valued (i.e. attribute values are exclusive) or multi-valued. Furthermore, values of different attributes may be linked by dependencies (inclusion or exclusion).

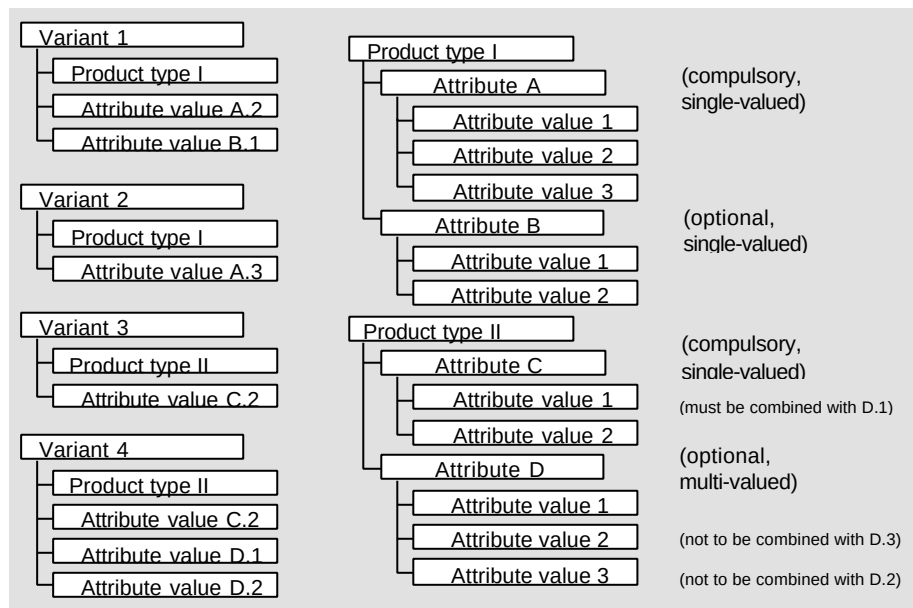


Figure 2. Derivation of Product Variants (adapted from [13])

Based on an open variant model (right side), the derivation of four product variants (left side) is illustrated by Figure 2. The simplified product model comprises two product types I and II which are specified by two attributes A/B and C/D, respectively. While A and C are compulsory, B and D are optional. A, B, and C are single-valued attributes, while D may have more than one attribute value. However, if C.1 is chosen, then D.1 must also be chosen. Furthermore, D.2 may not be com-

bined with D.3. This simple product model implies a total of 13 feasible product variants.

The simplified product model for open variants may be elaborated by various types of additional constraints, creation of tables for maintaining feasible combinations of attribute values, and integration of individual calculation routines.

3.2. Application Example: Insurance Products

If configuration concepts from mechanical engineering are to be applied to financial services, two specialties of services must be taken into consideration:

1. Not all product variants may be generated that are technically feasible. For services, it is essential to integrate customer properties into the configuration process [12, 33-34].
2. While maximum flexibility has been the foundation of product models in mechanical engineering, service product variants primarily reflect regulations, pricing rules, customer properties, or risk properties. Therefore, more constraints have to be represented in general.

The primary advantage of an open variant product model for financial services is a simple representation of configuration rules.

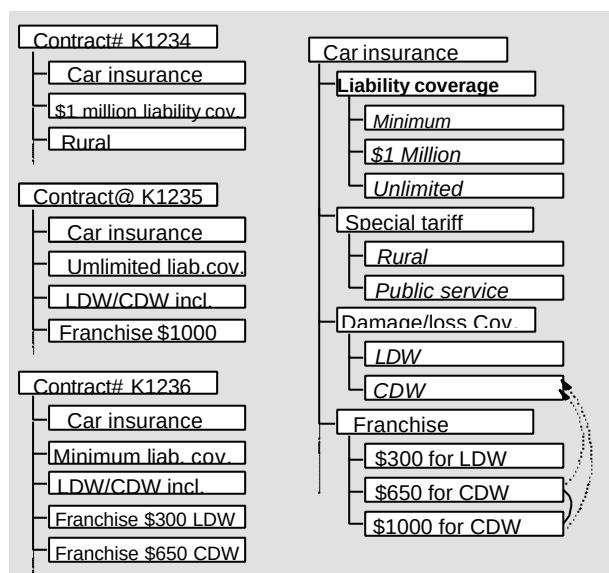


Figure 3. Insurance Contracts as Open Variants

Figure 3 illustrates the application of the open variant product model to financial services: Based on a general model of car insurance contracts (right side), the derivation of three concrete contracts (left side) is shown. The notation is condensed from Figure 2 by denoting compulsory attributes in bold font (vs. optional attributes in normal font), values of single-valued attributes in italic font (vs. values of multi-valued attributes in normal font), exclusion rules as undirected arcs, and inclusion dependencies as dotted, directed arcs. A detailed analysis of the applicability of open variant product models to different insurance and banking service types can be found in [12][13].

3.3. Inverse Configuration

Usually, product models are utilized to generate variants based on a general product structure and a set of constraints. But it is also possible to utilize a product model in an inverse way: Since the generation rules for variants based on the general model are known, information related to concrete variants can be transformed into information related to product types, attributes, and attribute values. E.g., using the product model illustrated by Figure 3, profitability information for insurance contracts could be transformed into profitability information linked to the various liability coverage, tariff, damage/loss coverage, and/or franchise alternatives. This information is particularly valuable to support pricing decisions or decisions regarding product structure.

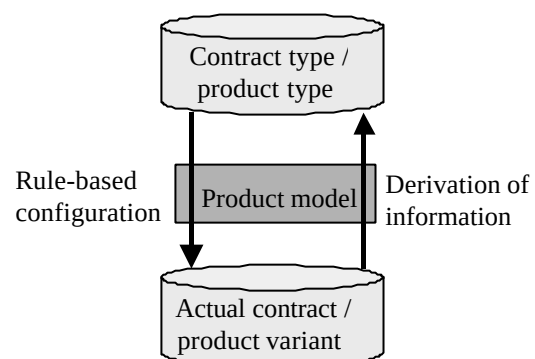


Figure 4. Forward and Inverse Application of Product Models (adapted from [13])

Figure 4 illustrates the two different utilization directions of an open variant product model: While the usual configuration-type utilization creates product variants from a general model of product types, its inverse utilization derives type-level information from variant information.

4. Intentions Value Networks in Financial Services – A Consumer Process-oriented Approach

Consumers are looking for ways to manage basic needs and achieve basic objectives in a simplified way [6]. As an example, 'travelling' today often means that travel products (e.g. flight, accommodation), banking products (e.g. foreign currency), health products (e.g. vaccination), insurance products (e.g. baggage insurance), and information products (e.g. travel guide) have to be purchased from different suppliers. This situation is illustrated by Figure 5. More complex objectives like planning for a secure retirement, moving to a new

community, or starting a new career require even more products and services to be integrated. Such complex life objectives have been designated as consumer ‘intentions’ [6].

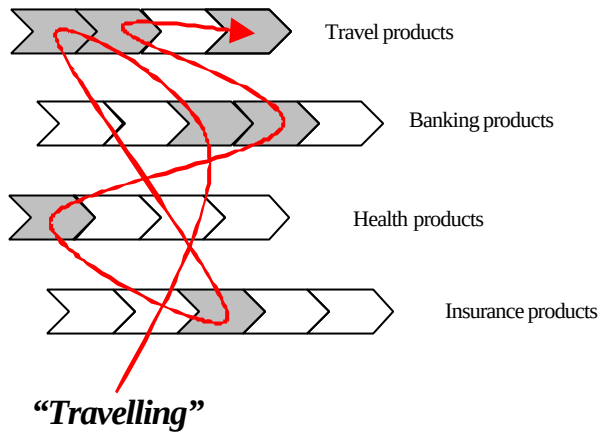


Figure 5: Intention ‘Travelling’ vs. Traditional Travel Related Products and Services [2]

Since deregulation and globalization induce not only more choice, but also more complexity in consumer’s buying decisions, isolated products and services lose their traditional importance. When buying is more and more driven to create a holistic solution to a problem or to entirely satisfy an intention, companies which want to succeed have to simplify consumer’s processes, i.e. by integrating products and services for focussed customer segments.

The conceptual basis for consumer process-oriented design of business models is presented in subsections 4.1 and 4.2 from the consumer’s and the provider’s perspective, respectively. The contents of these subsections have been initially developed in [2]. Subsection 4.3 uses an example from retail banking to illustrate consumer process-orientation.

4.1. Modeling Consumer Processes – The Consumer’s Perspective

The consumer process from the consumer’s point of view is based on a multi product mix which defines itself according to the specific life event or intention that triggers the buying process. At the beginning of the buying process, the consumer does not always know the individual products which constitute the final product offered. Furthermore, this product does normally not have a company-related brand so that consumer loyalty is difficult to establish and the consumer lock-in process must be redesigned [18, 103-171]. The problems we face for branding an intention-triggered product can be

compared to the difficulties which occur when establishing a brand for a ‘traditional’ service product. A physical product, e.g. a specific car, ‘transports’ a brand and thus is recognized by the consumer due to its potential characteristics. A consulting company establishes a brand which is closely tied to its name, rather than its products. In this case the branding process is much more difficult, because the product cannot be directly recognized by the consumer. The product is defined by a good measure of imagination and suggestive power of the advertising campaign [10, 44-45]. The same is true for an intention-triggered product: From the consumer’s point of view, the lock-in is achieved by a product mix, which satisfies the intention in the best possible way, i.e. the most important characteristics of the product are its quality and degree of individuality. First experiences of Web based aggregators show that ‘true choice’ and ‘objective advice’ become more important constituents of consumer loyalty than factors that can be attributed to isolated products [11].

The consumer process, which results from the above discussed points, can be defined as follows:

- Identification of an intention
- Search for an aggregator which offers not only appropriate solutions, but also ‘true choice’ and ‘objective advice’
- Selection of appropriate solutions including desired distribution and access channels
- Payment and ‘consumption’

4.2. Modeling Consumer Processes – The Provider’s Perspective

Following an outside-in strategy, the consumer process from the provider’s point of view must be defined according to the process described in the preceding subsection. This leads to the following provider’s process steps:

- Identification and selection of communities / consumer segments. While traditional approaches are based on income, geographical, educational, or similar segmentation, alternative approaches include an analysis of individual attitudes [5].
- Anticipation of intentions. This analysis can be done using an event-oriented approach (‘Which life events are triggering buying decisions?’), a life stage-oriented approach (‘In which life stages, which buying decisions are made?’, ‘Which life stages precede / succeed which life stages?’), or a combination of both.
- Selection of ‘best of breed’ solution components. In order to provide ‘true choice’ and ‘objective advice’, the network should be large, and selection

decisions should be made based on quality assessment rather than be based solely on profitability.

- 'Assembly' of solutions which contribute to the satisfaction of one or more intentions.
- Support of all appropriate distribution and access channels. While maximum channel usage flexibility should be maintained in general, assignment decisions can be based on a content model [8].
- Obtaining and keeping a competitive position in the network. For maintaining a favorable position in a value-added network, the concept of networkability [14] has been proposed.

If a company is a component of an intention value network, it contributes to the final solutions by providing components rather than being the last element of the supply chain. Thus, several changes and effects result:

The consumer is no longer a 'holistic' marketing object, but is segmented according to his or her intentions. The company must nevertheless know the intentions and the possible solutions in order to be able to produce the 'right' product or service component. Customer relationship management in this context means that the service integrator as direct interface to the consumer has to individually care for him or her. As long as the product was the link to a 'faceless' mass of median consumers, it could be manipulated according to more or less fuzzy results of empiric research. Today, the connection is directly established with the consumer and the care must be 'applied' according to his wishes. That means that the product has to be individually customized for a specific consumer. Otherwise, since the switching costs are very low, the consumer can easily move on to another integrator.

Customers from the companies' point of view can be divided into three groups:

1. End consumers which buy and combine products and services directly (without using a service integrator)
2. End consumers which buy solutions, i.e. which use a service integrator
3. Service integrators

Since, in the presence of service integrators, a direct contact to end consumers becomes increasingly difficult for producing companies, differentiation as far as competitors are concerned must be created by other means. This can, for example, be done by banner advertising on the respective Web site, targeting particularly customers in groups one and three. A prerequisite for being able to do this is that the company stays in the network. Thus, on the one hand, the company has to keep a direct contact to the service integrator and create a lock-in posi-

tion with it. On the other hand, and this must be the main ambition, the entire organization must be orientated towards keeping the position in the new business architecture of the information age, which is developed in the next chapter.

Another important point of the multi product mix is that it is constituted by products of different companies. Therefore we need a reliable standard for enabling the intermediaries [9] (service integrators) to assemble the final solution. Service integrators must be able to integrate product and service components by using a generic method in order to achieve a maximum degree of individuality. Generic products can be integrated by using product catalogues [16] which serve as product pool for creating individual solutions.

4.3. Application Example: Home Buying Process

Among the pioneer intention value networks created in 1999 were ThirdAge and Quicken:

- ThirdAge.com 'presents the best the Web has to offer for active older adults. ThirdAge.com offers rich advice and helpful information on topics critical to the ThirdAge community, such as retirement housing and estate management - areas typically ignored or glossed over by traditional media.' (<http://www.thirdage.com>) By integrating services from Drugstore.com, E*Trade, GE Auto Insurance, IBM, Intel Relocator, Merrill Lynch, Millstone Coffee, etc., and by partnering with Barnesandnoble.com, Ecentives, Global Health and Fitness, Monster.com, Softwatch, Weather.com, Women's Health In-teractive, WorldRes, etc., ThirdAge.com tries to satisfy the intentions 'achieve financial security', 'maintain a healthy lifestyle', 'find appropriate housing', 'expand personal horizons', and 'explore the world'.
- Quicken's insurance market claims to help customers in making better, more informed decisions (<http://www.insuremarket.com/event/>). By integrating products from Allstate, MetLife, Prudential, State Farm, Transamerica, Travelers, Zurich, etc. and by providing lots of independent information and support tools, life events like 'buying a car', 'getting married', 'buying a home', 'becoming a parent', 'leaving a job', 'getting divorced', and 'retiring' are covered.

Quicken's approach to integrating information and insurance products into event-oriented solutions for private consumers has been extended by Credit Suisse, the retail banking unit of Swiss Credit Suisse Group, to a portal that is intended to holistically support the home

buying process. Yourhome.ch integrates geographical and statistical information with services e.g. from real estate brokers, architects, interior designers, tax consultants, legal consultants, real estate consultants, moving companies, insurance companies, and of course mortgage banks. In addition to general information and product-related information, among others a utility to locate an address on a map and a utility to interior design is provided. Of particular interest is the fact that, although the portal is provided by a bank, it is planned to integrate products of competitors.

5. Conclusions and Outlook

We have presented two different individualization approaches to financial services. While the configuration approach allows to generate highly individualized product variants if the open variant product model provides for a sufficient number of attributes and attribute values, the intention value network approach caters to specific consumer intentions by integrating a large set of products and services. The first approach represents an inside-out view to individualization: Corporate product development tries to reflect consumer needs by offering customizable services within the scope of the respective corporate mission. In contrast, the second approach represents an outside-in view to individualization: Based on an in-depth analysis of consumer processes, corporations with complementary core competencies form a value-added network to support consumer processes holistically. In an open finance setting, service integrators need flexible 'product factories' producing customizable products efficiently as well as product factories need service integrators that provide effective customer knowledge and effective customer care.

Current developments in the retail banking sector support that hypothesis: Universal banks disintegrate into product factories that produce shared services (e.g. transaction banks, online brokers, card services), exclusive service providers (e.g. risk management, investment consultants), and service integrators (e.g. home-buying specialists, retirement specialists). Simultaneously, banks begin to collaborate with traditional customer knowledge / customer care specialists like insurance brokers, retailers, airlines, or portals.

If customers increasingly use integrators for process support in specific life stages and/or life events, however, the question arises whether branding and loyalty-based customer management are sustainable approaches. Long-term and holistic consumer relationships seem to be contradictory with a life event / life stage-oriented, core competency-based approach. Moreover, it is in question whether the integrated data needed for customer knowledge management will be

available to an integrator, a network of service providers, or only the consumer.

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