Mass Customisation and Personalisation: One-to-one Customer Approach on a Mass Scale

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Recently, there has been a remarkable shift from mass-production and mass marketing into the more individual customer approach (Du et al., 2003; Gilmore and Pine, 1997; The Economist, 2001, Wilson and Gilligan, 2005), which resulted in emergence of new concepts like one-to-one marketing, mass customisation and personalisation (Peppers and Rogers, 1995). This shift owes its existence to contemporary computerised information systems and internet technology which enable companies to meet customers’ needs and provide communication links to each customer individually, but on a much larger scale than before (Gilmore and Pine, 1997). Technological advances now enable to maintain cost and time efficiency which used to be attributed to mass production only (Huang and Lin, 2005; Peppers and Rogers, 1995).

It seems that, among many texts written by academics and practitioners, there are several definitions and understandings of these new marketing paradigms. This paper gathers and describes some of the related descriptions, frameworks and techniques. It also attempts to depict and systematise several current trends in reference to academics’ and practitioners’ literature review. Firstly, the paper provides various reasons for emergence of personalisation and customisation concept. Then, it enumerates different definitions of the concepts and elaborates on their dimensions, types and categorization methods. Next, it attempts to solve the misconception problem between personalisation and customisation definitions. Further, the interdependency between personalisation and customisation is exposed in a business process; also a new term of mass personalisation is proposed. Finally, it summaries issues discussed and suggests arguments for further debate.

One-to-one marketing – the traditional “corner shop”

The phenomena of one-to-one (relationship) marketing, personalisation and mass customisation are not new (Evans, 2003; Kahan, 1998; Peppers and Rogers, 1995; Schilke et al., 2004). They have their roots pre-dating mass production, when sellers in the traditional “corner shop” (Evans, 2003, p. 668) knew their customers in person. They often held very personal information on the particular customer which enabled them for constant reinforcement of the relationship. The in-depth, “tacit knowledge” about customer’s preferences, financial and family situation allowed sellers to adopt marketing messages and products individually to each customer (Evans, 2003, p.668). However, the real challenge is to keep the same kind of relationship supported by customer knowledge and communication but on a much larger scale without losing the profitability of the business (Huang et al., 2005; Peppers and Rogers, 1994).

Pitta (1998) considers one-to-one marketing as the next step in evolution of segmentation process; also Franklin (2001) announces the emergence of marketing notion in which one
customer constitutes one segment. According to Peppers and Rogers (1994, p. 27; 1995, p. 49) technology development enabled marketers to produce personalised marketing communication and customise products and services for “one customer at a time”. The emphasis is on keeping the most profitable customers and selling more products and services to these customers during their relationship lifetime which increases the share of customer. Peppers and Rogers (1995, p. 48-49) propose a new way of measuring company performance. They say that instead of looking at market share, companies should focus on increasing “share of customer” (Peppers and Rogers, 1995, p. 48-49). Further, they argue that organisation should measure the quality of relationship; since the quality of product and service became a standard that must occur in order to enter the competition (Peppers and Rogers, 1995). Personalisation and customisation are therefore crucial processes for the quality relationship. Other reasons for the emergence of these concepts are depicted in the next section.

The reasons for emergence of personalisation and customisation concept

It is believed that globalisation and technological development cause significant change in consumer behaviour (Thomas and Gupta, 2005). Customers are nowadays better informed, more demanding, and they often actively collaborate with each other sharing knowledge about the market and exposing marketing techniques (Brown, 2006). As Pitta (1998) claims, in global market information about prices is easy to obtain and there are fewer purchasing barriers. He further argues that, in such a monopolistic market in which numerous companies offer the same or similar goods and services, it is difficult to achieve a competitive advantage. Practitioners see the solution in advanced differentiation where customised product should better meet individual needs (Pitta, 1998) and satisfy more customers at the same time (Huang, 2005).

Knowledge management is another urgent space for improvements via personalisation and customisation processes (Searby, 2003). Workers need to face an increasing flow of information. The data is often fragmented, unstructured, have various forms and must be searched from numerous locations. For that reason, personalisation and customisation create opportunities to decrease the amount of irrelevant information that reaches workers and increase relevancy and quality of the selected information (Hicks, 2003).

Mass customisation may also contribute to forecasting and marketing planning by helping to predict changes in customer preferences. Monitoring customer’s choices during for example a co-design process may reveal trends early enough to modify business strategy and adapt relevant marketing plan so that the customer remains satisfied (Thomas and Gupta, 2005).

Another reason for individual customer approach is the vast amount of stimuli that customer is exposed to by advertising activities. Mass media advertising and internet-based communication cause among many customers information overload (Evans, 2003; Schilke et al., 2004). In response, customers apply psychological self-defence that is manifested in a form of selective perception and distortion; as a result, significant share of the marketing communication reaches recipient in a misrepresented form or it doesn’t reach a target at all.
(Kitchen, 1994). Thence, personalised marketing communication aims to provide appropriately selected information at the right moment and at the right place, and in a way that gains customer attention. For instance, a personalised salutation used in header letters for online survey contributed to a higher number of filled in questionnaires (Heerwegh et al. 2005).

Some forms of customisation may satisfy customers who seek individual and unique experiences (Coner, 2003 cited in Huang, 2005; Fiore et al., 2004). As Fiore et al. (2004) reveal, co-creation (also called co-design in Killer, 2006) fulfils the need to express customer’s individuality and may create a memorable experience. As Instone (2000) argues, in the current market, where push methods are not as effective as they used to be, customers seem to resist a larger part of marketing activities. He also comments that this resistance could be overcome by involving the customer in the whole process thus intensifying his or her interaction with the company or the product. This goal can be achieved by personalisation and customisation techniques.

In the next two sections a review of definitions and deeper insight into personalisation and mass customisation concepts are presented. Various notions, frameworks and techniques directly related to the concepts are elaborated.

**Personalisation**

A generic definition of personalisation states that it is a process of communication in which the recipients’ names and other personal data is used in order to make a message more appealing and more special. In addition, the core content of the message can be personalised by employing recommendations which have been created according to e.g. past purchase behaviour records or other information stored in company’s data bases (E-Marketing Glossary, 2006). The purpose is to make the consumer feel that he or she is treated on the one-to-one basis, increase the response rate and, in consequence, improve the conversion rate. Personalisation intends to adapt the content so that it meets individual requirements but it should also emerge at the right time and within the right context (Ho, 2006).

Personalisation is not a single activity but a complex, often long-term process (Peppers and Rogers, 1995). Murthi and Sarkar (2003, p. 1344-1346) propose 3 stages of this process: **learning, matching and evaluation.** Firstly, learning occurs when the company finds out about customer personal information and preferences. Desired data can be given explicitly by the customer or it can be indirectly gathered from various resources, usually from customer previous interactions with the company or its partners. Secondly, data must be matched with relevant product, price or marketing message that will ensure individual customer approach. For matching process, Murthi and Sarkar (2003) recall recommendation systems that utilize such techniques as collaborative filtering and data mining. Collaborative filtering automatically applies information obtained from the customer and other customers from the same buying group to create preference profile for the individual customer (Schubert and Ginsburg, 2000). Data mining can be defined as an inductive process that uses various
available data to determine patterns, trends and useful information (Stankovski and Dubitzky, 2007). The third stage relates to constant evaluation of the personalisation process by relevant measurement techniques. Figure 1 shows 3-stage Personalisation Model based on Murthi and Sarkar (2003) concept. Evaluation stage has been linked to remaining elements to ensure feedback on learning and matching effectiveness and their constant improvement (Murthi and Sarkar, 2003)

![3-stage Personalisation Model](Figure 1: 3-stage Personalisation Model (as interpreted from Murthi and Sarkar, 2003, p. 1344-1346)

Apart from the three stages of personalisation process, the concept should be also considered from a dimensional aspect. According to Schilke et al. (2004), the extent to which a given process is successfully personalised depends on the number and quality of factors that are taken into account. Schilke et al. (2004, p.379-380) proposes the so called “multi-dimensional-personalisation (MDP)” which aims at connecting different characteristics of personalisation like interest, location and time in the virtual and (more importantly) in the real world. The interest dimension considers user preferences and previous behaviour to match relevant information, products or services. The location dimension employs information about the physical user position in space, obtained from the user-end devices (e.g. mobile phone) and uses it to suggest off-line events and to provide appropriate assistance. The last dimension - time - attempts to analyse and then make use of consumer behaviour within certain time. Schilke et al. (2004) suggest also the use of different user personalities, and these would include employing special customer lifestyle profiles depending on the time and place. For example, for a customer being at work different set of personalised activities would be applied than for a person being at home. Figure 2 demonstrates a simplified model of optimal personalisation based on Schilke’s et al. (2004, p. 380) “multi-dimensional-personalisation” concept. It can be noticed that all three dimensions overlap creating common area. This field symbolises the optimal personalisation process in which information about customer’s location and interest in time is analysed to produce the most relevant outcome.
As Schilke et al. (2004) claim, even though these 3 dimensions are already in use in on-line and off-line space when personalising, they are usually not linked together. There are barriers for incorporating these new concepts: mainly technical limitations (Agrawal et al., 2001) and users concerns about privacy (Evans, 2003) which are beyond the scope of this paper.

Searby (2003, pp. 13-15) identifies four different business areas where personalisation is utilised at the moment: “targeted marketing/advertising”, “customer relationships”, “service integration” and “knowledge management”. Targeted marketing and advertising are based on assumption that it is more profitable to serve to niche markets (in this case – to individual customers) due to competitive advantage of product differentiation. Searby views customer relationships concept is viewed as a business philosophy. In this case, personalisation generally aims to give consumers an impression that they are treated individually and that the entire organisation knows them and cares about them, no matter how and when the communication occurred. As Searby further comments, in services integration the use of personalisation concept involves combining information across different services and, in result, creating a common customer profile. In knowledge management, personalisation is used to select information that matches workers preferences and is relevant to business tasks undertaken at a given moment. Mass customisation also has its applications in these four areas, which is further discussed in the next section.

**Mass customisation**

Customisation occurs when customers are actively involved in providing information about their preferences and needs. They are influencing their profiles directly, for instance when filling a registration form with personal data or product specification form (Huang and Lin, 2005). In on-line environment, customisation is usually applied to enable a user to change web site layout and to specify the content composition (Schilke, 2004).

Mass customisation can be viewed as a much broader concept that applies to manufacturing processes. In this case the Internet, enhanced by information technology, is often used as medium that enable customisation of the final product (The Economist, 2001). Piller (2003) stresses the importance of efficiency when employing mass customisation. He argues that
mass customisation aims at providing highly individual products but produced in a way so that the cost of customised production is comparative with the cost of production of homogenous goods. Therefore, as Piller (2003) claims, mass customisation does not require a change of targeted segment. The difference between traditional “corner shop” customisation (Evans, 2003, p. 668) and new mass customisation is that of production elasticity. While the former requires that the whole production process be changed according to demand (e.g. ordered furniture will be built from scratch for every single customer), the latter employs pre-design flexible production. This so called “stable solution space” enables a customer to adjust the product to their need and receive it in a reasonable time at a reasonable cost (Piller, 2005).

Mass customisation aspires to provide exactly what customer wants, including the appropriate time of delivery and place (Hart, 1995 cited in Bardakci and Whitelock, 2003). This is, however, an ideal, which in many industry sectors cannot be achieved. Often a company that chooses mass customisation, in order to be efficient, needs to predict customer possible choices and introduces the set of limited options; otherwise it will need to add substantial costs (consequently increase prices) and extend the time of production significantly (Agrawal et al., 2001).

As has been stated in The Economist (2001) claims that mass customisation is a next stage in evolution of build-to-order (BTO) system. BTO means that products are manufactured only as and when the customer makes a request but they don’t have to be necessary customised (Agrawal et al., 2001). Dell is generally considered as a provider of a successful product customisation. Other examples can be found in food, bicycle and clothes industries (Agrawal et al., 2001; Pitta, 1998; Gilmore and Pine, 1997).

To sum up the foregoing, customisation aims at meeting unique needs of each individual (segment). It is often technically impossible to enable product customisation exactly according customer’s requirements, since the increase in cost of manufacturing and time of delivery would defeat the purpose of mass customisation.

Gilmore and Pine (1997, p.92) propose 4 types of mass customisation: collaborative, adaptive, cosmetic and transparent. Collaborative customisation is used when customers don’t have their needs defined and the company cooperates individually with each of them to produce an optimally customised product. Adaptive customisation relates to the standard product which, after a purchase, can be easily modified according to customer need in a particular situation. Cosmetic customisation is employed when the appearance of the product is essential. For instance, the size and design of packaging can be customised but the purpose of the product and the way it’s being used doesn’t change much. The last type of customisation transparent customisation possesses (according to definition stated in the previous section) all characteristics of personalisation. As Gilmore and Pine (1997) further describe, products are individualised without direct customer involvement, based on observations and analysis of customer needs and past purchasing behaviour. For the aforementioned reasons, the discussion on personalisation versus customisation should be conducted. The next section attempts to explain differences between these two terms.
Personalisation versus customisation

There are authors that use the term (mass) customisation alternatively to personalisation and vice versa (Ball, 2006; Goldsmith, 1999; Ho, 2006); however as Huang and Lin (2005) claims, nobody made a formal statement that these two expressions have definitively the same meaning. Moreover, there is a lack of support for this view in the literature; instead, several opinions against considering personalisation as the synonym of (mass) customisation have been recorded (Allain, 2006; Huang and Lin, 2005; Schilke, 2004).

Allen (2006) claims that customisation appears when the customer requests changes in the product or service that is normally standardised, whereas personalisation relates to active dialog with a customer. Also Huang and Lin (2005) and Schilke (2004) have similar idea about these two terms. Generally, the question that should be asked is: who decides about how the customer needs should be met, and how and what message should be communicated to him or her. Mass customisation occurs when the customer is in charge of making these decisions, whereas personalisation is more about gathering information, predicting and concluding about customer needs and optimal communication solutions (Schilke, 2004).

The differentiation between personalisation and mass customisation can be also made by looking at how information is gathered. Huang and Lin (2005, p. 28) make a clear distinction between customisation, which requires “active” user involvement and personalisation, which relates to “passive user involvement”. Piller (2005) has a similar view on this issue; he states that, for mass customisation to occur, consumers need to specify requirements and they need to communicate them to the company. These requirements usually relate to the specifications of a product or service and indicate how the offering should be modified. On the other hand, personalisation occurs when the company matches data about products with data taken from customer profile in order to create recommendations that will optimally fit customer’s needs. Additionally, Instone (2000) maintains that data can be collected explicitly (e.g. when customer fills in forms) or implicitly when the knowledge about a customer is deduced indirectly from various actions (e.g. previous buying patterns). Huang and Lin (2005) indicate that customisation requires generally explicit records, whereas personalisation is based on explicit and implicit records.

Explicitly and implicitly as distinctive characteristics have been used by Ho (2006, p. 42) to present a hierarchy according to which personalisation seems to be much more advanced than mass customisation. He proposes “Taxonomy of customer relationship management systems for e-commerce” (Figure 3) which shows three levels of “automation and individualization” (Ho, 2006, p. 42). Customisation has been placed at the lowest level, because Ho (2006) defines it as a process in which users adjust the website having a limited range of choices to make. He further explains that middle level belongs to adaptation methods (Web content changes according to information about a given user group, e.g. URL may automatically change so the contents is viewed in respect to user’s country) and the highest level consists of personalisation applications (user is faced with the contents that was created especially for him/her so that it corresponds to their preferences, needs and values).
Ho’s model of “taxonomy of customer relationship management systems” is seen from the customers’ perspective where the level of automation depends on the level of customers’ active direct involvement. From the company’s perspective however, the level of automation that must be pre employed in order to provide customised output can be comparable with the level of automation in case of personalisation. The automation of the personalisation and customisation process is essential for efficient production and marketing on large scale. Due to technological constrains, in some industries, the trade off between the level of automation and individualisation comes into existence. The higher the level of individualisation processes (through personalisation or customisation) the more difficult it gets to automate these processes. Car industry provides a good example: production of a highly individualised car will be less automated because more elements will have to be modified or built to order from scratch to meet customer’s highly specific requirements (Agrawal et al., 2001).

Analysing the abovementioned definitions, one may state that the same product can be seen as being personalised and customised at the same time (Allain, 2006; Huang and Lin, 2005; Schilke, 2004). It depends which perspective – channels or end-user’s - is considered. For instance, financial organisation wants to send birthday cards to its customers. In order to do that they submit a data base containing details on its customers to a direct marketing company, which designs desired greetings. Financial company personalises marketing communication for its customers (end users), whereas direct marketing company acts as a customizer, given that the former intentionally stated its needs by formulating the layout of the post card and delivering the data base.

The problem with a clear definition of personalisation and (mass) customisation may have its source in practical usage of both concepts (Huang and Lin 2005). The next section explains application of both notions in one business process and shows their close collaboration in creating individual offerings and employing personal marketing communication.
Personalisation and customisation in a business process

As discussed above, these terms are often mutually dependent and they support each other in a process of gaining data, analysing information and carry on dialogue with customer. Customisation is often used to remove errors from personalisation activities, by updating customer profile. Figure 4 illustrates how personalisation and customisation can be used to enhance one-to-one marketing approach. The Figure is based on the model of “Interdependency between personalisation and customisation” (Huang and Lin, 2005, p. 30). Several elements have been added in order to make it more universal and consistent with concepts introduced in this paper.

![Diagram](Image)

Figure 4: Collaboration Model (adapted from Huang and Lin, 2005, p. 30)
The process may begin from customisation, in which customers directly specify their personal data or preferences. This information together with data from past purchasing behaviour and external resources constitutes “customer profile”. Personalisation process starts when information from “customer profile” is used to segment customers and match the relevant “company offerings”. Individual recommendations are produced and presented to customers. The effectiveness of the particular recommendation is assessed and the outcome is used to modify customer profile in order to prepare more accurate recommendations in the future. Modifications consist of linking “Observation Function” with “Segmentation”, and with “Rule-based matching” in order to indicate the necessity of constant improvement of personalisation techniques based on success or failure of their outcomes (process of evaluation mentioned by Murthi and Sarkar, 2003).

“Application of personal data” is incorporated in the model in order to separate information which is not necessary subject to segmentation or matching process (e.g. customer names) (Heerwegh et al. 2005). This data can be directly used to communicate with a customer, for instance by using personalised salutation or preparing special birthday vouchers. Another modification relates to “Company offerings”. Products can be directly customised and information gathered during this process may be used for further recommendations. For instance, travel agency’s customers may receive promotional leaflets with personalised pictures from their previous trips and with new suggestions relevant to their interests and experiences.

The overall objective is the ability of successful application of collaboration model to many customers simultaneously. Collaboration model performs its function properly if the needs of masses are met on the individual level. The next section proposes a new term of “mass personalisation” and explains the reasons for this suggestion.

**Mass personalisation - term proposal and justification**

As it has been explained earlier mass customisation in comparison to customisation stresses the need for a large scale of business activities (Piller, 2005). Mass customisation occurs when individual preferences of many customers are met simultaneously without delivery delays and without significant increase in production cost (Gilmore and Pine, 1997). Based on the same rules, the distinction between mass personalisation and personalisation should be made. The large scale of mass personalisation activities likewise represents the competitive advantage. Many practitioners already execute this approach. For example, AlphaPicture and DirectSmile provide a service of image mass personalisation mainly for marketing communication purposes. The technique allows placing variable text in specially prepared motifs. Motif is firstly alphabetized and then the relevant font is developed. For instance, as can be seen on Figure 5 and 6, the only difference between these two photographs is the text on the London’s road sign.
The names of the streets were changed automatically after uploading relevant data base to the software. There was no need to place a new sign in front of the Big Ben and take a picture of it. Images can be personalised with text using large data bases in a relatively short time. Additionally, technological advances make it possible to print variable data on digital printers with at costs and quality comparable to those of offset technology (www.alphapicture.com, www.directsmile.de).

In conclusion, the “mass” approach to personalisation should be distinguished from the general concept, since the former requires less time per unit personalised in order to prevent increase in costs and consequently prices. Therefore, more advanced process techniques and greater automation are needed for efficiently employed mass personalisation.

**Conclusion and further discussion**

On the one hand, technological advances cause information and advertising messages overload (Kitchen, 1994, Evans, 2003, Schilke et al., 2004). On the other hand, the same technological development enables companies to personalise marketing communication and makes customised products and services possible. The new one-to-one marketing relationship concept aims at interaction with many customers simultaneously however on the individual basis (Peppers and Rogers, 1995). This mass approach seeks the highest possible level of personalisation and customisation by automation of the processes and individualisation of the output on a large scale (Figure 3). For that reason the new term “mass personalisation” has been proposed to stress the importance of costly and timely effective mass character in personalisation strategy. Additionally, optimal personalisation connects online and offline world and takes into account user interests, location and time (Figure 2).

Sometimes, the same individualised product can be personalised from the end-user perspective and customised from the outsourcing company perspective. This issue and the fact that personalisation and customisation are often collaborating in a business process (Figure 4) and are mutually dependent (Huang and Lin, 2005), might be the reasons why this terms are often used alternatively, for example by Ball (2006), Goldsmith (1999) and Ho (2006). Both terminology and collaboration model require further theoretical discussion and empirical tests.
Nevertheless in this text the differences between customisation and personalisation have been elaborated and the main distinguishing factors have been stated. Personalisation occurs when information used to individualisation was gathered implicitly (Instone, 2000), without customer direct input, whereas customisation requires customer’s deliberate involvement in providing relevant information (Huang and Lin, 2005). The difference between these two terms might be sometimes hardly visible; the difficulty lies in ability to indicate whenever customers are aware of the purpose of the data they provide and if they are, does it mean that they take part in a customisation process? For instance, customers that type in their date of birth into an online registration form might or might not know that this information will be used to send them birthday cards. This example shows that theoretical knowledge should be further developed, systematised and tested.

Further discussion should also embrace the practical approach to one-to-one marketing and its effectiveness in the current businesses. The question arises if these new concepts are really valuable or if they are just technological “hype” (Pitta, 1998, p.471; Searby, 2003, p.13), over publicized result of direct marketing companies and creative agencies that try to induce interest and demand for their products and services.
References


