

What, Who and Where: Insights into Personalization

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Abstract

Personalization is a phenomenon that intrigues and confuses. Personalized offerings promise customer attention, loyalty and safe haven against commoditization. However, these promises do not materialize unless customers accept personalization as a means to enhance their consuming experience. Three points of views are offered to personalization in this paper. An analysis of various personalization concepts shows that the basic concept of personalization is reaching maturity even though fresh views are added to it, e.g. context-based personalization. Secondly, a text-mining based approach profiles the personalization research based on bibliometric data on nearly 800 articles, and indicates that the research field is fairly fragmented, and that mass customization and customization research clearly diverges from personalization research. Based on a selection of articles, a further analysis classifies the type of research and research contexts that are the most common. Finally, this research also suggests a conceptualization of personalization.

1. Introduction

Personalization has attracted increased attention in the 21st century. The benefits of personalization are said to be many for both marketers and customers. Customized products, services and communication are believed to attract customer attention and foster customer loyalty and lock-in [1], and serve as protection against the commoditization of the offering [2]. Goldsmith [3] has included personalization as one of the major changes that are influencing and will continue to influence marketing, and according to Kalyanam and McIntyre [4], personalization is an element of the online marketing mix.

Even though many articles have been written on the subject of personalization, there is still some confusion about what personalization actually means. Several disciplines are interested in personalization; most notably information systems (IS), computer science and marketing, and different fields emphasize different aspects of personalization. The terms used in different

fields are collected in the articles of, for example, [5], [6], [7]. The IS research on personalization is said to fall into three categories, i) applications of personalization strategies, ii) philosophical issues such as privacy regulations and ethics related to data collection and processing, and iii) technologies for mining user transaction data and deriving rules to generate personalized content [8].

There has been a growing interest towards personalization possibilities, as indicated by the amount of articles written on the subject. Personalization is based on the idea that that customers have hidden or overt preferences that marketers can reveal by building a learning relationship with the customers [9]. After learning the preferences, marketers can target their current customer base and prospects with more accurate offerings at better suited times and in more convenient places. In other words, they can provide customers with superior value. In addition, in theory at least, serving “segments of one” cannot be less effective than serving larger segments, unless the additional benefits are outweighed by the additional costs [10].

The objective of this paper is to gather, analyze and link concepts that revolve around personalization. The more specific goals of this paper are to i) analyse definitions and typologies of personalization, especially in the web-context, ii) map the research using a research profiling approach and iii) suggest a conceptualization of personalization. The paper is structured as follows: The second section sums up various definitions of personalization. The third section presents the main principles of research profiling and introduces the results of two database searches of nearly 800 articles. In the fourth section, a more detailed analysis of personalization literature is presented, and fifth section depicts a personalization framework. The sixth section concludes the paper with discussion.

2. The concept of personalization

Personalization goes by many names, e.g. customization, mass-customization [11], [12],

individualization [13] segmentation [14], targeting, profiling, one-to-one marketing [9], as there is no agreed on definition on what constitutes personalization [2]. Smith conceptualized the origin of the idea of tailoring the offering to better suit a certain customer group in 1965 [14]. His definition of segmentation is as follows: “Market segmentation involves viewing a heterogeneous market as a number of smaller homogeneous markets, in response to differing preferences, attributable to the desires of consumers for more precise satisfaction of their varying wants” [14]. It is sometimes difficult to draw a line between market segmentation and a personalized offering, or individual marketing as Simonson [10] calls it. According to him, many examples of one-to-one marketing could also be classified as usage-based segmentation [10]. The definitions of personalization have, to some extent become more lucid during the past few years, and on the other hand, new dimensions have been added to the definition. In the following, definitions that form the basis of the present conceptualization of personalization, especially in the web context, are listed.

According to Instone [15], a personalization system is *any piece of software* that applies business rules to profiles of users and content to provide a variable set of user interfaces. Personalization is presented as a two-dimensional construct based on *user involvement* (explicit vs. implicit) and *what is profiled* (user interface vs. content) [15]. Treiblmaier et al. [6] further examined the user-initiated customization (explicit) and system-driven personalization (implicit), and concluded that customization is less threatening to the privacy and security of consumers. Wu et al. [16] define web personalization as the adjustment and modification of all aspects of a website that are displayed to a user in order to match the users’ needs and wants. In addition to user interface and content, the *hypermedia links* that are presented to the user are included in the definition.

McCarthy [17] concentrates on various dimensions of content: (1) different *sources* of content; (2) the *arrangement* of content *on the screen*; (3) the *delivery mechanisms* (system or user initiated) and the *delivery vehicles* (web browser, mobile phone, pager, etc.).

Ho [8] attaches *adaptation* to the dimensions of personalization. In adaptation, relevant content is based on the preferences of *a group of users*. This definition adds a needed dimension between one-to-one personalization that might be impractical in many instances because of high costs and inconvenience of targeting only one consumer, and traditional segmenting that relies mainly on demographic factors when targeting a group of consumers. Albert et al. [18] talk about the right *timing* of the offering, and state the immediate objectives of personalization to be the understanding and delivering of highly focused, relevant content matched to users’ needs and *contexts*. They [18] also extend the concept of *micro-segmentation* [19], that reveals the underlying motives of the customer for acquiring an offering and define *nano-segmentation* whereby both transactional and non-transactional data is used.

According to Tam and Ho [20], there are three types of personalization. In *user-driven personalization* a user specifies in advance the desired web layout and content that matches his interests and preferences. User-driven personalization provides the user with tools and options to specify information requirements and presentation format (customization is the term more commonly used for this type of personalization). *Transaction-driven personalization* represents the “normal” personalization whereby the online merchant generates personalized layout and content. Finally, *context-driven personalization* adds yet another dimension to personalization. It is an adaptive mechanism to be employed to personalize content and layout for each individual user. Advances in click stream analysis and web mining have made it possible to understand the context and to infer the user’s likely behavior in real time (browsing or buying).

Fan and Pool [5] provide the most comprehensive framework of personalization that builds on the earlier definitions. According to them [5], personalization can be seen as three-dimensional implementation choice: what to personalize, to whom to personalize, and who does the personalization. The following table depicts the framework.

Table 1: Implementation choices in personalization [based on 5, pp. 187-188]

Who does it?	To whom?	What?			
		Content	Functionality	User Interface	Channel/Info Access
Implicit	Individuated				
	Categorical				
Explicit	Individuated				
	Categorical				

According to the framework [5], personalization can be conducted by the system (explicit) or by the user (implicit). The object of personalization can be the content, functionality, user interface or channel. Furthermore, the framework distinguishes whether personalization is directed to individuals (*individuated*) or groups of individuals (*categorized*). This distinction is important since personalization targeted to an individual requires more computing power.

Regarding the other terms that are often used interchangeably with personalization, *mass customization* can be defined as follows: "Using flexible processes and organizational structures to produce varied and often individually customized products and services at the low cost of standardized, mass production system." [21]. In general, customer involvement and modularity in the production process are necessary conditions for mass customization. *Customized marketing* offers customized shopping, purchasing and consumption experiences for the customers [2]. *One-to-one marketing* is marketing based on the idea of an enterprise knowing its customers and treating customers differently [9]. Companies initiate it as they are trying to predict what customers want with the help of the information that companies have collected of customers [9].

Customerization, [2] on the other hand, combines mass customization with customized marketing, and aims at buyer centric marketing. Customerization is under the control of customers and initiated by them, and it focuses on helping customers to better identify or define for themselves what they want – it is a way for companies to adapt personalization and one-to-one marketing for the digital marketing environment [2].

When compared with the variations of customization - adaptive, cosmetic, transparent, and collaborative customization by Gilmore and Pine [22] - customerization is closest in the meaning to *collaborative* customization whereby companies help end-users to indicate their individual needs. In another type of customization, *adaptive* customization, the offering is designed so that end-users can modify it themselves without any direct interaction with the company. Adaptive customization resembles customization in the web context whereby users can modify the user interface and content. *Cosmetic* customization changes only the representation, not the functionality of the products (e.g. different color options of products) and *transparent* customization provides tailored products without letting end-users explicitly know that those products have been modified to better fit their specific needs (e.g. advertising system

that learns users' preferences and does not show ads that consumers have defined as uninteresting).

Based on the review on personalization concepts, the consensus seems to be that personalization has developed as an umbrella term, especially in the web context. Customization, in web-context, is user-controlled so that customers are presented with increasing amount of tools that help them to adapt the content, interface, and in some cases also the functionality of the systems and access channels to serve them better. Mass customization or customization, on the other hand, seems to focus more clearly on products and how to manufacture them at nearly the mass-market prices and in almost the same time as mass-market offering.

We will next examine what kind of picture of personalization is disclosed through the research profiling approach.

3. Research Profiling

A literature review is a standard part of any academic research article. Normally, a limited set of articles is selected to present an overview of the earlier accumulated knowledge in the research field. This approach was taken in section two regarding the concept of personalization.

However, in this section, we adopt a bibliometric approach called research profiling [23] in order to paint a metal-level view of the personalization research. Research profiling can, for example, be used to uncover research gaps of emergent streams of research in any particular research field. Table 3 summarizes the key differences between traditional literature reviews and research profiling. The main difference is based on the amount of literature included, and, consequently, on the type and scope of discussion it allows.

Table 2: Comparison of literature reviews and research profiling. Source: [23, p. 353]

Traditional literature reviews	Research profiling
Micro focus (paper-by-paper)	Macro focus (patterns in the literature as a body)
Narrow range (~20 references)	Wide range (~20 – 20.000 references)
Tightly restricted to the topic	Encompassing the topic + related areas
Text discussion	Text, numerical, and graphical depiction

In this paper, a text-mining tool called Vantage Point (<http://www.thevantagepoint.com/>) is used to analyse the literature (for a more detailed description of the tool and an example of a practical application in the group support systems area, see [24]).

3.1. Research profiling on personalization

Over 1200 articles were retrieved with the search word “personalization” and variants of the same stem from two scientific journal databases, ISI Web of Science (WOS) and ABI Inform ProQuest Direct (ProQuest). It should be pointed out that the review covers many, but not all relevant journals. As such, some interesting articles are not included in the study, due to the limitations in the databases.

The articles were retrieved from the databases in the end of 2006. However, the results for 2006 are not complete due to delays in registering publication information.

The number of articles from the WOS database during the past 20 years is depicted in Figure 1. A total of 944 articles were retrieved from the database of which 795 (84 %) were published during the period from 2000 to 2006. After the manual clean-up process that omitted non-relevant articles (for example, from medical journals), the number of articles of interest to us was decreased to 645 (90 % of the 714 articles published in the 21st century).

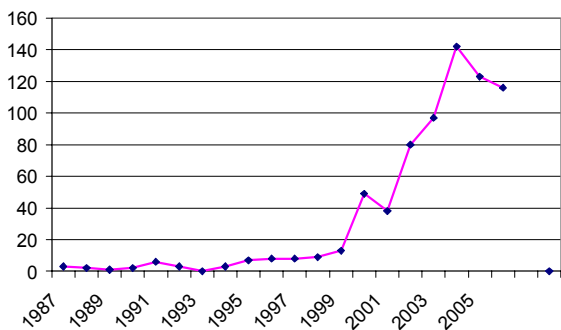


Figure 1: Number of personalization articles in WOS database (1986 – 2006)

As can be seen, the number of articles multiplied in the beginning of the 21st century. The figure depicting similar results with a longer time frame (from the beginning of the 1970’s) but from a different database, ProQuest, is presented next (Figure 2). A total of 317 articles were retrieved from the ProQuest database, and

after the clean-up process, there were 252 articles of which 204 (81 %) were published in the time period from 2000 to 2006.

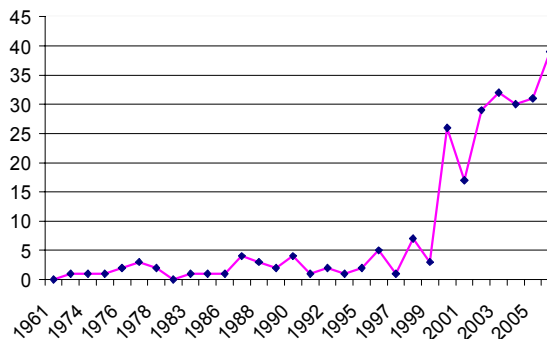


Figure 2: Number of personalization articles in ProQuest database (1973 - 2006)

After eliminating duplicates retrieved from the databases, a total of 781 personalization articles were included in the further analysis. Most of the articles (57 %) were published in refereed journals, whereas 43% of articles were conference proceedings published mainly in Lecture Notes in Computer Science or Lecture Notes in Artificial Intelligence.

In the following tables (Tables 3 – 6), the results of WOS database search are depicted: the most prolific authors, affiliations, journals and keywords in the time period from 2000 to 2006 are presented to give an overview of the state of the personalization research. The results of the ProQuest database were very similar, thus only those results that brought something new to the WOS results are incorporated in the findings and discussed later.

Table 3: The most active authors (WOS database)

Main authors	#
Smyth, Barry (University College Dublin, Ireland)	11
Mobasher, Bamshad (DePaul University, USA)	8
Ardissono, Lilian (University of Turin, Italy)	6
Kobsa, Alfred (University of California, Irvin, USA)	6
Abidi, Syed S. R. (Dalhousie University, Canada)	5
Fink, Josef (University of Applied Science, Frankfurt, Germany)	5
Henze, Nicola (University of Hannover,	5

Germany)	
Kazienko, Przemyslaw (Wroclaw University of Technology, Poland)	5
Nejdl, Wolfgang (University of Hannover, Germany)	5
Niederee, Claudia (Fraunhofer IPSI, Darmstadt, Germany)	5
Semeraro, Giovanni (University of Bari, Italy)	5
Tuzhilin, Alexander (New York University)	5

As can be seen, the research field is fragmented, and no single leading figure can be recognized. The fact that the most cited article is Mobasher's [24] article in the Communications of ACM (53 citations), however, enhances his position as a prominent author in the personalization field. As the ProQuest database consists of different journals than the WOS database, and there are far less conference proceedings in the ProQuest database, the list of most prominent authors differs slightly. Barry Smyth occupies the first position with 5 articles, and Lilian Ardissono and Shuk Yin Ho are the second most productive authors with four articles each.

Table 4 presents the most active affiliations in the personalization research based on the WOS database.

Table 4: The main affiliations (WOS database)

Main affiliations	#
IBM Corporation, USA	12
University of California, Irvine, CA, USA	9
University of Minnesota, MN, USA	9
University of Turin, Italy	9
Carnegie Mellon University, PA, USA	8
Dalhousie University, Nova Scotia, Canada	8
University of College, Dublin, Ireland	8
University of Hannover, Germany	8
Brunel University, UK	7
DePaul University, IL, USA	7
New York University, NY, USA	7
University of Hong Kong, Hong Kong	7

IBM Corporation is the most productive institution in the personalization research; however, the research interest in personalization is dispersed in the company since no author from IBM belongs to the most prolific author list. In addition to the US universities, the University of Turin (Italy), University College Dublin (Ireland), University of Hannover (Germany) and University of Hong Kong (China) are the most active contributor universities to the personalization research.

When the research activity is examined at a country level in the timeframe 2000 - 2006, the US institutions (based on the affiliation of the first author) are responsible for 20 %, German for 10 %, British and Italian institutions for 6 % and Chinese for 5 % of the scientific articles published on personalization.

Table 5: The main journals (WOS database)

Main journals	#
Communications of the ACM (Association for Computing Machinery)	16
Expert Systems with Applications	16
User Modeling and User-Adapted Interaction	13
Interacting with Computers	9
Decision Support Systems	7
Journal of Universal Computer Science	7
Data Mining and Knowledge Discovery	6
Educational Technology & Society	6
IEEE Transactions on Consumer Electronics	6
IEEE Transactions of Knowledge and Data Engineering	6

The top position of CACM regarding journal outlets is largely due to a special issue on personalization in August 2000. The top journal list from the WOS database is complemented with a marketing journal from the ProQuest database: Journal of Interactive Marketing that published 6 articles on personalization.

The conferences that have contributed most to the research on personalization are: Adaptive hypermedia and adaptive web-based systems (18 conference articles), User modeling (12 articles) and Web Engineering (12 articles).

The keyword list consists of the author-defined keywords as depicted in Table 6.

Table 6: The top keywords (WOS database)

Keywords	#
Personalization	146
Electronic Commerce	28
User Model	24
Recommender System	21
User Profile	18
Data Mining	17
Collaborative Filtering	16
Information Retrieval	15
Internet	13
Context-aware	12
Web Usage Mining	11

Machine Learning	10
Semantic Web	10
Adaptive	9
Adaptive Hypermedia	9

The keywords and journals from the WOS database (covering 8700 multidisciplinary journals and several conference proceedings) dealing with personalization issues are clearly technically oriented whereas the ProQuest database (covering 1200 journals and some conferences) includes more marketing oriented journals. This difference is reflected in the most common keywords, as well. The keywords from the WOS concentrate on the information-gathering phase of personalization, for example “data mining”, “information retrieval” and “web usage mining”. Another area of attention is matching the customer information and personalized offering as keywords like “user model”, “recommender system”, “collaborative filtering” and “user profile” show. “Context-aware”, “semantic web” and “web usage mining” were used as keywords for the first time in 2003, “ontology” was introduced as a keyword in 2004.

Since the ProQuest keyword list differed so markedly from the WOS keyword list, the results of the main keywords of the personalization articles retrieved from the ProQuest database are presented in Table 7.

Table 7: The top keywords (ProQuest database)

Keywords	#
Studies	122
Customization	54
Electronic commerce	40
Internet	21
Consumer behavior	17
Customer services	15
Market strategy	14
Customer relationship management (CRM)	12
Statistical analysis	12
Web sites	12
Information systems	11
Statistical analysis	11
Web site design	11
Privacy	11
Models	10
Users	10
Consumer attitudes	9
Information retrieval	9
Polls and surveys	9

Customization is the keyword used by the database classification, thus the high number of “customization” instead of “personalization”. Customer and consumer, and their modifications are common keywords, for example, “consumer behavior”, “customer service”, and “consumer attitude”. “Electronic commerce”, “Internet”, “web site” and “web site design” anchor the discourse clearly in the web context. The high rankings of “statistical analysis” and “polls and surveys” indicate that a typical research method in personalization studies is a quantitative method. It is also interesting to note outside the timeframe examined that there were 13 articles in the ProQuest database (from period 1974 – 1991) indicating that previous personalization research concentrated mainly on examining the effects of personalization in the direct mail marketing or in questionnaire context.

Privacy (and computer privacy) has been often studied in conjunction with personalization (e.g. [26], [27], [28]); it is thus understandable that privacy is among the top keywords.

3.2 Research profiling on mass customization and customization

Since the terms customization and mass-customization are often connected with personalization, another search with search words “customization” and “mass-customization” and variants of the word stems was conducted in the WOS database in the end of 2006. First, a figure of the number of articles from 1986 to 2006 is depicted (Figure 3). Even though it appears that the research activity had faded in 2006, in reality, there were more than 200 articles published on customization or mass customization after the publication registrations were up-dated.

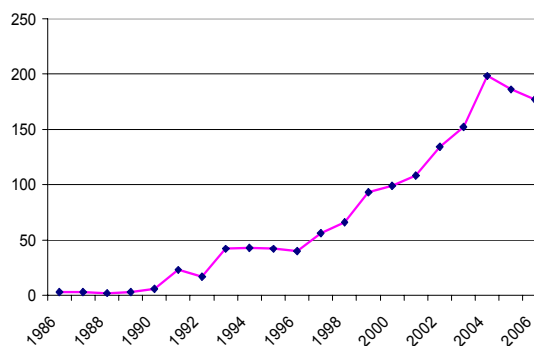


Figure 3: Number of mass-customization articles in WOS database (1986 – 2006)

Customization and mass-customization represent a slightly older research interest indicated by the number of articles (over 40 per year) published already in the middle of 90's.

In total, there were 1473 articles, over 3700 authors, more than 1000 affiliations and over 600 journals that were returned. Approximately 70 % of the total volume of literature was published in the time period 2000 – 2006 (out of the 1053 articles, 85 % were journal articles and 15 % were conference proceedings). The following tables (Tables 8 – 11) are drawn based on the data from the last seven years. No manual clean up was carried out with the mass-customization literature.

Out of the total body of articles, there were less than 20 articles that were duplicates when searched with words personalization and mass customization from the two databases in 2000 - 2006. Thus the overlap of the research that is being defined with both personalization and customization keywords seems to be minimal. However, even with a quick scan of the articles, it could be detected that 10 – 15 articles yearly dealt with issues (such as web or service) that are usually dealt with under personalization research.

Table 8: The most active authors (mass customization / WOS)

Main Authors	#
Jiao, Jianxin (Nanyang Technological University, Singapore)	13
Tseng, Mitchell M. (Hong Kong University of Science and Technology)	13
Simpson, Timothy W. (Pennsylvanian State University, PA, USA)	7
Kumar, Ashok (Grand Valley State University, MI, USA)	6
Piller, Frank (Technical University of Munich, Germany)	6

The two most prolific authors had co-authored 8 out of their 13 articles. There is hardly any overlap between the authors in the personalization and mass customization research streams; only Piller is present also among the personalization authors with his two articles.

Table 9: The main affiliations (mass customization / WOS database)

Main Affiliations	#
Nanyang Technological University, Singapore	31
Hong Kong University of Science & Technology, Hong Kong	26
University of Michigan, MI, USA	15
Stanford University, CA, USA	14
University of Texas, TX, USA	14

The main affiliations in 2000 – 2006 in mass customization research differ from personalization research. The most active universities come from Asia. The only affiliation to be found on the top 20 list of both personalization (1st place) and customization (14th place) is IBM Corporation.

Regarding countries in general, the USA dominates the mass customization and customization research, accounting for one third of the publications, followed by England (9%), China (6%) and Germany (5%). Canadian, Italian and Singaporean institutions are responsible for 4 % of the publications each.

Table 10: The main journals (mass customization / WOS)

Main Journals	#
International Journal of Production Research	28
Production Planning & Control	19
International Journal of Production Economics	16
Journal of Operations Management	16
Concurrent Engineering-Research and Applications	15

The journal outlets of customization and mass customization focus on products and production whereas personalization research is published mostly in computer science and IS journals.

Table 11: The main keywords (mass customization / WOS)

Keywords	#
Mass Customization	104
Customization	79
Supply Chain Management	25
Electronic Commerce	22
Product Family	18
Product Platform	12
Product Configurator	11

Configurable	10
Design	10
Modularity	9
Personalization	9

Keywords emphasizing tangible products, “product configurator”, “product family”, “product platform” are common. However, electronic commerce is a usual keyword in both personalization and mass customization research.

The results of the search are very different from the results with “personalization” search, indicating that mass customization is a separate research stream from personalization. Even though the definition of mass customization [21] includes both products and services, it seems that tangible products dominate the research interest in the field.

3.3 Summary of the research profiling

In summary, research profiling presents an alternative to the traditional literature review that concentrates on a limited set of journals and articles. Research profiling brings breadth to the review and provides an excellent tool for examining who is studying personalization and where. However, to learn what is being studied in detail, and how, is more challenging to determine based on the bibliometric data. One way of examining this is to inspect the development, especially temporal development, in keywords. In order to reach a deeper understanding of the development in the field, a traditional literature review is also needed, and articles selected through the research profiling process would provide a good starting point to a truly in-depth literature review.

In the following section, a preliminary analysis of the articles on personalization from years 2005 and 2006 is presented. The abstracts are studied in more detail according to the main research focus and application industry or area. This analysis gives us a snapshot of the latest research on personalization.

4. Classification of literature

In order to see if a further analysis of the abstracts provides more insights into the personalization literature the articles of the two last years were chosen for further examination. At first the overlap of the databases was scanned; there were 10 articles in 2005 and 15 articles in 2006 that we found in both databases. The total number of articles thus amounted to 151 in

2005 (88 journal articles and 63 conference proceedings), and 149 in 2006 (91 journal articles and 58 conference proceedings). The abstracts from years 2005 and 2006 were classified according the topical area to see where the focus of the personalization research is. The classification is only preliminary and will be elaborated in future studies. In addition, the application field of the research, if mentioned, is noted.

The most researched topic area is personalization technology or technique (over 60 % of the articles), especially recommender systems, context-aware applications, semantic web, and user modeling and profiling are topics that have attracted a plenty of interest. The three other areas where studies have been conducted the most are: conceptual papers [5] and reviews (e.g. personalization in semantic web [29] or personalization of web search [30]), articles that take the marketing approach, and papers that link personalization and privacy. They all accounted about 8 % of the papers. On the other hand, research on personalization process [31], and the effectiveness of personalization [20], [32] from the consumers’ viewpoint is scant.

Electronic commerce, mobile and ubiquitous commerce, online learning and information retrieval (including search engines) are the most typical application areas in personalization research. However, nearly 25 % of the papers did not indicate any application field. The most common method of research is design research: planning, implementing and evaluating a system or a part of system (nearly 40 % of articles). In addition, survey was used mainly in the papers with the marketing approach to personalization.

5. Framework for personalization

Based on the review of the personalization definitions, research profiling, and literature classification we ended up with a new framework for personalization.

We draw on the previous conceptualizations in our personalization framework (Table 12). In our mind, personalization should be the umbrella term and include mass customization and customization following the suggestion of Poulin et al. [33] who see personalization as more generic and open concept as opposed to mass customization that is “an extreme concept” [33]. User-initiated web customization differs from customization that is a term used mostly with tangible products and production.

We make also a distinction between personalization at an individual and group level, as Fan and Poole do

[5]. However, we suggest more familiar terms, one-to-one personalization instead of individuated, and micro personalization instead of categorical. We find that micro personalization adds to the idea of micro segmentation by taking the web usage mining and other personalization technologies into an integral part of the personalization process.

Table 12: Personalization framework

Personalization			
	Intangibles (web-context, services)		Tangibles (products)
	Individual	Group	Individual/Group
Customer-initiated	Web-customization	?	Mass customization, customization
System or company initiated	One-to-one personalization	Micro personalization	

In praxis, it is most likely that the one-to-one and micro personalization occur simultaneously so that some of the information is on an individual level, and some is based on group behavior. As a practical example is personalized marketing in an online bank. The bank has the account information of an individual customer at its disposal, but might personalize the messages based on the group to which the customer belongs, e.g. an investor or a mortgage owner. Since one-to-one personalization requires more computing power it is likely that micro personalization based on group behavior is easier and cheaper to implement.

6. Discussion and Conclusion

Personalization research is on the rise, and it is being studied in several disciplines. The terms used for personalization are still somewhat confusing and make comprehending the phenomenon difficult. However, concepts have evolved during the past years, and a common understanding about personalization is emerging. Personalization is regarded as the main concept, and customization is user-controlled personalization in a web-context. It is unfortunate that mass customization and customization are so similar terms since the similarity adds to the confusion in the field. In order to clarify the terms, we are suggesting that personalization would be the umbrella term for both web personalization and mass customizing and customizing of tangible products (see Table 12). In addition, we emphasize the difference between personalization to an individual (one-to-one

personalization) and personalization to a group of consumers (micro personalization).

As we reflected the method used in this research, we are confident that research profiling provides us with a comprehensive view of the personalization research. However, the large number of conference proceedings and the lack of keywords and standardized content of abstracts can be considered limitation of the study. We wanted to double-check to the validity of our findings and classified the literature by going through the abstracts, and ended up with the similar picture of personalization that was presented to us with research profiling.

In research profiling, one of the keywords that is on the rise in the database searches is “context-aware”, a sign of an increasing interest in the context-dependent communication and advertising. Context-awareness holds many promises but may also be a reason for irritation among consumers. Even though technology allows inferring the consumers’ likely behaviour, the consumers might not be ready for this.

It is important to step back and view the results of both literature review and research profiling in terms of the future personalization research. The number of articles both in refereed journals and conference proceedings has multiplied in the 21st century, but the bulk of the studies represent research on various personalization technology and techniques. Further studies on personalization are needed; especially in the areas of consumers’ views on benefits and drawbacks of personalization, as well as the true effectiveness and efficiency of personalization. In addition, the view of personalization as a process taking into account the necessary changes, not only in technology, but also in organizational and human aspects, is needed.

We have already carried out two other phases of the personalization research project. Four electronic focus group interviews were conducted with regard to personalized messages in the online bank context [34] in order to get the consumers’ viewpoint to personalization. Based on the customer reactions, pilot messages were posted on the real online bank site and the reactions (ignoring the message, opening the message, purchasing based on the message) of the customers are being analyzed.

6. References

- [1] Ansari A. and Mela C. F. (2003), “E-Customization”, *Journal of Marketing Research*, XL, May, 131 – 145.
- [2] Wind J. and Rangaswamy A (2001), “Customerization: The next revolution in mass customization”, *Journal of Interactive Marketing*, 15, 1, (Winter 2001).

- [3] Goldsmith, R. E. (2004), "Current and future trends in marketing and their implications for the discipline", *Journal of Marketing Theory and Practice* (Fall 2004).
- [4] Kalyanam, K. and McIntyre, S. (2002), "The e-marketing mix: a contribution of the e-tailing wars", *Journal of the Academy of Marketing Science*, 30, 4, pp. 487-499.
- [5] Fan, H. and Poole, M. S. (2006), "What is personalization? Perspectives on the design and implementation of personalization in information systems", *Journal of Organizational Computing and Electronic Commerce*, 2006, 16 (3 & 4), pp. 179 – 202.
- [6] Treiblmaier, H., Madlberger, M., Knotzer, N., Pollach, I. (2004); "Evaluating personalization and customization from an ethical point of view: An empirical study", *Proceedings of the 37th Hawaii International Conference on System Sciences (HICSS'03)*.
- [7] Vesanen J. (2007) "What is personalization? A conceptual framework", *European Journal of Marketing*, 41, 5/6, pp. 409 – 418.
- [8] Ho, S. Y. (2006), "The Attraction of Internet personalization to web users", *Electronic Markets*, 16, 1, Feb 2006, pp. 41 – 50.
- [9] Peppers D. and Rogers M. (1997), *The One to One Future: Building Relationships One Customer at a Time*, Double Day Publications.
- [10] Simonson I. (2005). "Determinants of customers' responses to customized offers: Conceptual framework and research propositions", *Journal of Marketing*, 69, January, pp. 32-45.
- [11] Davis, S.M. (1987), *Future perfect*, Addison-Wesley, Reading, MA
- [12] Pine, J.B. (1993), *Mass Customization*, Harvard Business School Press, Boston, MA.
- [13] Riemer, K. and Totz, C. (2001), "The many faces of personalization", In Mitchell M. Tseng / Frank T. Piller (ed.): *Proceedings of the 2001 world conference on mass customization and personalization*, Oct. 1-2, 2001, Hong Kong: Hong Kong University of Science and Technology.
- [14] Smith, W. (1956) "Product differentiation and market segmentation as alternative marketing strategies". *Journal of Marketing*, 21 (July), pp. 3-8.
- [15] K. Instone, "Information Architecture and Personalization," White Paper, *Argus Associates, Inc.*, Dec. 2000, pp. 1-10. <http://argus-acia.com/>.
- [16] Wu, D., Im, I., Tremaine, M., Instone, K. and Tuoff, M. (2003) "A Framework for Classifying Personalization Scheme Used on e-Commerce Websites, *Proceedings of the 36th Hawaii International Conference on System Sciences (HICSS'03)*.
- [17] McCarthy, J. F. (2001) "The virtual world gets physical: Perspectives on personalization," *IEEE Internet Computing*, 5, 6, pp. 48-53.
- [18] Albert, T.C., Goes, P. B. and Gupta, A. (2004) "GIST: a model for design and management of content and interactivity of customer-centric web sites", *MIS Quarterly*, 28, 2, June 2004, pp. 161 – 182.
- [19] Peltier, J., and Schribrowsky, J. "The Use of Need-Based Segmentation for Developing Segment-Specific Direct Marketing Strategies", *Journal of Direct Marketing* 11, 4, Fall 1997, pp. 53 – 62.
- [20] Tam, K.Y. and Ho, S.Y. (2006) Understanding the Impact of Web Personalization on User Information Processing and Decision Outcomes. *MIS Quarterly*, 30, 4, pp. 865 - 890/December 2006.
- [21] Hart, C. W., (1996), "Made to Order", *Marketing Management*, 5, 2, pp. 12 – 22. 1996
- [22] Gilmore, J.H., and Pine, J., (1997), The Four Faces of Mass Customization, *Harvard Business Review*, 75, January/February, pp. 91-101.
- [23] Porter, A.L., Kongthon, A. and Lu, J-C. "Research Profiling: Improving the Literature Review", *Scientometrics*, 53, 3, 2002, pp. 351-370.
- [24] Bragge, J. Relander, S., Sunikka, A. and Mannonen, P. (2007), Enriching Literature Reviews with Computer-Assisted Research Mining. Case: Profiling Group Support Systems Research, *Proceedings of the 40th Hawaii International Conference on System Sciences (HICSS'07)*.
- [25] Mobasher, B., Cooley, R. and Srivastava, J. (2000) Automatic Personalization based on web usage mining, *Communications of the ACM*, 43, 8, August 2000, pp. 142–151
- [26] Awad, N. F. and Krishnan, M. S. (2006), "The Personalization Privacy Paradox: An Empirical Evaluation of Information Transparency and the Willingness to Be Profiled Online for Personalization, *MIS Quarterly*, 30,1, pp. 13-28/March 2006.
- [27] Chellappa, R. K., and Sin, R. (2005), "Personalization versus Privacy: An Empirical Examination of the Online Consumer's Dilemma," *Information Technology and Management* (6:2/3), 2005, pp. 181-202.
- [28] Milne G.R. & Gordon M. E. (1993). Direct Mail Privacy - Efficiency Trade-Offs within an Implied Social Contract Framework, *Journal of Public Policy & Marketing*, 12, 2, pp. 206 – 215.
- [29] Baldoni M., Baroglio, C., Henze, N. (2005), "Personalization for the semantic web", *Lecture Notes in Computer Science*.
- [30] Keenoy, K. and Levene, M. (2005) "Personalisation of web search", *Lecture Notes in Artificial Intelligence*.
- [31] Adomavicius, G. and Tuzhilin, A. (2005), "Personalization technologies: A process-oriented perspective", *Communications of the ACM*, 48, 10, pp. 83–90
- [32] Ho, S. Y. and Tam, K.Y. (2005) "An empirical examination of the effects of web personalization at different stages of decision making", *International Journal of Human – Computer Interaction*, Vol. 19, No. 1, pp. 95 – 112.
- [33] Poulin, M., Montreuil, B. and Martel, A. (2006), "Implications of personalization offers on demand and supply network design: A case from the golf club industry", *European Journal of Operational Research*, 169, pp. 996 – 1009.
- [34] Sunikka A, Läheemäki, M. and Bragge, J. (2007) Perceived Benefits and Costs of Personalized Marketing Messages. Case Online Bank, *Proceedings of the European Marketing Academy Conference*, 22 – 25. 5. 2007 Island.