The Future of Social Commerce
Trends for the Web 2020

Trend Report 2007/2008

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Patrick Nepper · Nikolaus Konrad
(Editors)

The Future of Social Commerce Trends for the Web 2020

Trend Report 2007/2008

Class 2009 Summer

Center for Digital Technology and Management

The Future of Social Commerce - Trends for the Web 2020.
Trend Report 2007/2008

Edited by: Patrick Nepper, Nikolaus Konrad

Preface

Social commerce is a special form of electronic commerce in which customers participate actively in the buying experience. In this respect the word "social" indicates the integration of your social network, i.e. your family, friends and acquaintances. Typical means of participation in social commerce are sharing product reviews and recommendations, promoting products within a social network, or even collaborative shopping. We are just about to tap into the widespread possibilities that social commerce offers for e-Commerce and even for traditional brick and mortar businesses.

This trend report resulted from a seminar on trend research at the Center for Digital Technology and Management (CDTM) and shows the interdisciplinary work and visions of 20 students of the Class of 2009. The seminar was organized jointly with our project partner Solute GmbH (Billiger.de) and provided our students with access to experienced industry experts. The students' work represents a starting point in understanding where social commerce is today and where students envision its further development. The book is split into two parts: Part one presents six research reports looking at the state of the art of social commerce from different perspectives. First, you will find an outline of the technological status-quo, followed by an overview of online payment mechanisms. Then the customer's decision making process is described. Finally, insight is provided into the impact of Google and new value chains on e-Commerce.

Part two is visionary. Five student teams present social commerce applications that in their opinion will reshape the future. The first team introduces a concept for a social online home and garden shop in which customers can recommend furniture to other customers by virtually placing 3D models of the furniture into their living rooms. Two other teams describe how concepts known from today's online services, namely mass-customized fashion and social search engines, will evolve to mainstream services that will be closely integrated with our social network.

Please enjoy reading this interesting book, maybe some ideas will inspire you to future activities in the field of social commerce.

Munich, June 2009

Prof. Dr. Dres. h.c. Arnold Picot   Dipl.-Inf. Patrick Nepper
CDTM Board of Directors   CDTM Management Team

For more information about the CDTM and its related projects,
please visit http://www.cdtm.de.

The entire trend report was written by CDTM students in 2007. The papers
compiled here do not claim to be scientifically accurate in every case; they are
rather meant to give a structured and broad overview of trends relevant in the
context of social commerce.

Two of the topics described in this chapter, namely the social future of price
comparisons and the social future of retail stores have been the basis for a
research paper on the future of brick and mortar shopping, which was awarded
with the Wolfgang-Heilmann-Prize for humane use of IT in 2008[1].

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[1]T. Dingler, A. Hoffmann, J. Ju, F. Kneißl, H. Müller, D. Rohini, N. Stadtelmeyer, W.
Weinmair, K. Wiesner, P. Nepper, A. Picot (2008): YouShop – the Personalized Retailer
Concept, Center for Digital Technology and Management, Ludwig Maximilians Universität
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Part I

Trends

1

Technology Push

Fabian Kneißl, Richard Röttger, Siarhei Trushyn,
Dhananjay Vaidyanathan Rohini

In this report, we claim that an increased availability of fast online access through mobile devices will lead to the fusion of fixed line and mobile Internet. Additionally, improved human-computer interfaces will push the willingness of customers to use their cellular phones as all-purpose computers. Sophisticated Semantic Web design techniques and easy to use APIs for creating powerful dynamic websites will form the backbone of successful Social Commerce platforms, influencing the Internet in the next years.

1.1 Introduction

In the last few years, digital technology has performed breathtaking leaps, especially in the realm of Internet and related web technologies. The end users as well as businesses are flooded with buzzwords from the new digital economy like Web 2.0, AJAX, HSDPA etc., without having a clear idea as to what these techniques will be able to realize. Besides these new techniques, the World Wide Web has developed into a nearly uncontrollable dynamic entity. This is more relevant in the face of user generated content driven new businesses, particularly Social Commerce. Are the currently available technologies developed far enough and are they feasible for Social Commerce? Where are the challenges and the risks, and what has to be done to make Social Commerce a worldwide success? Are there technologies to bring Social Commerce on mobile devices and would they be able to handle such amounts of data? Presently, these questions are being heavily discussed on relevant forums and blogs as well as in prestigious newspapers [13], which in our opinion is an evidence of the importance of Social Commerce as a future driver of the Web.

1.2 Current Technologies Influencing Social Commerce

1.2.1 Web Technologies Available Today

In December 2006, the percentage of Broadband Internet subscribers in OECD countries was 16.9%, which is 25% more than the previous year [4]. Therefore, many users are and will be able to view dynamic and data intensive websites. In the following section, essential web technologies for generating such websites and Social Commerce services based on these techniques will be discussed.

1.2.1.1 Back-end Technologies

A web server delivers content from a web service provider to the customer. Ten years ago, only static web pages were created and updated manually. A few years later, dedicated computer programs were programmed to create static pages. Today, many web application frameworks exist which generate content on the fly from databases.

Most of these databases like MySQL, Oracle and PostgreSQL are designed to store huge amounts of data. This is done in a relational structure: Each table has several columns for different attributes and data are stored in interconnected tables. This structure can be represented in UML diagrams intuitively and it is quite easy and flexible to maintain such a database.

To access these databases, programming languages like Java, .NET or PHP are widely used. When the web server receives a request from the client, an

application or script is executed on the server which produces the web page, before the server transmits the page to the client. With these techniques, dynamic content became possible and these languages have now become indispensable on the Web.

Out of these languages, frameworks evolved. The idea behind frameworks consists in the automation and simplification of common processes in web development. For example assistance in accessing databases, using templates, creating smart URLs and managing users is given. Often used frameworks are Ruby on Rails and Spring framework. They make use of the Model-view-controller (MVC) architectural pattern which proposes to separate an application into the underlying data model, the user interface and the user action processing system. This breakdown is very useful as the user view can be modified without touching the data logic and vice versa.

1.2.1.2 Front-end Technologies

Not only are the technologies on the web servers important, but also the ones on the client's side. Web browsers like Firefox or Internet Explorer are used to view web pages. Browsers have to perform much error handling and correction while parsing web pages. The World Wide Web Consortium published the XHTML Recommendation, that aims at simplification of parsing web pages, better accessibility for scripts and applets and improved extensibility [38]. Each XHTML document is an HTML document that is conform to XML, a language used to represent structured data in form of a document tree. Existing websites only have to be changed little to be XHTML compliant. The big catch of XHTML is that programming languages like JavaScript can access each part of the document very easily as every information is one node in the tree that can be addressed directly.

This leads to the next technology that is very important: JavaScript is a programming language used in web pages to respond immediately to user activity. It is executed on the client's web browser in a so called "sandbox" to prevent access to local confidential data. Also, rich content like flash applications are executed on the client which feels more like normal computer programs than websites.

Combining these techniques, the well-known Ajax arises. Ajax is shorthand for asynchronous JavaScript and XML which was first mentioned by J.J. Garrett in 2005.
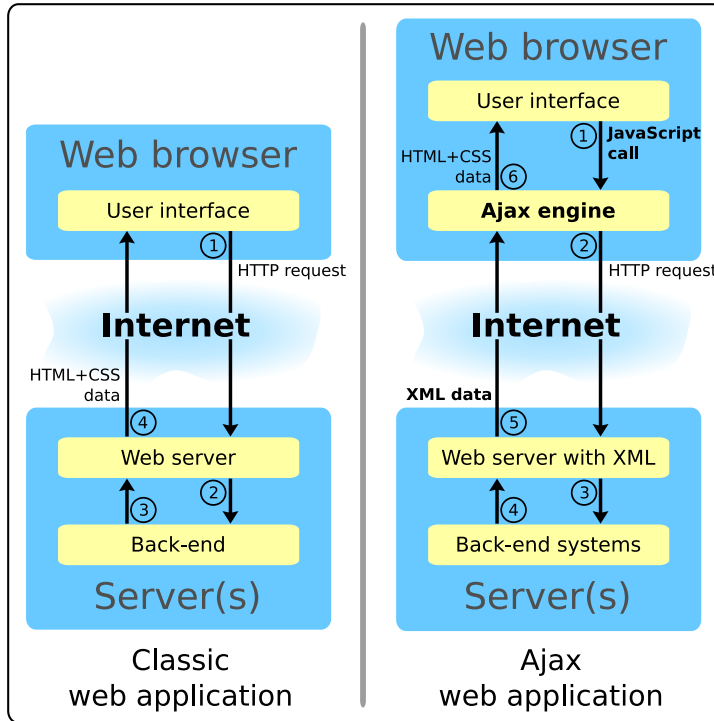
Figure 1.1: Classic web applications model vs. Ajax model
Source: based on Garrett [15]

As shown in figure 1.1, the Ajax engine is introduced between the user and the server to process user requests and modify the web page according to the response of the server. This is very powerful as web pages can be transformed interactively without reloading the whole page each time the user requests new information. It saves a lot of time because the user can continue looking around while new data is being fetched from the server. This makes websites very dynamic and allows social features like instant feedback [15].

Several frameworks and tool kits for Ajax exist like Prototype and Dojo. They assist programmers in writing JavaScript code by offering ready to use methods for transferring data, modifying content and using dynamic features like auto-completion. Thus, enough technologies exist for building rich content websites.

1.2.1.3 Cross-section Technologies

Cross-section technologies are located between front-end and back-end. They combine the power of both and take new ideas into account.

Information Filtering

The huge size of the Web makes it difficult to find the information one searches for. Search engines are not sufficient to cope with the information flood. Filters have to be used to refine search results. A traditional system is called information filtering system. The concept is to filter out information by machine analysis of content. More advanced, different systems like collaborative filtering use human decisions as a basis for filtering. This is a better approach for many applications, because the user knows best what he wants. These social filtering systems are used for recommender systems like Amazon's popular "users who bought x also bought y".

Recommender Systems

There are several different approaches for this kind of recommender systems. Content-based systems are information filtering systems that are only based on the interests of the current user. For each user, a profile is created, "often expressed as a set of weighted keywords" [33]. In Social Commerce, recommendations are created from the user's shopping profile, trying to find new products that closely match his preferences. However, this is no real social recommendation system as no other users are involved. In contrast, the recommendation support system is a tool for users to create and share reviews and ratings. It does not generate recommendations but helps users in exchanging viewpoints and building their own opinion. Another approach is the social data mining system, which mines information from services with social activity, such as Usenet messages or hyperlinks, and tries to determine preferences. Google uses this type of algorithm for evaluating the relevance of websites. The fourth and last system is collaborative filtering. First, the user preferences have to be sorted out, either automatically by tracking visited web pages and purchases or by direct user input through a rating system. Then, users with similar interests are matched by a specific, complex algorithm and recommendations are induced from this basis [33, 20].

User-generated Content

One more very important technology that has to be considered is user-generated content. End users produce some type of content such as text, audio or video and store it somewhere in the Web where it is accessible to other people. This gets possible because of cheaper prices for storage and computer devices, as massive amounts of data have to be saved. It also needs a well designed indexing technique in order that other users can find content easily. Examples for websites depending on user-generated content are YouTube, Flickr or MySpace. Also, several Social Shopping websites such as threadless or BoardPusher have been

founded, giving users the facility to create their own products and sell them. They are focused on one specific product group like t-shirts and profit from the creativity of the users.

1.2.1.4 Web Services Based on These Technologies

As the technologies are clear now, some commonly used social web services that are based on these technologies will be discussed.

Blogs

Most popular these days are web logs, or just blogs. A blog consists of a chronological series of articles published by one or more authors. Usually, they are updated regularly and filled with new entries, so there is a constant flow of information. There is no restriction on one subject, blogs about politics, web hypes, commerce and personal thoughts exist. Also, shopping blogs like Terapad are getting increasingly popular. Users can create a blog entry, present a product they found and sell it on their own shopping site [24].

Wikis

Another widely used web application type is a wiki. It is a website which allows any user to create or edit any page just by using the web browser. The first wiki was launched in 1994, but it took some time for wikis to become popular: The Wikipedia project started 2001 and has been growing exponentially with the English version hosting 1.7 million articles at present. As one can see the concept of user contribution works quite well. Currently it is getting popular to use wikis also for Social Shopping: ShopWiki offers a wiki with user editable buying guides and product information. In addition, it offers price comparisons and selection based on various criteria enabling users to order products.

Social Bookmarking

Even though classical search engines are heavily used, sometimes it is difficult to obtain the information one is searching for. This is where social bookmarking comes into the picture. The concept is that users share and classify their Internet bookmarks in an online service and others can search for them. Services like del.icio.us or StumbleUpon are state-of-the-art social bookmarking sites. This technique is also used for linking products from online shops in order that other users find them and buy them, sometimes with affiliate programs so that the link-creator earns money.

Collaborative Price Comparison

As traditional price comparison has not enough possibilities to include user content, collaborative price searching websites like Dealjäger were created. A user enters a product he wants to buy with one price he found and other users search for cheaper prices, underbidding each other. Furthermore, ratings, comments, ranking lists and daily challenges are provided to improve communication

between users and push their effort. This is a very good example of including user-generated content into a shopping website.

Widgets

Finally, widgets play an important role in the Web. Web widgets are small pieces of code that can easily be integrated into existing websites. They offer functionality from another website such as a list of favored products that in return can be ordered by clicking on them. Thus, it gets easy to include content from other sites into one's own website.

1.2.2 Mobile Technologies Available Today

The market for mobile devices is growing unremittingly and comes up with very impressive figures. In the year 2006, there are 84.3 million mobile subscribers in Germany, which translates into a penetration of 102.3% with a growth rate of 25% [10]. The world wide figures are even more impressive with total of 2.255 million subscribers and a growth rate of 29% in the last year [2]. That this situation is affecting our daily life in communication and has influence on Social commerce is obvious, and motivates us to take a deeper look at the state of the art mobile technologies.

1.2.2.1 Fast Mobile Internet Access

In this chapter, we want to take a look at the currently available high speed methods for accessing the Internet with mobile devices like a cellular phone or a PDA and analyze them in order to see their possibilities and their weaknesses. We also want to present a very brief view on the historical development of the telecommunication systems, so that the magnitude of the leaps in evolution becomes obvious.

In Germany, mobile communication started with analog networks, namely the A-, B- and C-Net. With the A-Net, which was inaugurated in Germany in 1958, connections had to be set up manually in a switching center, while the subsequently introduced B-Net was able to establish connections by itself. The B-Net was launched in 1972. The first standard allowing mobile devices in an acceptable size and nameable distribution was the C-Net, which was installed in 1984 and survived as the standard especially for car-phones until the mid 90s. Due to compatibility reasons, cross-Europe roaming features were not possible with the C-Net. As a result, Europe started to develop a new digital standard, the Global System for Mobile Communications (GSM), a representative of what is usually called the second generation network, 2G. Although the system was digital, it was optimized for the transmission of voice messages and not for sending data packets. Therefore, GSM reaches only maximum transmission rates of about 14.4 kbit/s without error correction [11].

Owing to this limitation, some new packet orientated standards were introduced, which were optimized for data transfer. This type of transmission technique is sometimes called the second Generation Enhanced, 2.5G and provides data-rates of up to 500 kbit/s [14]. The two main Players in this section are General Packet Radio Service (GPRS) and Enhanced Data Rates for GSM Evolution (EDGE). Both GPRS and EDGE work on top of the GSM network. The speed improvements are reached by using more time-slots simultaneously and with enhanced coding schemes.

Beside the previously mentioned techniques, there is the ubiquitous UMTS, a representative of the third generation networks, 3G. UMTS is a hierarchical structured network and provides in its first expansion stage, transfer rates starting from 9.6 kbit/s in the furthermost satellite cells to 2.046 kbit/s in the innermost cells [34]. However, UMTS is being constantly improved and with the state of the art technique called High Speed downlink Packet Access (HSDPA, sometimes called as 3.5G), rates up to 14.4 Mbit/s are reachable [27]. In figure 1.2 the theoretical maximum and the effectively reached data transfer rates are shown.[1]

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[1]The actual speeds are taken from current and shortly upcoming offers of T-Mobile, Germany and may differ between the different carriers and countries.
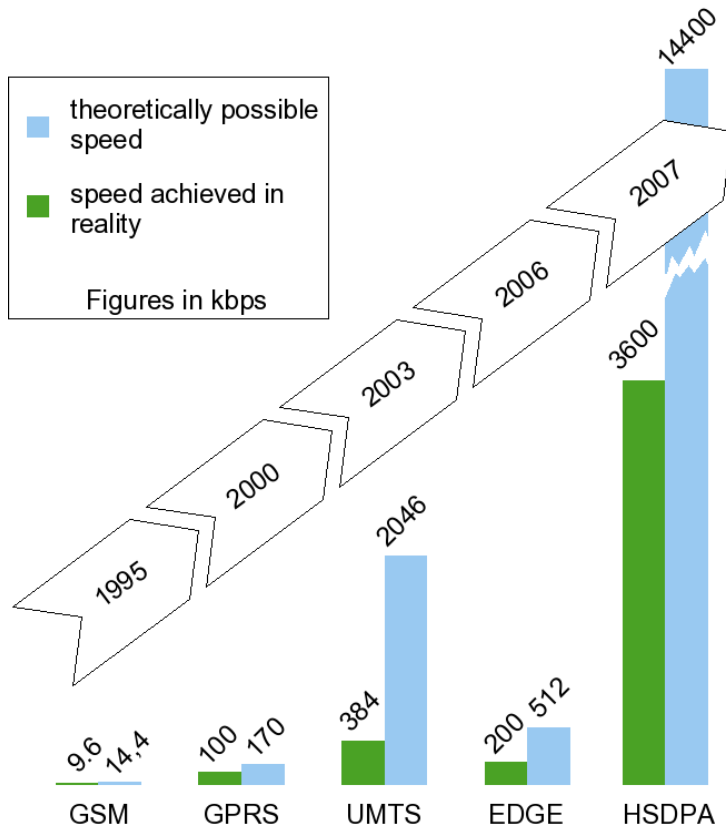
Figure 1.2: Theoretically possible speed and the achieved speed in reality.
Source: Loos [27], Tiwari et al. [34], Suhl [32], Furuskar et al. [14]

As already mentioned, GPRS and EDGE work on top of GSM, in contrast to UMTS. This is the reason why the carriers do not need to build up a whole new network and have to only improve the available stations with new Software and some additions to the existing Hardware. It is therefore much cheaper to build GPRS or EDGE networks instead of UMTS for which a completely new infrastructure is needed. Even so, the German carriers hesitated to introduce EDGE because they have paid a huge amount of money for receiving the UMTS licenses, about 8.4 billion Euros per frequency. For running UMTS, two frequencies are needed and in addition the expensive buildup for a new network is forcing the carriers to push UMTS to make it a success [23]. (With UMTS in Germany already nearly 80% of the population are reached [10].) However, in 2006 T-Mobile started to introduce EDGE because they are not

using EDGE as competitor to UMTS, they use it as an addendum [18]. Since GPRS and EDGE can be realized at every location where GSM is available, in particular where UMTS is not built up at the moment, for example in rural regions they can provide their customers even in those regions a fast mobile Internet connection. Later other German providers have adapted this strategy and are offering EDGE services too [36, 6].

With high penetration of fast Internet access, it is possible to take part on the Internet life mobile. Therefore, it is possible to provide services with high demands on the net infrastructure to cellular phones like video-streaming or net-radio. In combination with high developed mobile browsers like Opera, the mobile phone is providing a common interface to the User with the desktop PC at home. In contrast to WAP or i-Mode, which is very successful in Japan, the content-providers are no longer forced to develop special websites for the mobile needs. With the fast Internet and high calculation power of the devices it is also possible to provide the well known protocols from the Desktop-world to the mobile world, and Programs can be easily ported to them.

At the end of 2006, although only about 4.5 Million UMTS capable mobile devices were sold in Germany, the trend is certainly on the rise. Last year, the number of 3G cell phones nearly doubled and this year the forecast is even better, such that the 3G network will reach a reasonable size [10].

1.2.2.2 Value Added Features in Mobile Devices

Along with the possibility of fast Internet connections, modern mobile phones and PDAs are equipped with a multitude of additional features which are suitable for interesting applications.

Nearly every mobile device possesses a digital camera which is already capable of taking moderate quality photos and capturing short movie clips. In combination with the availability of fast Internet, this can be exploited as a powerful tool. For example, such a camera can be used as a cheap monitoring camera for sending an MMS for signaling events or it can be used as Bar-code scanner, as in a former CDTM Project called P-nut-S. Here the user takes a snapshot from the EAN-Code of a product which is recognized. The customer then receives relevant information about how the product might influence his health. For example, it may suggest that he is allergic to certain ingredients or the product is not suited to his alimentary plan [16].

Another feature of mobile devices is that they can store large amounts of data on compact storage cards. With such cards, cell phones can store and play one's music collection and even entire movies are available for phones. If a modified SIM card is added to the mobile device, it can be easily used as a secure and personalized data storage. Again, this idea was used in a CDTM-Project called "Gesundheitshandy". Here the cellular phone is combined with the health card, and the user is able to store important information about his health or carry

with him, for example his radiography from one doctor to another without using the time consuming postal way [12].

Additional benefits are also received from using GPS data with a mobile device. Nearly all PDAs come with a GPS receiver or can easily be retrofitted with this capability. For most of the mobile phones GPS-dongles are available connected via Bluetooth. Combined with a fast Internet connection, the cellular phone or the PDA is able to fetch the city map and provide the customer location based services like interesting sights around him or the way to the next gas station. Other examples are social network services like Socialight. With Socialight people are able to add sticky notes to places they have been or liked and share them to other users.

In addition, there are Radio Frequency Identification (RFID) and Near Field Communication (NFC) to be mentioned. For example, Nokia has started to equip some phones with NFC technology for the German market. In Japan it has been common for the last few years for cell phones to have in build NFC technology. It is quite usual to pay the fee for local transportation system or for drinks at dispensers with the NFC enabled mobile phone. In general, RFID and NFC provide the ability to identify objects and can themselves be identified. The main difference between these technologies is the effective range. While RFID can be used from 10 centimeters up to distances over 100 Meters, depending whether there is a passive or active tag used [28], NFC is designed for only "a few centimeters" [7]. Due to this fact, with RFID it is possible to identify more objects at the same time enabling an entire shopping-cart to be checked out at once with the Slotted Aloha method [25]. NFC in contrast was designed keeping security in mind, so it is extremely important to have an exclusive connection. Therefore, it is not possible that the same bill is debited from two mobile phones. Another difference between these technologies is with NFC active - active connections are possible, which means that both connection-partners are able to send and receive data. This enables active communication between two devices which can be used, for example, to configure your laptop such that it can connect to a WLAN by just holding it close to a marked spot [7].

1.3 Social Commerce in 2012

1.3.1 Technical Improvements on the Web

Moving away from Web 1.0 which only offered static content, Web 2.0 with its on the fly generated content and revolutionary applications like blogs, wikis and social networks was the hour of birth of Social Commerce. It is indisputable that the phenomenon 'Social Commerce' does not have the potential of an ephemera and in fact will be a great success in the future. But what will be the web technologies which will push and influence it in the era of the next

generation web called Web 3.0 and even leverage it?

1.3.1.1 The World Wide Database

The current World Wide Web contains huge amounts of information in a format which was developed to give the user the possibility to find desired and relevant data and information. Unfortunately, there are still immense amounts of unstructured information on the Web which is not accessible by society and additionally also very complicated to find because it is structured in a lot of to each other incompatible formats. These are the main problems concerning the Web humans are conflicted with today.

   The Semantic Web will be the catalyst and the main technology of the next generation web called Web 3.0 which will handle the mentioned problems and have a lot of other innovative technologies which will be based on it. There are two main steps towards the Semantic Web which are described best possible by Nova Spivack: "First comes what I call the World Wide Database, making data accessible through queries, with no AI involved. Step two is the intelligent Web, enabling software to process information more intelligently." [8].

   The idea behind the first step is to add "a layer of meaning" [29] on top of the existing web by sticking meta data information on almost every content on the Internet and to make the Web like a database where all data is structured and classified and is linked together in the same way. The goal of databases is that they are able to provide answers to complex search queries quickly because of the fact that they are able to understand and process the context of each entry. But in order to be able to do this one will have to provide meta data information which might be read, understood and manipulated meaningfully by machines, which is an important prerequisite. "Right now, search engines cannot tell the difference between Paris Hilton and the Hilton in Paris" [30] Jeff Bates says who is co-founder of Slashdot. But in the future, search engines will not only be able to distinguish between similar terms but also even be able to understand natural-language queries and answer questions like "Which celebrities have visited Munich the last month?"

   Based on the first step there will be the need for intelligent software agents which will be able to work through this "web of data", understand the meta data content, take decisions autonomously, that way support humans by taking over everyday tasks and even learn from the results. This will be the era of artificial intelligence. For example just imagine that someone is ill. An intelligent semantic software agent will check a doctor's availability, determine whether his insurance status is OK, consult his calendar and include an appointment in his schedule. But finding the "right" answers and information will only be one field of application in the Semantic Web for intelligent tools. They will also be used as data mining programs to find unstructured information on the Web, to categorize it, structure it and to make this information available in the 'global

database' as the Semantic Web might also be called.

The concept of the Semantic Web might also be extended and combined with several other powerful technologies which already exist nowadays. One of them will be the fusion of the service-oriented architecture and the semantic which has realistic potentials to become a killer combination [31]. In the next years almost all companies will try to migrate their functionality and processes to Web Services in order to give their customers the possibility to buy and use their services online. But what if a certain functionality is needed that is provided on the Internet, but it just cannot be found? Web Services could overcome this problem by taking the advantage of the Semantic Web. Due to the fact that almost every online data will contain also computer processable descriptive information, intelligent software agents will be able to understand what functionality is needed, find the appropriate Web Service and even integrate it autonomously in the business process or everyday's life.

The Semantic Web will have a tremendous impact on Social Commerce and might be the catalyst for its real success in the next time. It will be dispensable to spend a lot of time and effort in order to find the right product, with best configuration and at lowest price. The intelligent software agents will do all the work. A request like "I am looking for a MP3 player and I have a budget of $200" will be sufficient. Using the possibilities of the Semantic Web they will scan the Internet for similar products which fit to a user's shopping profile, find the stores where to get it at the lowest price and even search for recommendations and experiences from other customers with this product and provide the user with a recommendation list or even buy it automatically, if empowered to do so. There will be social search engines which will be so powerful that they will be able to find people who could answer a person's question or give him recommendations on specific issues.

1.3.1.2 Open Identity

As human beings tend to integrate the World Wide Web more and more in their normal day life, it gets inevitable to share personal information over the Internet. Due to the fact that the Web has not been designed to transmit and safeguard such important information like postal addresses, bank account information or social security numbers there is a danger that this data could be hijacked and abused. Nowadays this private data is stored and secured by private organizations like banks, insurance companies and credit-card companies [17].

The next generation identity management systems will change the process of sharing personal information. The goal will be to uncouple this data from organizations and companies and additionally let the user decide who should see his information. Each user on the Internet will get a unique identity key which will be stored by open decentralized digital identity systems. These

systems could be hosted by the user himself or by any public open identity provider. The most important feature of open identity will be the single sign-on process which will give users the possibility to verify their identity everywhere on the Web [26]. Remembering the login and password for each website or service will become superfluous. Furthermore it will not even be noticeable that the authentication process is in progress because the Internet sites will be able to fetch the information in the background from identity servers. Beyond this, the Internet user will be able to transfer his identity or personal data like account information or search history from one service to another because of his universal identity key.

An open identity will have an immense impact on possibilities concerning Social Commerce and the way of shopping on the Internet. Due to quick and easy identity verification the customer will always know who he is talking to, whether he can trust this person and rely on his information.

1.3.1.3 Open Technologies

The term Open Technologies will play a big role in the future of the World Wide Web. It will combine several technologies which will have one thing in common; they will be 'open' and freely available to everybody on the Web. The most important will be Open Application Programming Interfaces (Open APIs) and Protocols, Open Data and Open Data Formats.

Web APIs or Web Services which provide functionality and business services over the Internet already exist nowadays. In most cases companies and organizations which host them keep the access to these services in a proprietary way or even use them only internally [21]. Furthermore they are quite complex in use and therefore only experts are qualified enough to use them. Future trend will force the companies to open up these interfaces and the protocols to access them for everybody's use on the Internet. Additionally, Open APIs and protocols will get elegant and easy to use in a manner that even non-professionals will be able to integrate them in their business process or personal use. This development could go even further and provide Internet users with visual web programming environments to create and share their own APIs and background logic in order to process and link web data in a more efficient way.

"Numerous scientists have pointed out the irony that right at the historical moment then we have the technologies to permit worldwide availability and distributes process of scientific data, broadening collaboration and accelerating the pace and depth of discovery (...) we are busy locking that data and preventing the use of correspondingly advanced technologies on knowledge" [37] by John Wilbanks characterizes the situation of the usage and the availability of human knowledge nowadays in the best way. Therefore future web will include ambitions to make certain information freely available for everyone. It will be possible to use this data without copyright and patent restrictions.

By opening up the interfaces to social networks and shops on the Internet, new possibilities emerge which contribute to integration of the social component in e-commerce. Due to easiness of use, almost everybody will be able to supply his software with access to collaboration portals, worldwide market places and huge knowledge databases.

1.3.1.4 The Media-Web

The future web will have a lot of other concepts which will go beyond semantics and Open Technologies and use such exciting media like virtual space, images and sound.

One of these concepts is the 3D-Web where the Internet can be discovered by moving through a virtual space, walking through towns, visiting websites or meeting people which will be represented by avatars. The 3D-Web could represent not an alternate world but merely the existing world [30]. This way it would simplify daily life by giving the possibility to meet people more easily, to discover new places and greatly contribute to new developing Social Commerce concepts like collaborative shopping.

Also, ideas like the media-centric Web will be relevant. Just imagine customers could use the Web to find media by using other media. For example having a picture, one could search for images that look similar or handle the same topic. Concerning Social Commerce it would greatly help to find favored products or other people who have the same shopping interests.

1.3.2 Technical Improvements in Mobile Devices

Mobile devices are expected to play a pivotal role in influencing Social Commerce in the future. With the number of mobile units vastly outnumbering computers and laptops and being much cheaper, they will represent the bulk of web-enabled devices. The present day shortcomings of mobile devices which result in a reduced user experience are expected to be offset by a considerable extent by the year 2012. Improved and more secure connectivity to the Internet will lead to an increased usage of the conventional Internet services on handheld devices. A Forrester Research Inc. study indicates that 60% of all actively used phones in 2010 in Western Europe will have third generation Internet access [35]. The line dividing mobile web and the Internet will progressively fade, and lead to a merger of the two, at least in terms of accessible content. The difference will be in the terms of presentation, which would be enhanced by improved and optimized human-computer interfaces. As chips get smaller and power dissipation density increases, innovative solutions to reduce power consumption in the next five years will emerge, with the focus being on software controlled power management techniques.

1.3.2.1 Faster and Easily Available Internet Access

The current technologies for accessing the Web through mobile devices are expected to drive growth. Access to the Internet through handheld devices will be characterized by improved speeds. By 2012, we will be in the 3.5G to 4G stage. This would translate into a theoretical downlink speed in the order of tens of Mb/s for 3.5G, and in the order of hundreds in case of 4G. Until now, the focus of the networks has traditionally been on downlink services. In an era of user generated content, it is imperative to consider uplink speeds. Considering that popular applications like Voice over IP (VoIP) and video conferencing have heavy uplink demands, improved speeds will be also be made available on the uplink side. Theoretical uplink speeds of up to 50 Mbit/s will be possible. Taking into consideration of the demands, all competing 4G standards will have three underlying features. The general trend common to 4G (and 3.5G) will be the reliance on principles of Orthogonal Frequency-Division Multiplexing (OFDM) to achieve higher throughput. OFDM refers to the use of multiple sub-carrier waves which are highly uncorrelated to one another. A second long term trend on the network side would be a shift to all IP based networks, although it is unlikely to happen in entirety in the next 5 years. This is due to the fact that the 4G networks will be based on IPv6, and existing and 3.5G installations will still work with conventional implementations. 4G is already deployed in parts of Korea and is in test phases in several other counties with deployment forecasted as early as next year.

A third feature that will be common to any implementation of 4G will be the extensive use of spatial processing techniques like beamforming to achieve higher signal to noise ratios. The use of adaptive channel coding will make it further possible to enhance speed. In simpler words, information about the quality of the channel is transmitted along with the message to ensure greater reliability. This ensures that the kind of modulation and coding deployed can be varied to ensure better service. The extensive use of Multiple Input Multiple Output (MIMO) techniques will also unfold owing to the parallel nature of demands of mobile broadband customers. For example a user may be downloading a film (high downlink requirements) while using a VoIP (downlink and uplink requirements) to talk economically at the same time. MIMO techniques involve the deployment of multiple antennas at both the transmitter (mobile base station) and the mobile unit. This serves the varied requirements of modern day mobile broadband users.

The fast and efficient access to the Web would mean that users will be able to access their social communities on the move. This in conjunction with location based services and NFC's will drive Social Commerce. The above mentioned technologies will provide the infrastructure that will be exploited by customized interfaces, as described in the next section.

1.3.2.2 Improved Human-Computer Interfaces

The central challenge to wider usage of mobile Internet is the perceived user experience. With respect to mobile phones, improved emphasis will be laid on making the interface as natural as possible. For example, the deployment of touch screen devices will be on the increase. Additionally, there will a focus on the websites optimized for the mobile browser. The smaller display demands a different presentation of the content, and additions to the conventional browser have to be made. The usage of intelligent zoom and widgets are expected to assume importance in this regard. Due to the size of widgets, they are naturally suited to the smaller displays on mobile units. They will be of importance to Social Commerce on the move.

The coming years will also see the emergence of Multimodal Interaction in a massive way. Multimodal Interaction refers to the usage of many interfaces, each covering for the possible weakness of another. In the case of mobile devices, conventional interfaces like the keypad severely limit the user experience. The possibility of voice interaction exist presently, but will play a much bigger role in the future once the speech recognition technology matures. One of the key drivers will be the XHTML+Voice standard developed by several important players in the market, which would integrate voice functionality to browsers. A further example of Multimodal Interaction is NTT DoCoMo's FingerWhisper technology, which goes a step further and tries to use the hand as a handset. Since the mobiles of the future are likely to have NFC devices and/or RFID readers, physically touching a 'Tag' to perform some action like a price comparison, will also become significant.

It is also pertinent to mention the notion of Mobile 2.0 here. Although it has a wider definition than Web 2.0, its definition does not seem to have a wide consensus. However, it does encompass the porting of Web 2.0 applications to the mobile web to harness 'Collective Intelligence'. A typical example available today would be Dodgeball, a mobile based social community that leverages the current location of the user. Applications of such nature and extensions to Social Commerce can be thought of as likely to happen.

1.3.2.3 Improved Batteries and Lower Power Consumption

In a survey carried out by TNS media regarding desired features in mobile Phones, a two day battery life emerged on the top with two-thirds of the respondents mentioning this as the key feature [5].Clearly, as the applications on phones become more sophisticated, the demands on power will also increase. The scope for improving on the currently available battery technologies is limited, although attempts are being made to reduce working voltage levels. This would mean improved software based power management techniques will have to contribute to meet the power budget. Display Units consume the majority of the power in mobile devices, and with increasing mobile Internet

usage the consumption of power because of displays will increase. In this regard Organic Light-Emitting diodes will be an increased usage, considering their reduced power consumption. Software management of display power will also emerge as an important technique [22].

1.3.3 Challenges and Risks Concerning Social Commerce in the Future

Secure identification remains the primary challenge to the success of Social Commerce, for that matter, e-commerce. The technologies that will be developed for this purpose will have to be much more robust than the present ones to inspire a greater confidence from the customers. The concept of paying via mobile devices is very convenient. However, the security issues, like possible loss of phone resulting in a possible compromise of identity and sensitive information will be have to be seen as threat. Widely reported cases such as these may discourage the use of the Web and mobile devices for purchase. As the mobile web grows in size, viruses and worms will also increase, and sensitive data can be compromised [9].

Another major challenge to Social Commerce is the presence of a chain model. The concept of Social Commerce involves extensive use of personal websites, blogs and social community profiles. A caveat to the success of social shops would be the possibly lengthy navigation from the point of noticing a product to the point of payment. Navigation through multiple websites might not be ideal, and is likely to annoy the user. For example, a book may be advertised on a blog, and further details are available on a website like Amazon, and the payment is handled by a payments solution provider. Therefore to keep the customer from noticing this, the handovers should be seamless, calling for innovative technology. The other aspect is the ease of use of setting up marketing tools like widgets and the extent of customizability.

Additionally, the future of mobile payment hangs in balance. Conflicting studies exist regarding the future of mobile payment. According to a study by Deutsche Bank Research [19], the conventional payment systems will win in the long run, whereas mobile payment is already big business in the Japanese market. While it is unsafe to use the Japanese market as a model for projecting to other less open markets like Europe, the convenience of a single device for all payment devices and the VISA and MasterCard warming to the concept would suggest that Mobile Payment indeed has a future.

Furthermore, there are socio-legal challenges that must not be ignored. The case of IBM accusing Amazon of infringing 5 of its patents, including that of "Ordering Items Using an Electronic Catalogue" endanger e-commerce immensely [1]. Amazon for its part sued Apple iTunes over its patented 1 click system. Whereas a firm of Amazons size can perhaps resist such a lawsuit with an out of court settlement [3], it can effectively prevent Social Commerce from taking

off, as individuals will not have the same negotiation power.

1.4 Conclusion

Taking the amazing developments in the field of web and mobile technology over the past 5 years into account, we are convinced that the fusion of mobile Net and fixed line Internet is inevitable. The same applies to the success of Semantic Web and the evolution of development tools and APIs for Web Services, and there will be as huge improvements as in the conventional Internet few years ago. And as you can see for example with YouTube, the people are willing and enjoying generating their own content and share it worldwide to other people. Especially Social Commerce, which depends on active users, will benefit from this trend. And now imagine the possibilities of Social Commerce with a huge community in combination with always-on mobile devices, intelligent semantic search engines and easy to use but powerful web-APIs.

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2

Chapter 2

Online Payment

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In social commerce customers as well as merchants face a variety of different payment systems. This often tends to result in a loss of overview, which is actually a key factor to win the confidence of the customer. The average customer is in general risk averse and skeptical towards not comprehensible changes with respect to transaction processes. The latter is a major reason why traditional payment systems hold the biggest market share. Whereas these systems have a tightened and well known infrastructure, they get adapted to new challenges; the Single European Payment Area (SEPA) will strengthen these methods as it facilitates their handling across the Inner-European borders. The numerous traditional payment methods can be integrated into one provider to simplify and structure the transaction process. Additional to the mentioned services, PayPal recently acquired a European banking license to integrate the full payment value chain and also implemented alternative payment systems. Due to the needed flexibility, reduced transaction fees, and the ability to establish Person-to-Person payments, innovative payment systems are assumed to have a good perspective concerning social commerce. These systems and especially e-cash and m-payment, which are fully developed from a technological view, suffer from a lack of standardization and therefore cannot achieve a wide market share. But there are recent trends in the European Union to push the standardization process, like the pan-European consortium StoLPan.

2.1 Introduction

e-Commerce like conventional commerce offers a wide range of different payment methods. Traditionally for example cash in form of coins and bills can be used as well as credit cards, payments via invoice or payment in advance. In case of social commerce very often traditional payments have been adopted as they have the advantage of being well known and all-round. However through the transformation the surrounding changed. Technical requirements arise concerning the speed of transaction or the security against misuse; customers demand user-friendliness and merchants low costs. Traditional payment systems moreover face challenges like cross border transactions or micro payments. This provides a great atmosphere for new technologies, solutions and start-ups. Many new companies and technologies are already in the market and manifold the e-payment methods. In the following an overview of the current situation of e-payment will be given together with impacts and prospects upon the near future.

2.2 Status Quo

2.2.1 Principles and Technologies of Online Payment

Currencies, as well as payment methods, of an online Electronic-Payment-System (EPS) can be based on a conventional payment system. Here, real money is converted into electronic money, which can be transferred on an electronic way and can be reconverted to real money if required. Therefore, existing infrastructures, for example those of clearing institutes or credit card businesses, can be utilized. Hence, an Online-EPS can exclusively be composed by a procedure to securely transmit credit card information (card system with secure credit card transactions), or to cooperate with secure online transactions of the banking system (debit/credit systems). While credit card and debit/credit systems are based on the existing national currencies and perform the task of transmitting payment data as well as establishing access to banks, at electronic currency systems e-cash is emitted, which uses online specific transfer procedures [76]. These private currency units can be converted into national currencies or other private means of payment. It is just as possible that, for example, a globally active company establishes its own e-currencies without any convertibility, like Second Live did [69].

  In the following sections we will describe the major principles of online payment. As e-credit seems to be one of the most complex systems and forms a base to understand the payment process in general, we will concern it first. Whereas the debit/credit systems are briefly addressed as they get overlooked due to the popularity of e-credit. As payment methods that are wrapped from traditional offline payments like "cash on delivery" or "via invoice" and their

functioning are well known, we won't go too much in detail. However, E-Cash deserves closer attention due to the fact that it includes some of the most promising innovative payment concepts.

2.2.1.1 E-Credit

Conventional E-Credit Processing
Before the person-to-person and third-party services were introduced, the only way to accept online immediate payments for a business was to acquire a merchant account from a bank, integrate a shopping cart into their website, and to obtain or develop an interface with a credit card gateway. These components interact with the consumer, vendor, merchant bank, and credit card issuer during a transaction. Here, the payment gateway is the crosslink in an online transaction. It securely transfers the information entered into the shopping cart software by the customer, validates it at the financial network and initiates the transaction of the funds. As each shopping cart package supports only a limited number of gateways, it is important to take this into consideration[1].

Figure 2.1 shows the interconnection of each component as a simplified structure of a complex transaction network. As it is not self-evident that all parts of the network are compatible with each other, most providers offer merchant accounts that are bundled with a payment gateway.

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[1]An exemplary cart package can be found at: http://smallbusiness.miva.com/products/merchant/
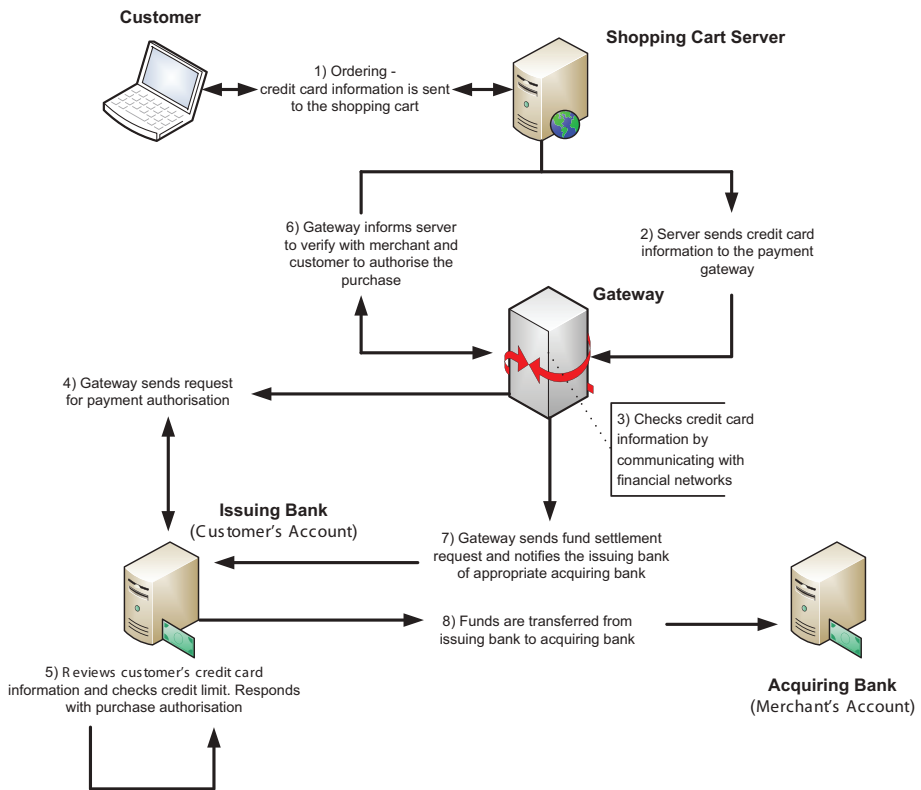
Figure 2.1: Conventional Credit Card Processing
Source: Own Illustration

Third-Party E-Credit Providers

Third-party payments differ from conventional processing by eliminating the need to open a merchant account [40, p. 18]. The provider processes the funds in all parts of the customer transaction and allows the vendor to transfer them to his own bank account in the conventional approach. If the consumer wants to pay, he gets forwarded to the third-party website and is asked for his card information, as shown in figure 2.2. Therefore, the credit card data is never passed to the merchant but only to the payment gateway of the provider. Different from the conventional system the gateway receives the funds of the customer's bank account and holds them in trust for the subscribing business. Temporarily the provider purchases the sale and receives payment from the consumer. In case of a non valid credit the purchases are canceled and all dues are passed back to the merchant. In this process the merchant account provider is not the merchant's institution, but the one of the third-party-provider. A

further advantage is that the components (e.g., payment gateway and cart software) are 100% compatible.
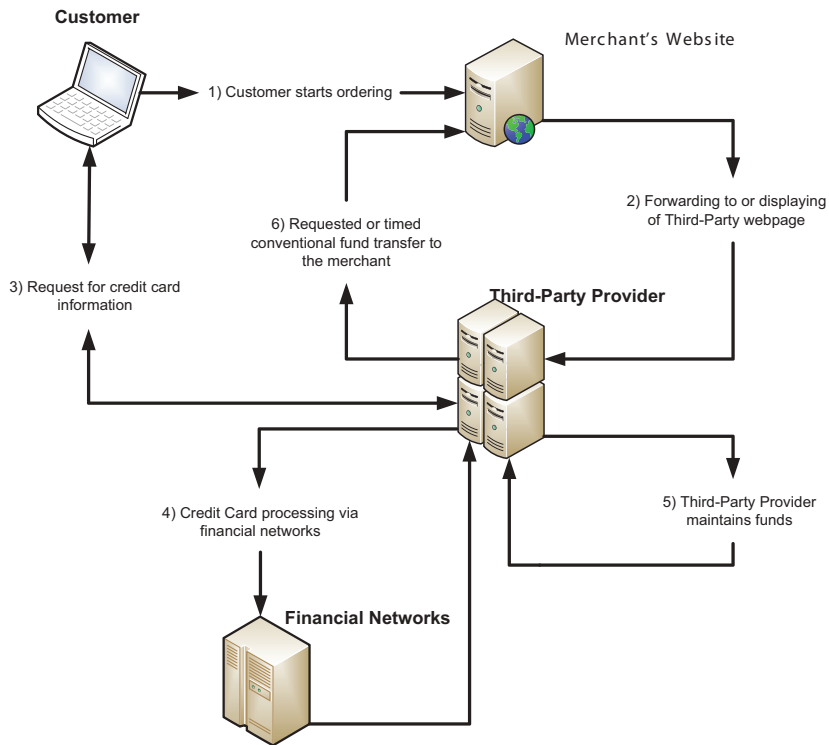
Figure 2.2: Third-Party E-Credit Processing
Source: Own Illustration

Person-to-Person E-Credit

Person-to-Person (PtP) payment services are a convenient way to accept online payments. PayPal is alongside Google Checkout the most prominent among these services, by virtue of the alliance with the auction site eBay [42, p. 24]. PtP services require both the vendor and the consumer to hold an account, which enormously simplifies the transaction as all processes can be handled internally, as shown in figure 2.3. The clearing institute only needs to be accessed if one of the PtP subscribers is about to transfer their money from or to their bank account. For example this can be monthly. That way, micro-payments can easily be accomplished. Though, only a limited number of members are registered with a specific PtP-service, which reduces the possible quantity of consumers. But as neither the vendor nor the consumer has to pay monthly fees, as it is usual at conventional and third-party providers, it is an especially

convenient system for low volume sellers. Further advantages are the ability to automatically invoice your buyers and to accept instant payments from your website [84].
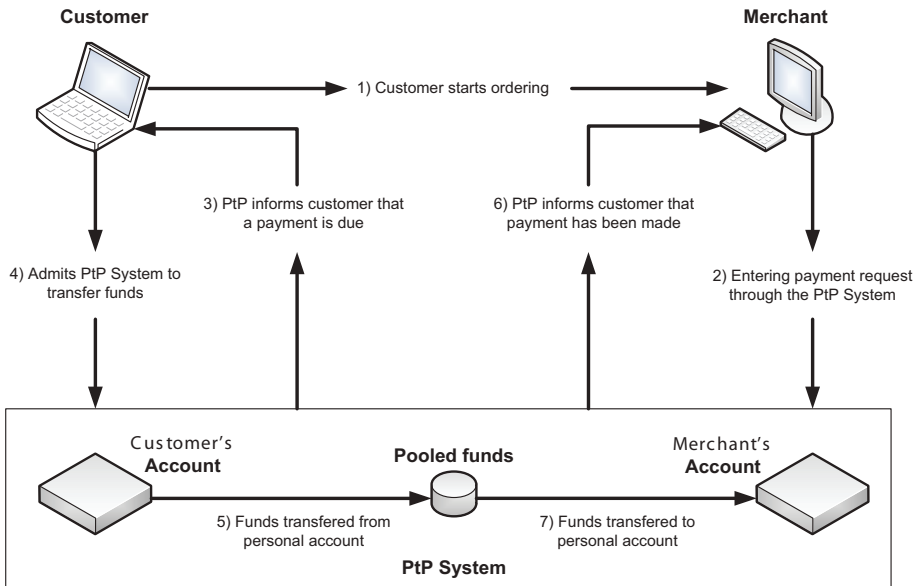
Figure 2.3: Person-to-Person Processing
Source: Own Illustration

Evaluation of E-Credit Systems

Due to the necessary authentication with credit card issuers, which is adherent to a minimum charge, conventional systems are unsuitable for micro-payments. A great advantage of credit card systems is the independence of currencies, as the conversion is directly handled by the credit card issuer. Further on, the customer is partially protected of deceitful vendors, as he can ask his credit card issuer to cancel the transaction within a certain range of time. Concerning this matter there are also advantages for the vendor, due to the fact that all transactions are insured by the credit card issuer. A disadvantage can be found in the partial anonymity. Whereas the merchant does not necessarily have information about the customer, the credit card issuer is informed about all transactions.

2.2.1.2 Debit/Credit Systems

Debit-Systems are working similar to cheque accounts with a cash card. The clearing is processed via a bank account the consumer has to establish at an

EPS provider. He also has to deposit real money before it can be spent online (prepaid). Therefore, there has to be a continuously sufficient account balance, which can be cleared via an agreed bank collection or credit card if a limit is exceeded. With credit systems the clearing corresponds to the principle "buy now - pay later". The required funds for the acquisitions are advanced on loan of the EPS-service-provider and charged on a regular bank account at an agreed point of time. Both systems can be integrated into the already presented third party and person-to-person principles to increase the flexibility of payment for the consumer.

2.2.1.3 Traditional Payment Methods

There are further payment methods existing that are basically wrapped from traditional offline payment methods. Among these rank for example the settlement via a usual invoice, direct debit or payment in advance. Those and also the cash on delivery method are reliable and proven methods customers trust in, no matter how long a transaction may take or cost. Due to the fact that all of them have a tightened and well known infrastructure it is hard for innovative concepts to compete [53].

2.2.1.4 E-Cash

E-currencies work like paper money and coins, with the difference that the representative values are so called "token" in the form of bit strings. The token include a serial number, the indication of value, and information about the issuing institute [83]. Token can be transferred between any computers, allowing the bilateral money transfer between private persons. A major problem can be found in the so called double spending, whereas e-cash is tempted to be copied and sold more than once. Therefore a network has to check the validity of the serial numbers which reduces the grade of anonymity [68]. Two of the first companies in this sector are Digicash and NetCash. To avoid the limited mobility of e-cash and to increase the security, smart cards are seen as promising for e-cash systems, even though one of the earliest projects, Mondex, which was acquired by MasterCard, experienced modest success [86]. Yet e-cash is not broadly accepted due to its process complexity and missing standardization, but there is a lot of research activity at the moment [75]. The combination of both smart cards and near field communication (NFC) technologies opens a broad field of new opportunities, not only in e-payment. Implemented, for example, in cell phones it allows the customer to pay at any time and any place via his telephone bill, which is just one scenario of m-payment. But the NFC approach is at the very beginning and has to overcome several barriers like the conviction of the carriers and of course the standardization [66, p. 49].

Also sometimes the term e-cash is used to refer to the provider itself. Many systems will sell their e-currency directly to the end user, such as PayPal

and Webmoney while other systems, such as e-gold (e-cash backed up with gold), sell only through third party digital currency exchangers. With most of these providers there is no way to spend the e-cash without their software involved, which greatly simplifies the process as no serial number and validation is required. But on the other hand you are tied to the provider and have to trust in it. Due to these facts, only providers with a capacious amount of members can succeed. This principle can also be found in integrated person-to-person e-credit systems.

2.2.2 Online Payment Implementations: Evaluation and Usage Statistics

Given the multitude of available transaction principles, their success and acceptance among customers is also affected by their particular implementation and the associated interfaces. In order to provide an overview, popular examples for the following different payment methods in e-commerce will be examined: Direct debit and credit card as representative of conventional e-credit; cash on delivery, trust service and payment in advance as traditional payments and an alternate debit system.

2.2.2.1 Criteria

The choice of featured shops/service providers is based on the idea of covering the most relevant e-credit payment methods (see 2.2.2.3) within prominent surroundings (Amazon.de, eBay.de), new concepts for the classical methods (Giropay, Amazon 1-click) and the leading ('alternate') debit system (PayPal). The comparison mainly focuses on the users' point of view and their perception of the actual process. Nevertheless, facts on merchant fees and speed of transaction are also included. Research encompassed the official websites as stated below. The relevant data applies to the specific German branches or the German market respectively:

- *Speed of transaction:* Valuates the time between the issuing of a payment or an order on the website and the point when the merchant is notified (e.g. in order to start the shipment process) (first rating) or the point of time, when the money is credited to the merchant's bank account (second rating).

- *Registration effort, ease of use:* Valuates the one-time effort needed to register and the effort linked to every transaction as an important aspect.

- *Security against misuse, revocation possibilities:* Perceived insecurity is a major issue with online payment. Ratings consider how easily accounts can be taken over and false payments can be issued as well as the possibility to annul such payments.

- *Customer fees:* States only the fees for the customers, merchant fees are listed with PtP possibilities.

- *PtP possibilities:* Takes into account the number of required parties and the merchant's cost of transaction.

- *Spread:* The number of shops offering the respective service affects the attractiveness for customers and vice versa. *Notice:* This evaluates the general payment principle, not the specific implementation.

The characteristics of the different payment methods are rated relatively to each other, meaning a solution rated (+) provides comparable features as another with the same evaluation, but is superior to those given (0), (-) or even (- -).

2.2.2.2 Investigation of Current Services and their Characteristics

Amazon provides its customers a very sophisticated way of issuing their transactions via traditional methods. Based on mutual confidence, both parties fulfill parts of their contract in advance: The customer issuing the payment and Amazon shipping before the payment is credited. Thus, this method generates the fastest sales process possible within the given technological restrictions. Payment on invoice is charged an additional fee as it is often practiced to make customers avoid certain decisions. Stored information facilitates repeated ordering, but still the process itself provides a decent amount of security, as due to the assignment of payment data to a specified shipping address, a hijacked account cannot be used to the fraud's advantage.

Method	Amazon.de			
	credit card	direct debit	invoice	1-click
Speed	(++)/(0) instant acceptance, credit card account charged within approx. 3 days after shipment	(++)/(0) instant acceptance, customer charged within approx. 3 days after shipment	(++)/(--) instant acceptance, customer pays within 2 weeks after recipience	(++)/(0) instant acceptance, charging depending on payment method (credit card or direct debit)
	payment is charged only after product enters shipment process			
Registration	(0) Name, email, address, credit card information stored (2 pages)	(0) Name, email, address, bank account information stored (2 pages)	(+) Name, email, address, date of birth stored (2 pages)	(-) Name, email, address and payment information stored, extensive setup effort (min. 4 pages, small buttons)
Usability	(+) convenient through possible selection of previously stored data (1-3 pages, 0-10 lines to submit)	(+) convenient through possible selection of previously stored data (1-3 pages, 0-10 lines to submit)	(-) see credit card and direct debit, but separate payment process necessary	(++) literally 1-click
Missuse	(+) secured via logín, change of shipment address requires new payment information	(+) secured via login, change of shipment address requires new payment information	(++) payment is linked to recipience, shipment and invoice addresses need to be identical	(0) possibility of unwanted orders at e.g. public workstations, change of address requires new payment information
Revocation	(+) limited liability (50€) on fraud	(++) generally 6 weeks time to revocate the payment	(++) payment is issued at the end of the sales process	(0) see traditional methods, but order cancellation not possible with Amazon marketplace
	order annullable until product enters shipment process			
PtP	(+) Amazon acts as 3rd party payment provider for Amazon marketplace; merchants receive payment every two weeks automatically or daily if ordered manually			
Fees	(++) none (merchant fees may be up to 3,8% with other PSPs)**	(++) none	(-) EUR1,50	(++) none
	general fee per transaction (EUR0,99 plus 15%*) independent from payment method			
Spread	(+) high distribution, see chapter "Usage statistics" (though less in germany than in the e.g. in the US), multi-usage convenience not across different shops			(n/a) Amazon internal, patented

Figure 2.4: Comparison of Amazon services.
Source: official homepage Amazon [39]
* Fee for non-consumer electronics up to 100 Euro
** information on credit card payment from Frank, H.R.[51]

Payment in advance and cash on delivery are the classical methods of PtP business where there is less trust in the contract partner. They provide the customer with the choice of paying extra for his safety or relying on the merchant. Still, these measures naturally slows down the total sales process.

Giropay and Amazon 1-click represent attempts to further improve classical online payment. Amazon 1-click at the moment is Amazon specific and transports the feeling of spontaneous, inconsiderate action as it enables order-

ing and payment without user verification. In contrast, Giropay takes a very general approach addressing customers who enjoy the perceived safety of their well-known online banking. As Giropay redirects customers to the web sites of the banks providing prepared remittance receipts within the banking portal, Giropay relies on the high security standard of the original safety features of the particular bank (PIN and TAN).

Method		ebay.de		PayPal	Giropay
		payment on delivery	trust service (iloxx AG)	transfering prepaid credit	payment in advance
Speed	shop specific evaluation	(++)/(-) instant shipment, charging upon recipience	(-)/(--) shipment after payment reaches trust service, final payment after customer's approval	(+)/(+) user account needs to be added funds in advance, immediate transaction, but refunding to bank account takes approx. 3 days	(0)/(+) no shipment until payment is actually creditted (approx. 3 days)
Registration		(++) none	(-) data on customer, merchant and transaction (min. 13 lines), profile storing available	(--) name, email, adress, bank account data, e-mail and bank account verification (5 pages, 16 lines)	(++) none
Usability		(--) personal recipience of shipment necessary, payment to the postman	(--) separate payment process and additional communication necessary	(+) login with email address and passwort, choice of payment method, approval	(0) separate payment process necessary (PIN, (i)TAN) with preconfigured remittance receipts
Missuse		(++) payment process separate from sales portal	(++) payment process separate from sales portal	(0) secured via login, email notification	(++) payment process separate from sales portal
Revocation		(0) post holds the money for quick reaction to reclaim it	(++) final payment after customer's approval	(--) not possible for already booked transactions	(--) bank transfer is generally not to be undone
PtP		(+) postal service as 3rd party per transaction	(0) iloxx as 3rd party, additional shipment and payment process	(++) payment to be initiated via hyperlinks or email	(+) no 3rd party involved
Fees		(--) EUR4,00 with DHL	(--) starting at EUR4,50 for basic trust service	(0) none, (fees of 0,35€ plus 1 to 2 % for recipience likely to be introduced soon)	(+) depending on clearing institution
Spread	general eval.	(+) traditionally high distribution, featured by offline mail order shops	(--) service for special PtP cases of high priced products	(0) not yet as succesful as the traditional methods, but high growth rate	(++) most popular eCommerce payment method in germany, Giropay featured by the Sparkassen, Postbank, Volks- und Raiffeisenbank

Figure 2.5: Comparison of eBay, PayPal and Giropay services
Source: Official homepages e-Bay, giropay, iloxx, PayPal, Deutsche Post
[44, 52, 58, 70, 43]

PayPal combines the classical payment methods with a "virtual bank account". All transfers issued via PayPal are credited to an online account and charged a fee for the recipient. The amount is stored online and can be used to either pay again via PayPal or to be refunded to a regular bank account. PayPal transactions carry the advantage that no account information is passed to the business partners but stays with PayPal only. Also, PayPal internal transactions do not suffer the regular time shifts between issuing and crediting. Traditional payment methods can be used to transfer money to a PayPal-account directly referring to a certain job number, but refunding has to be ordered manually. There has been a lot of criticism on PayPal[2], mostly referencing to the fact that PayPal's terms of use allow them to deny their users access to their accounts [71]. Belonging to the US resident branch is oftentimes criticized for being obliged and known to compare registered users with governmental suspect lists under the term of the Patriot Act [48]. With PayPal having acquired a banking license [72] and opting to transform into a bank, there is the chance to re-increase confidence in their system [59]. PayPal might then also offer users to receive their salary on their PayPal account, thus totally eliminating the need for traditional payment methods in online business.

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[2]e.g. http://www.nopaypal.de, http://www.nopaypal.com, http://www.paypalsucks.com

2.2.2.3 Online Payment Usage Statistics
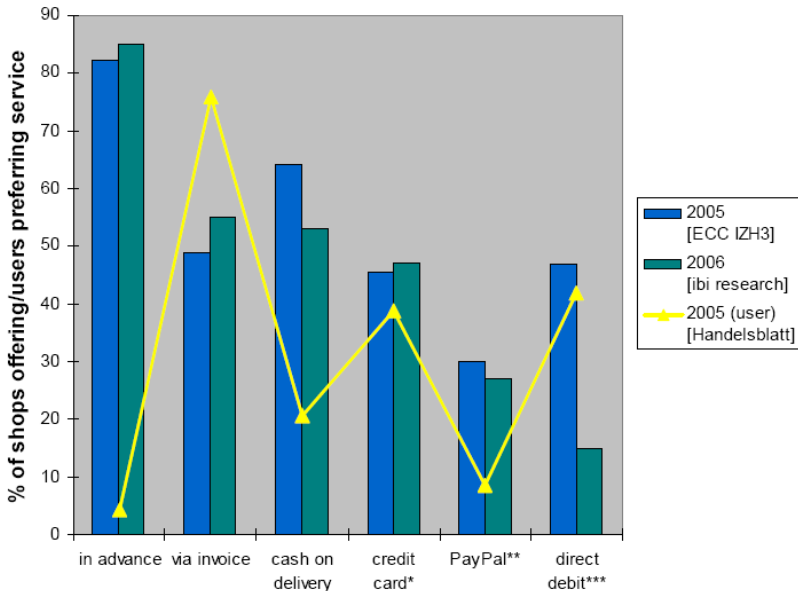
Figure 2.6: Offered methods of online payment and user preferences
Sources: data taken from van Baal, S. [78], Heng, S. [53], Finke, N. [49]
* Summing over different security levels for the offers
** user preferences referring to 'e-cash' in general
*** ibi research referring to 'electronic direct debit' only

In 2005, total e-commerce value in Germany equaled 321 billion Euro, 10% of which was achieved in B2C commerce [60]. This amount is believed to increase to 694 billion Euro with a 16.4% B2C share until 2009. Based on different queries [78, 53] among German e-shops, traditional payment methods were offered far more often than PayPal or any of its competitors. Growth is still high with direct debit and credit card solutions, whereas the other traditional payment methods are reaching saturation. The one exception being transfers with automated online notification. m-payment and alternate online payment systems besides PayPal are hardly in use, ranging between 2% and 7%, but their introduction is intended. This holds true especially for all-in-one solutions featuring multiple methods or automated notification. For many alternate systems their application is limited to specific niches in e-commerce. For example, where used, mobile payment contributes with about 22% to the revenues. As overall usage of m-payment among shops is only 2%, this suggest

very specialized businesses with intensive concentration, probably on the sales of mobile contents. Payment in advance, cash on delivery and PayPal are especially used among small shops, shops selling physical goods rather than digital content. On the other hand, businesses selling digital content rely more often on alternate online payment methods [53].
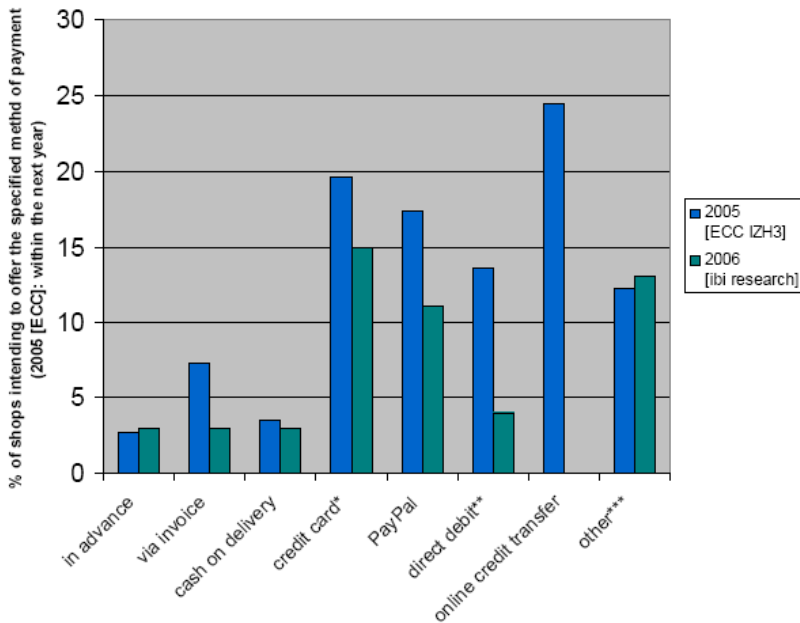
Figure 2.7: Intended introduction of new payment methods
Sources: data taken from van Baal, S. [78], Stahl, E. et al. [81]
* averaged over different security options,
** ibi research referring to 'electronic direct debit' only,
*** 'other' referring to 'payment platform with several payment methods' for ECC and 'other online payment solutions' for ibi research

Very interesting is the divergence between customer wishes and the methods offered. Although customers naturally dislike payment in advance (see figure 2.5 and [49]), the shops interest can prevail. Also PayPal and other e-cash system are less requested by customers than offered by merchants. This may yet be due to the unfamiliarity, as these systems potentially provide advantages for online shoppers and for upcoming PtP e-commerce, but are subject to network effects (2.3.1.2). Still PayPal, accounting for only 8.5% of the revenues of the shops that offer it, seems to be rather an additional payment solution than one which e-commerce merchant mainly or exclusively rely on.
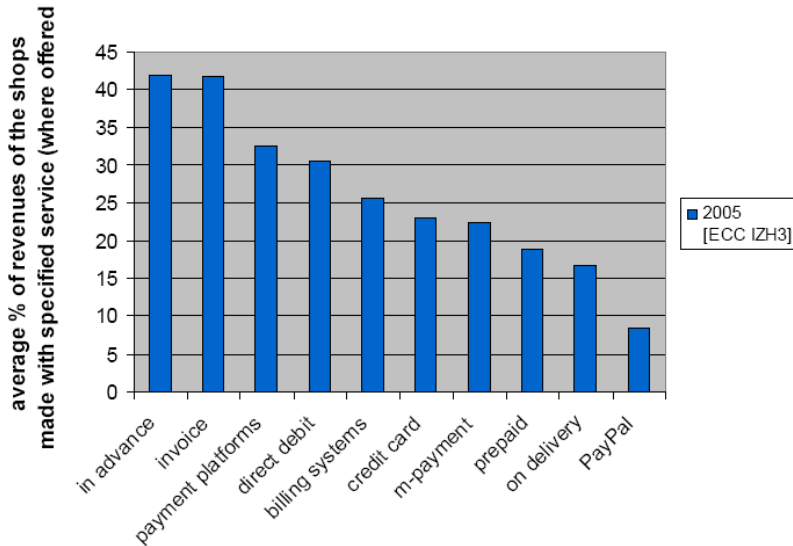
Figure 2.8: Revenue share by payment method
Source: data taken from van Baal, S. [78]

2.3 Medium-Term Forecast

2.3.1 Drivers of Online Payment

2.3.1.1 Players

Four main players, who can influence by their interests the future online payment market can be distinguished: Banks, merchants, customers and payment service providers (PSP). Whereas the last have the lowest influence, as they primarily have to adapt to market needs, if they want to remain competitive. That is why PSP won't be mentioned in the following.

Banks

The banks position in online payment, is that they are especially strong in traditional payment systems like the automated clearing house, but almost not present in Alternative Payment Systems [64]. This leads to a competition between the Alternative Payment Systems (APS) of modern PSP and the Traditional Payment Systems of banks. In this struggle for market banks are still in favor, because of the reason, that they do have well-known brands, which is especially important to older customers [53]. In addition banks profit from traditional payment mechanisms, as they do not provide real-time clearing, which leads to increased profits for banks [80].

Customers

Customers are not a homogeneous group like banks. Their interests differ mainly with age, income and Internet experience. Nevertheless the following interests are true for all customers: Important issues are Security against the merchant and user-friendliness [55]. The problem about security and user friendliness is, that many customer perceive a very user friendly registration and paying process normally as less secure, than a longer registration and payment process [53]. Therefore the combination of these two features is difficult to manage, but could be a unique selling proposition for a PSP that is able to solve this problem. Security against the merchant is also important, because many customers feel that merchants try to record their activities and hence have concerns about their privacy [55, 50, 53]. Nevertheless data is also recorded when using "Payback" cards which are very popular. So a merchant needs to explain why he stores data, and that in the end it is useful for the customers, as the seller is able to serve the customers needs better. The third feature many customers ask for, is the broad acceptance of a Payment System, in order to avoid to be forced to register again and again at each new e-commerce page [55, 50, 53]. This leads to network effects, which will be explained in 2.3.1.2.

Merchants

Merchants are those who can make the most out of the new payment systems. Sales e.g. increase by 14% when providing at least three different opportunities compared to those, who offer less [84]. Also costs play a big role. The operation of an Alternate Payment Systems costs in total less than e.g. credit cards [84]. But as different customers are registered with different Payment Systems it is not easy for a merchant to find the best solution. First, giving to every customer the possibility to pay with the system he prefers, but not confusing the customer by providing too many payment possibilities [73]. Second, realizing the cost advantage is about on the one hand providing enough payment possibilities, so that customers use the Payment Systems, but on the other hand, avoid providing too many possibilities, as the merchants pay for every single one. Consequently this will lead to network effects, which will be explained in 2.3.1.2. Last but not least it is important for merchants to be able to track the buying behaviors of their customers, in order to be able make personalized offerings [50, 55, 53]. As already described, this is not favored by the customers and needs to be solved by marketing campaigns.

2.3.1.2 Market Transparency and Access

With over 40 PSP on the market it is in general difficult for a merchant to choose one of them. Above all if he wants to decide upon technology, user-friendliness etc. [53]. Even the amount of fees a merchant has to pay is often unclear to him [73]. Moreover most of the e-payment solutions are technically so sophisticated that they are difficult to understand for the normal owner of an e-commerce

shop, unless he is a computer scientist himself. But also for the reason that it is difficult for the merchant to tell upfront, whether a new unknown payment system will become popular with customers for a certain reason, or not. That is where network effects need to be taken into consideration. When people need to choose, but don't have enough knowledge to do so properly, they normally pick either the biggest player on the market, as they think that a product that was chosen by many must be a good and reliable one or they trust on recommendations of their friends. Both possibilities lead in general to the result that the biggest players in the market win. Moreover if a payment system is already used by many, more and more merchants will implement the payment system on their page, and more and more customers will know about it and hence also use it. When more people use it, also concerns about security go down, as the technology itself is safe, but needs to be experienced and trusted [79, p. 20]. This leads to an added value for the user, as it becomes more attractive for old and new customers, but it is also makes more sense for a merchant to provide the paying possibility [55, 53]. To sum it up, for customers and merchants it is difficult to make a knowledgeable decision, when it comes to choosing payment systems. Thus the first system that reaches a critical mass of users, will attract the biggest share of new users [53]. That makes it hard for new systems to access the market.

2.3.1.3 Crossing National and System Border

M-Payment
E-payments from mobile phones via short messages (SMS) or phone calls are referred to as m-payments. M-payment players (involved parties) are financial service providers, mobile phone service providers, Start-ups like Paybox (PSPs), mobile phone service providers and technical providers. The main advantages of m-payment are the high penetration level of digital mobile phones, the application for all kinds of payment (e-, m-commerce, offline, etc.) and the possibility to both initiate and valid payments [46].

Up to now m-payments are already very successful for example in Japan and Austria. The Japanese NTT DoCoMo and Sony established a simple device based mobile payment solution. "FeliCa"- mobiles are equipped with a Sony Chip that allows payment via mobile phone in several shops. Since FeliCa's launch in July 2004, NTT DoCoMo has seen significant growth in its service and the payment options are constantly enlarged [77, 41]. In Austria mobilkom austria has taken over the Austrian branch of Paybox, the other mobile phone service providers agreed in 2003 on the gateway MIA (M-Commerce Interface Austria) as a common Standard for m-payment services. Concerning Germany m-payment is also not a new idea, but till today no standard has emerged to make market diffusion possible. But the success of m-payment might soon cross the border as discussions and development are running [56, 54].

E-cash

E-cash works like paper money and coins with the specialty that for transactions there is no need to have access to a banking account. Since, due to technology progress a widespread adoption of e-cash is becoming more realistic there has also started a discussion about the impacts on monetary policies. The importance of e-cash for monetary policies can be explained by the fact that e-cash could become an important substitute for paper money and coins (change of systems). For the banks there are three main issues regarding electronic money and monetary policy: first there is a need to safeguard the role of money as the unit of account for economic transactions; second the effectiveness of monetary policy instruments might be affected and third the emergence of electronic money may have repercussions on the information content of monetary indicator variables [82]. With the diffusion of e-cash in e-commerce, banks would loose their influential capability. Thus one could see the issuance of a European banking license for a company like PayPal (Electronic Money Institute, authorized and regulated by the Financial Services Authority of Great Britain under 2000/46/EG) under the intention of saving influence on e-payment transactions.

2.3.1.4 Legal Issues, Regulations, and Standardization

Legal Issues and Regulation

Fast transnational developments and interdependencies are a great challenge not only for e-payment systems but also for the elaboration of laws and regulations for the Internet on a national basis [45]. With regard to social commerce in Germany the widespread traditional e-payment systems face challenges like cross border transactions and micro payments (under 10 Euros). Cross border transactions still take a smaller part of all transactions, this might be due to the fact that these transactions are cost intensive and sap the small margins of the e-shops. Problems arise also from the wide disparity in implementation of e-money regulations from country to country. Strict demands for example are placed on e-money in Italy, whereas mobile transactions in Finland are relatively unadjusted [65, p. 11].

To improve market efficiency the EU has introduced a new project called SEPA. The single euro payments area (SEPA) will be an area in which consumers, companies and other economic actors are able to make and receive payments in euro, whether between or within national borders under the same basic conditions, rights and obligations, independent of their location [47]. The main products of SEPA are SEPA credit transfers, direct debits and card payments; the consumer needs only one bank account with which credit transfers and direct debit payments can be made as easily as national payments. The crossing border problems of e-shops would thus be tackled for the European market [50]. The project furthermore introduces new products like e-invoicing, e-reconciliation

and payment solutions for Internet banking. For e-payments these products are value added services, e-reconciliation for example is a service offered to customers after payment (bills are electronically matched with the payment, and the payee's records are updated). Till 2009 it is planed to set up the single euro payment area, banks intend to offer SEPA credit transfers and card already from 2008 on [62].

SEPA can be seen as the foundation for all sorts of innovative payment systems [61], it pushes for rapid, low-cost handling of non-cash payments within the cross-border networks and thus supports harmonization of the EU market. The current state of discussion tends to give preference to innovation ahead of ensuring equal treatment of all types of payment transactions [53]. The next step might then be eSEPA which could develop standardized e- and m-payments across Europe [61]. Pan-European consorts like StoLPaN (store logistics and Payments with NFC) already started and develop in this direction [305].

Self-regulation of the Market

Self-regulation in the social commerce market comes into action for example via risk aversion (customer, merchant), network effects and partly the innovative payments systems themselves. Generally merchants as well as customers are risk averse and when it comes to e-payment, security is a key factor for both parties. Hence credit card companies for example took up the challenge and projects like Visa CISP (cardholder information security program) were created to define a security standard for all merchants that process, transmit and store Visa cardholder information[3] [317]. This step allows the credit card companies to tap new market potential and furthermore reduces the need of protective laws by government. Concerning innovative e-payment systems they are mostly geared to settle micro-payments (less than 10 Euros), which are only offered by one third of the e-shops [53]. The limited focus of some systems on social commerce requirements limit the potential of new payment systems. Another aspect of self-regulation of the market comes into action as soon as a new system enters the market. The newcomer will be checked out and evaluated by be users. This can be both a chance and a threat, a chance to improve and a threat of negative publicity what may lead to market exit [45].

2.3.2 Development of Technology

2.3.2.1 Electronic Direct Debit

Electronic direct debit as a well known, traditional payment method is quite popular within social commerce. It is offered by around 15% of all German e-shops. But like other traditional payment methods it faces new challenges out of the progress in e-commerce. When it comes to cross border transactions or micro payments it seem as traditional payment systems are loosing ground.

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[3]e.g. www.1ShoppingCart.com

Thus one could conclude that within the next five years electronic direct debit will be replaced by something more suitable. However there are developments that contradict this statement in the case of social commerce. First micro amounts are not even charged at two-thirds of the e-shops and second there are new transnational impacts. As mentioned above the SEPA - project will introduce a border crossing direct debit system with a common set of rules and processes within the next 2 to 3 years. Until today direct debit is handled different in almost all European nations. By harmonizing the schemes direct debit (like other traditional systems) will get great support. And moreover with foreign shares of turnover being relatively small in social commerce, the elimination of electronic direct debit might still take some time [47, 53].

2.3.2.2 PayPal

PayPal got a European banking license that is valid for the European countries from the second of July 2007 on. With the license the company expects to enlarge the distribution and arise the service and number of shops that accept PayPal. Advantages for merchants that offer PayPal can be the numerous payment methods included in PayPal and the client basis of PayPal. The consumer benefits as he has to register only once and can use traditional payment methods within PayPal (user-friendliness); furthermore transnational transactions are facilitated. To summarize in case of social commerce this would lead to a push and gain of market shares in the next years. So far 20 to 30% of the merchants offer PayPal as an e-payment system, the company hopes to expand this number within 3 years to 60 or 80% [74]. Yet another reason why a further growth might be realistic is the fact that with eBay PayPal has a very strong partner and a wide access to the market.

However there are also critical opinions discussing negative experiences with PayPal on the Internet. A close watch should be paid on this as references play an important role in social commerce.

2.3.2.3 E-cash

E-cash is one of the systems, that could gain a huge amount of the e-commerce market. As already described e-cash has the advantage of being able to pay peer-to-peer for low costs [63]. Using e-cash there are two possibilities how to pay. One is using tokens, which can be seen as a an electronic bill or coin. The transaction is secure, as coins are signed by the issuer [68]. For establishing tokens, which can't be doublespended, without having a provider that controls it, research is currently done. Once invented, e-cash wouldn't be subject to network effects anymore. This means, that customers could pay with e-cash to every merchant who provides an e-cash payment possibility. Consequently merchants would take the effort to offer paying via e-cash. The other possibility is having money on an account of a PSP and transferring the money to the subscribers of

the PSP. The major advantage of e-cash is anonymity, however it can become also its biggest disadvantage, because it opens the option for criminals to launder money, that was earned for example through child exploitation, credit card fraud etc.. This is what happened to e-gold [85, p. 5], and could now lead to a setback of the whole technique, because of the public attention e-gold attracts. E-gold just recently was the one of the first PSP, whose technology that based on e-cash gained subscribers. This is due to e-gold's idea, to make their subscribers feel secure concerning their money through promising them, that their money is stored in gold. That this idea works, shows also the success of a similar system called GoldMoney. As already stated in 2.3.1.1 the trust of the customers is very important, and also was one of the reasons, why e-cash worked for the first time [63]. As the trial can derogate this confidence, the outcome for e-gold's rivals is not sure. Hence the development needs to be followed carefully.

2.3.2.4 E-credit

E-credit is the most popular e-payment system in Germany. Over 45% of all e-shops offer the possibility to pay with it. Despite the fact, that it is a modern system it is well known and therefore trusted. This is due to the fact, that credit cards have already been used for shopping in brick and mortar markets [84]. Thus for many customers, it also became normal to pay by credit card in social commerce. Further advantages include user-friendliness, a standardized system, low cost compared to credit transfers or cheques, the possibility of international payments and increasing security through standards like "verified by visa" [46, 57]. Although the problem of credit card fraud is always prevailing, new standards are going to diminish this problem [67]. Consequently credit card payment will gain market share in the e-commerce market in the next five years [73]. This is also supported by the network effect, due to the already high user rates [53].

2.4 Conclusion

To be able to give an outlook over the development of e-payment in the the next five years, the drivers, which can lead to a change, were described. One of the dominant drivers are network effects. It can lead to the result that many of the PSP will find it hard to compete and gain market shares. Therefore it is likely, that they will be pushed out of the market [53]. Finally only 3 or 4 major players will survive and share the market among themselves [50]. PayPal could be one of these players. Due to its high market share, its cooperation with eBay, and its ability to transfer peer-to-peer payments, PayPal has an outstanding position in the e-commerce sector compared to other innovative payment systems. But besides PayPal, it will be difficult for many of the new

PSPs to become big players in the market, as many people see no urge to change from the traditional payment systems like electronic direct debit, or e-credit to the new ones like GoldMoney or others. Especially e-credit is a system, which has many advantages for e-commerce and is still improving by becoming safer through special security procedures like "verified by visa" [57, 53]. Thus, there is no real reason for people to switch from a well-known system to something new. However m-payment could be one of those technologies become successful from one day to the other. As the technology is already developed, it may only need one partner with influence to push this technology into the market. Hence one has to follow the development in the next years. All in all e-credit, the conventional payment systems and PayPal will dominate the market with or without m-payment, consequently merchants should offer these payment services, when they want to see people buy their goods [84, 204].

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3

Customer Decision Making Process

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In the last months the Internet and its users have changed towards a certain phenomenon we all know as the Web 2.0. Although these uprising communities with their participating users have not yet become mainstream, the development of the Internet is obvious.

Especially e-commerce vendors have to keep an eye on two recent developments. First, the differentiation of e-commerce platforms and second, the development of the customer's behavior. Although the classical form of price comparison shopping is still the most frequently used, more and more different social commerce platforms provide the new so called prosumer with recommendation systems and interactive communities. As a consequence e-commerce vendors also have to keep an eye on the development of their customer's behavior. Especially classical decision making models do not explicitly cover the new way of social online shopping. It is likely that the model of a rational high involvement customer that actively searches and evaluates information before a purchase is insufficient. Emotional factors like trust and loyalty additionally influence the traditional decision making process. Therefore the traditional decision making models have to be complemented by a highly involved customer that is mainly driven by social aspects. This change will cause e-commerce vendors to react to this trend by providing more than just product information or price comparison. In fact these companies will have to integrate social networking functions into their platforms to attract this new type of customer.

3.1 Introducing the Customer 2.0

When looking at the development of the Internet from originally exchanging scientific data between locations to what we face today it becomes obvious how not only the use of the Web but also the user and his behavior has changed. The web has emerged to a platform where all kinds of people with different backgrounds and intentions meet, build communities and do business. In 2004 O'Reilly Media introduced the phrase 'Web 2.0' as a social phenomenon in which the user becomes an active participant in shaping the Internet [107]. Technologies such as weblogs, wikis and RSS feeds enable the user to easily generate and distribute web content. Thanks to this freedom to share and communicate more and more classic consumers have evolved to becoming producers as well. These so called "prosumers" [114] can no longer only be seen as a target group or simply end users. They are furthermore persons who want to interact and communicate with persons. A desire for self presentation, networking and information exchange turn the conventional web surfing into a social experience for the "customer 2.0". They want to pursue their needs and at the same time look for attention and opportunities to communicate. One result of this vital information interchange is an overwhelming abundance of information offered by the Internet. All these information have to be found, sorted, processed and presented, while the customers' resources to handle it are generally limited. So along with conventional methods like browsing the Internet or looking specifically for information using search engines, other forms of inter-mediation have come up. Nowadays the Internet literally approaches the user. Information is being preselected by filters, subscriptions such as RSS feeds and recommendation systems. Those recommenders can work automated by analyzing users' behavior and preferences, but they can also include social components in order to satisfy the user's desire for communication. When comparing recommendations from friends or within a community with collaborative filter recommender systems, friends' recommendations often are preferred in terms of quality and usefulness [111]. In the presence of the abundance of information on the Web, the idea is that consumers help each other to distinguish between high quality and low quality items by providing ratings and comments for items they have investigated. Ultimately, online consumers also respond to the large amount of electronic junk on the Web by restricting their attention to a very limited fraction of information provided on a website. This leads to new ways of how consumers perceive the Internet and eventually make their decisions on the Web. Particularly companies operating in the field of e-commerce are being affected by this development. Visitors and therefore potential customers on a website are generally in a hurry, so they do not read everything, furthermore they roughly scan the content. Therefore they tend to not make optimal choices [101], whereby the recommendation systems' value is amplified. Also consumers actually search very few shopping-sites and the fraction of shoppers that stop

their search after the first site visited is high [99]. In general the customer has a convenient and quick access to a huge amount of information and products. So there is the need of online shops to integrate tools which support the customers' decisions in order to simplify the buying process. Since the customer is a social being and especially the customer 2.0 is interested in an active participation in the process, e-commerce providers are confronted with the new challenge of integrating social networking into their platforms. Consumers want to find like-minded persons. They are not only interested in the products these own, but also in what their experiences with those products are [87]. Understanding the mechanisms behind the customers' decision making process becomes vital for e-commerce providers. Companies have the opportunity to become part of the communities, just like users become potentially partners for companies. Therefore we want to detail the actual decision making process of a customer in the following.

3.2 How Social Commerce Changes the Customer Behavior

3.2.1 The Customer Decision Making Process

The decision making process of a customer is a very complex procedure. A decision whether to buy a product or not can be made in milliseconds or weeks. Sometimes the customer collects a lot of information about a product and sometimes he purchases very spontaneously. Some shopping decisions have to be made every day, and some will only have to be made once or twice in a lifetime. Therefore, the decision making process can differ extremely. The complexity of this process is primarily due to the tremendous number of influencing factors, such as the customer's needs, his mood or his time pressure. Therefore this chapter deals with classical decision making processes and shows to what extent these models can be used for e-commerce.

3.2.1.1 Factors Influencing the Decision Making Process

In order to structure this wide field of forces, most researchers divide the influencing factors of a customer decision making process into two categories: the activating and the cognitive factors [100]. Both categories influence each other reciprocally and cannot be regarded separately. There is no buying decision that only goes back to cognitive factors. Even extreme rational decisions are influenced by feelings and emotions somehow.

In fact, the activating factors are the driving force for the cognitive information processing and help to explain human behavior. Activating factors are defined as a person's motivation, his feelings or emotions and his attitude towards a certain topic or product. On the other hand, the cognitive factors consist

of the information search, information processing and storage of information. Consequently, the cognitive factors determine how rational a decision is [100].

Owing to the extent of cognitive control, which is influenced by the activating factors, the customer goes through a certain kind of decision-making process [410]. Howard and Sheth defined four types of buying decisions: the extensive decision, the limited decision, a routine decision and an impulsive purchase [100]. An active search, evaluation and comparison of different product information by using a price comparison site in the Internet can be seen as one typical example of a so called extensive decision. An example for an impulsive purchase is the decision to buy a chewing gum while waiting at the cash desk of a supermarket.

The most important construct, which has the deepest impact on the degree of cognitive control, is involvement. Involvement can be defined as "a person's perceived relevance of an object based on inherent needs, values and interests" [116]. A high level of involvement in general leads to an intense cognitive and emotional internal debate about the buying decision and a low involvement indicates a reactive and stimulus oriented purchase.

type of decision	dominant processes		
	emotional	cognitive	reactive
extensive	x	x	
limited		x	
routine			x
impulsive	x		x

Table 3.1: Dominant processes and types of decisions
Source: Kroeber-Riel, W. [100]

This typology of decisions by Howard and Sheth has been developed for classical shopping situations at the point of sale. Therefore it is not self-evident that they will work for e-commerce shopping, especially for the new "customer 2.0" we already introduced. Consequently it is necessary to look at decision making models to find out whether they cover online shopping situations and the behavior of the new type of customer or if they have to be converted somehow.

3.2.1.2 Decision Making Models

Because of its complexity, the customer decision making process has to be described by means of simplified models [410]. There are a lot of different models with varying levels of complexity. Some focus on information-search and -processing while others try to give an overview of all possible influencing factors.

One very simple model is the decision making process by Alfred Kuß and Torsten Tomczak [410]. This is a very clear model that goes back to the typology

of buying decisions of Howard and Sheth. In their model they differentiate between two types of shopping decisions. On the one hand the extensive and on the other hand the routine-buying decision. Kuß and Tomczak explain the separation of these two opposite decision types by four main influencing factors: general involvement, perceived differences of the products, frequency of homogeneous purchases and time pressure on the part of the customer.
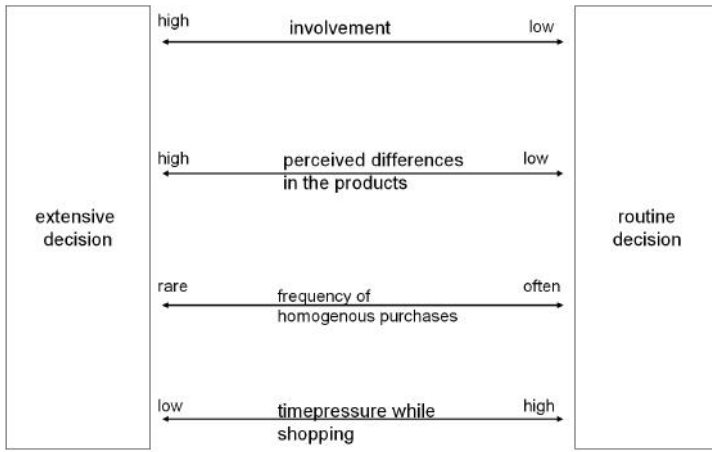
Figure 3.1: Factors of influence on the buying decision
Source: Kuß and Tomczak [102]

The extensive decision can be described as a very aware and high-involvement situation, where the customer has no time pressure. It is a situation where the customer actively searches for information and evaluates it. Throughout this process, the customer passes seven different phases. First, he starts with need recognition and problem awareness, followed by information search and the evaluation of this type of information. After checking the alternatives, the customer makes his final decision, which also influences future extensive decisions through the knowledge gained about the purchased product as shown in figure 3.2 [100]. All in all, this type of decision making process is determined by a high degree of cognitive control and rationality.

The routine decision, on the other hand, is more likely to show a habitual as opposed to a reflected type of behavior on the part of the customer. It can be described as a very low involvement situation, which has no particular meaning for the customer. A standard example for this type of decision is the purchase of daily groceries. It is a typical everyday situation in which the customer is under time pressure and therefore is not able to evaluate the different types of product information. Consequently, the routine decision has a very low degree of cognitive control.
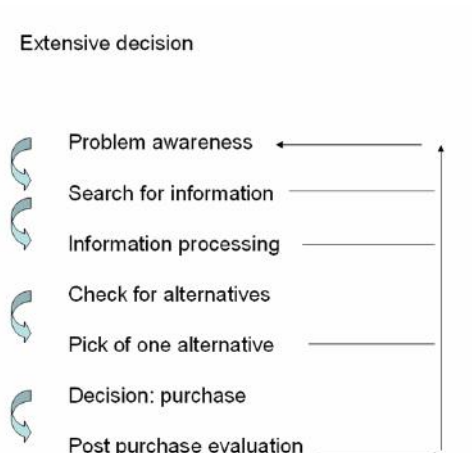
Figure 3.2: Extensive decision
Source: Kroeber-Riel, W.[100]

All in all this model covers most of the decision making processes even in e-commerce by defining two very opposite types. Although the routine online buying decision is only a small percentage of the purchases. Most online shoppers can be described as a high involvement customers, which in the model of Kuß and Tomczak leads to an extensive decision. Obviously the biggest weakness of this model is that the extensive buying decision focuses on a rational high involvement behavior. Above all you see a lot of high involvement purchases, which are mainly influenced by emotional factors, such as trust and loyalty and not on rational information search and evaluation. Consequently this model needs further differentiating between extensive decision making mainly based on cognitive and an extensive decision making process mainly based on activating factors if it is to be used for e-commerce shopping decisions. Bottom line is, that traditional decision making models like this do not explicit cover the decision making of customer in social commerce. Therefore the 'customer 2.0' can be seen as a new type of customer, which cannot be found in classical decision making models so far.

3.2.2 Decision Making in the Context of Social Commerce

Generally e-commerce is defined as the process of going online, identifying potential business partners, making the transaction and receiving the good [104]. The goods traded in e-commerce are not only of physical nature but may also be immaterial goods like information and intellectual property. During the past decade there has been a substantial development from traditional

e-commerce, i.e. going to an online shopping platform to buy a product, towards social commerce where social networking meets e-commerce, leading to interactive product recommendation platforms which are often covering niche product markets. At the same time the range of products offered in eShops has significantly increased over the last years. Three consecutive trends can be identified in e-commerce, namely comparison shopping, data-based recommendation systems and interactive product recommendation systems. The differentiation between these three trends however is not always clean-cut and therefore many hybrid models exist in the Web.

The change from traditional methods of trading to new ways of commerce tailored to the unique opportunities of the Internet has lead to a significant change in customer behavior as well. Where there once was one general buying environment, today there are many different types of purchase situations. This new setting entails a multitude of customer reaction containing significant changes in his decision-making process. The one thing the three shopping aids after all do have in common is that they all facilitate high-involvement decisions.

3.2.2.1 Decision Making in Comparison Shopping

It lies in the nature of customers to try to get the best deal possible for a certain product. The very complex structure of the Internet and the resulting information overflow however lead through intransparency to a higher price uncertainty for the consumer between the different eShops than between traditional retail stores [95, p. 313]. Price comparison engines try to overcome this intransparency by scanning different eShop-sites to find out the different prices for a certain item in different eShops. This allows the customer to compare the prices easily and therefore to get the best price possible. This technique however is flawed by the fact that different price comparison engines often have different online shops in their database [103]. The customer therefore has to visit multiple engines to find the absolutely best price [113]. First efforts have been made to standardize the online shops with the *shopinfo.xml* standard to allow the price comparison engines to access the product data and prices more easily [103].

Price comparison engines mostly allow for customer feedback by writing comments to certain products. This system however depends on the customer to come back to the comparison site after the purchase to rate the product and write a short statement on the quality and usability of the product. Long-time quality aspects are often not being recorded due to the fact that a customer might not post problems that arise after more than a few months. To overcome this problem some price search engines like billiger.de[1] also implement test reports from magazines on the products the user is looking for. Still, if the customer does not know what exactly he is looking for, he has to go through

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[1]http://www.billiger.de

standard search engines on the Web to look for products that could match his needs before using the price comparison engines to find the best price for this particular product.

A modern approach on comparison shopping is based on so-called comparison matrices: With them the customer may choose either interesting products or important attributes. Then the site will provide him with a matrix which proposes relevant attributes respectively matching products and presents them in a plain way. This helps the consumer to make in-depth comparisons among the considered alternatives [96].

Product	Picture	Memory	Color	Price	Delivery Time
Elson em900h		512 MB	Grey	...	12 days
SanDisk Sansa e250		2 GB	Black	...	3 weeks
Iriver t10		1 GB	Yellow	...	24 hours
...	...	...	...	...	...
Teddy		128 MB	brown	...	2 weeks

Table 3.2: Comparison matrix
Source: adapted from Fui-Hoon Nah, F. et al. [94]

According to Häubl and Trifts comparison-matrices help customers to consider only relevant items. Those better chosen alternatives form the matrix of possible choices out of which the product will be chosen. Thus a much higher level of product-customer-suitability will be reached [96].

But other studies provided evidence that "on the Internet, users do not use a multi-attribute weighted average strategy", meaning that for the most part they consider only one attribute to reach a decision [109]. He explains this behavior as Recognition Primed Decision making (RPD), the core idea of which is that consumer decisions are not as consciously made as normally assumed.

Depending on the situation, the decision maker bases his decision on salient characteristics which have subjectively proven useful before without taking into account other important factors. Another implication of the RPD-model is that a retailer, once having gained a customer's trust, will maintain a reliable client as long as he doesn't blunder. A favorable service history, trust and reliability [109] increase not only customer satisfaction but customer loyalty as well and therefore are one of the most important resources in gaining customer retention.

As a customer who uses comparison shopping engines has already in mind what products to buy, the phases of need recognition, problem awareness and information search are already completed. He is situated in the process of evaluating the alternatives and making his final decision. This actually increases the importance of trust in the customer-retailer relationship. Curiously, one way to improve the customer's trust is to provide a price-comparison engine on the vendor's website. By providing uncensored information about its competitors, the vendor can improve his chances even if he is not the price-leader. People like companies they can trust in and hence prefer vendors who disclose the information they own [97].

Altogether comparison system purchases can be interpreted as very cognitive decisions. Especially concerning price comparisons the emotional commitment will be very low, even if the decision made beforehand was very emotional. The reason for this rationality can be found in the late stage of the decision-making process in which comparison shopping is stated.

Thus we can state that price and trust are the most important factors in the decision-making process of the users of comparison systems. Whereas the measurement of reliability is impractical the comparison of prices on the other hand is very simple and therefore marks the most important aid for customers.

3.2.2.2 Decision Making in Recommendation Systems

To face the increasing information overload that a consumer is facing in looking for a product category, data-based recommendation systems, also known as recommendation systems or recommender systems, have been created. Based on user preferences, demographics and other information these systems recommend to the user other products or information that might be of relevance in the context of the search for a certain product [115]. Amazon[2] is one of the most popular examples for using content-based and collaborative filtering recommender systems. When the user views a book there is a recommendation at the bottom of their website of books that similar users also bought when they were buying the particular book the potential customer is looking for.

As data-based recommendation systems can be used in almost every stage of the decision process - some recommendations are given even before the need recognition has taken place - their effects on the decision-making process are

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[2]http://www.amazon.com

hard to generalize. Even so we can be sure that the final decision tends to become harder, the better the recommendation agents get. This is because the considered alternatives will more and more resemble the customer's imaginations.

Similar to decision making in a comparison system context, the use of recommendation systems appeal to the rational thinking of the users. Anyways the more the recommendation tools improve, the better they will be suited to advising emotional products and activating the customer by surprising him with unexpected ideas.

According to Wei et. al [115], recommendation systems can be classified into the following six categories:

1. *Popularity-based recommendation approach*

   These recommender systems are based on other users ranking items that they have bought. The items with the highest ranks are recommended to the customer. Its simplicity makes this system very popular even though the recommendations are not personalized and therefore might not match the customer's preferences.

2. *Content-based recommendation approach*

   This approach tries to match the user's preferences to the features of a product. If there is a substantial agreement between the customer's articulated and non-articulated preferences - e.g. by logging the former purchases of the customer and using this information to analyze his buying behavior - and the product description and features, the product is recommended.

3. *Collaborative filtering recommendation approach*

   Here other users with similar preferences and tastes are identified and their shared opinions regarding products are taken into consideration. Based on these customer inputs, products are recommended to the user. This approach is sometimes also called social filtering or user-to-user correlation.

4. *Association-based recommendation approach*

   This system identifies similar items to the item searched for by taking into consideration the user preferences for similar items.

5. *Demographics-based recommendation approach*

   The demographics-based recommendation approach uses the more general level of relying on the preferences of other users with the same demographic background. These preferences are then communicated to the user when searching for a certain item.

6. *Reputation-based recommendation approach*

   In this approach the recommendations for the user are generated by looking for users that the individual respects. The system then uses the preferences of the users to generate a recommendation for the customer.

Whilst popularity-based recommendations are completely general there is a smooth transition via reputation-based recommendations, demographics- and association-based recommendations and collaborative filtering towards content-based recommendations which is the most personal filtering device we know today. The more personal an advice is, the better it suits the customer's needs and the more activating factors will dominate. At the same time cognitive reflection will lead to approval of content-based recommendations in general.

All these approaches generate more information to the user than was asked for and are therefore significantly different from comparison shopping as defined above. Because the information is partially tailored to the customer need, the extend of product search is reduced by almost 50 percent [97]. Moreover the artificial proposal increases decision quality and consistency and, in addition to that, leads to a higher degree of confidence in the purchase decision [96]. Altogether customer satisfaction will improve and so will chances of repurchases. Thus recommending alternatives or products that complement the product searched for might also increase the revenue for the shop that uses this kind of system.

As recommender systems are the most influential recommendation source on the Internet [110], there is another important topic to cover while talking about recommendation systems: manipulation. The more the customer trusts in the algorithms of the web site in question, the more vulnerable he will be to manipulation. This can of course have a positive effect on both customer and retailer. If the retailer searches to use the cross-selling possibilities of online recommendation systems and therefore offers the customer additional products the latter can make use of, both will be better of than beforehand. But it is also possible for the retailer to manipulate his customer in a much more subtle way, e.g. by stressing the importance of some features in the recommendation process and thereby automatically make the customer appreciate this feature, too [97].

In any case, customers will always appreciate the help of recommendation agents, because they simplify the decision process and in addition to that improve his confidence.

3.2.2.3 Decision Making in Interactive Product Recommendation Communities

What significantly distinguishes the Web 2.0 from the former ways of using the Internet is the strong interaction between the different users. Nowadays there are many different user communities which share product information

and product recommendations in specialized forums. There is a significant difference in the focus of these communities. Whilst some forums review all kinds of products other forums concentrate on one specific product category, e.g. sport shoes [112]. This development shows that not only the product features and ratings by other users are important in social commerce but also the social embedding [91]. By exchanging information about certain products with other users that share the same interest social networks are established that allow for reputation-based recommendations as postulated by Wei et al. [115]. Rather than taking rational decisions, the decision process of these users is also influenced by factors such as cognition, knowledge, experience, background and behavior [105]. So the artificially created atmosphere of familiarity yields to a significantly lower level of cognition whereas emotions gain an importance yet unknown to e-commerce. It's the willingness of the customers to be activated, that makes them so valuable to the vendor.

Those customers don't necessarily have the initial desire to purchase. They might just be having a look around for information or they might be up to give advise or recommendations to other users. Whatever they intent to do, it will resemble browsing instead of searching. However some of the customers will end up buying something, which will probably be a routine or a very emotional purchase.

Even more than in other means of shopping, the trustworthiness of the vendor becomes important. Customer loyalty is one of the key factors that motivates customers to use communities in e-commerce and to contribute to them. Vendors will want to achieve the utmost level of customer loyalty possible to gain market power as well as additional clients. The difficulty in creating communities however is their need for very active customer participation. Why a customer should contribute time and energy to a community where he doesn't even know the members personally is a riddle which still needs to be solved.

So the motivation of (potential) customers to contribute as much as possible to the community will be the main task of vendors wanting to use the effects of communities for sales. A first step towards favorable conditions for contribution is to decrease the amount of social loafing. This can be reached by making the customers believe that their effort is valuable to the group as well as that their contributions are identifiable. At the same time an emotional bond should be created between the customer and the community [106].

As additional techniques of customer motivation Beenen et al. figured out two simple but effective methods: The first is to make salient the unique rating behavior of every single customer, the other is to set specific group goals [89]. They also figured reminders of benefits out to be negatively correlated with contribution. The effect was the same, whether the customers were reminded of their own benefits from their contribution or others. There is no obvious explanation for that, whereas the fact that setting group goals is much more effective than using individual goals can probably be explained psychologically

by group effects [89].
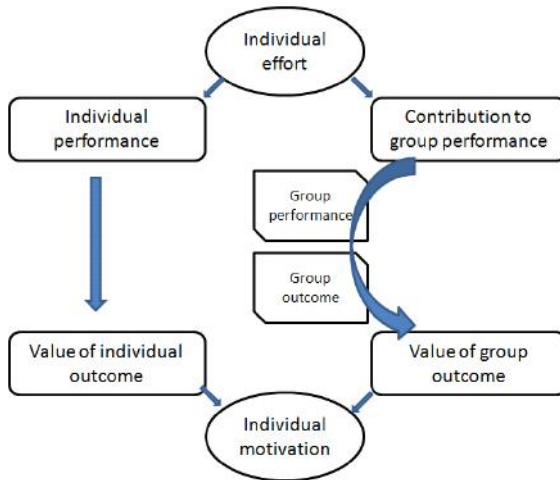
Figure 3.3: How individuals might profit from contribution to communities
Source: adapted from Beenen, G. et al. [89]

As communities, whether commercial or social, gain their strength from user interaction, each member influences the others. Consequently every negative experience one of them gains might affect all of them. So commercial communities will be a chance for good organized and service oriented vendors while it will damage the reputation of less reliable vendors. That probably is why people like those reality-alike recommender systems.

3.2.3 How Future Recommendation Systems Will Affect Customer Decisions

It is foreseeable that the amount of information provided on the Internet will further increase even on a higher rate. Thereby the customer will become more overloaded with the abundance of information. This will result in a pickier customer behavior regarding the information he consumes. For e-commerce platforms this means going new ways of recommendation and focusing on the specific consumers' interests.

3.2.3.1 Constantly Collecting Data about Users and the Context in Which They Make Decisions

Conventional systems like Amazon are focused on collecting user data by keeping track of page views and the customer's successful transactions, where from they derive new product recommendations. In order to create a comprehensive user profile it will be necessary to constantly record the user's behavior on a specific page and even his behavior on the whole Internet. The user may not be aware of this tracking but every move he makes will provide the recommendation system with valuable data [98]. A crucial part of this information can be won through monitoring implicit ratings such as time spent reading on a page or product. Besides evaluating users' interactions, the surrounding context in which a decision is being made is alike interesting for those recommendation systems. Hereby different kinds of contexts can be identified: The technological context already gives hints on what system the customer currently is using, where from an intelligent recommendation system is able to derive how to best present a product for example. Especially in social commerce the social context in which a buying decision is made is highly interesting for recommenders, the challenge will be to break down this complexity into computable factors. There is also the information on user's location from which offers can be specifically filtered in order to support the buying process [93]. At last there is the motivation context in which a product is bought and as we have already pointed out its complexity highly challenges computer based recommenders. All this recording of the customer's behavior and environment will finally provide the vendor with a highly specialized customer profile. Evaluating all the gained data will make it possible to individually anticipate the customer's desires. The monitoring of the customer's progress through a website might even indicate when a visitor is lost in the abundance of information. The system may be able to proactively intervene in order to help by opening a help window with direct recommendations and instructions or opening a chat window connecting the customer instantly with the service personnel [88]. Thus mediating commercial transactions data sources can be dynamically added or deleted depending on the user's interests and therefore not overloading his perception. Ultimately the development of what is called the "semantic web" - a web of data that can be processed directly or indirectly by machines - will take these systems even one step further [90]. The result would be an intelligent system that is aware of what users are thinking when navigating through the Web [92].

3.2.3.2 Recommender Systems Combined with Social Networking Functions

When focusing on how customers make their decisions we have concluded that the process is not solely rational. Analogically recommendations are seldom made in rational isolation, especially in a social network. Furthermore the

relationship between recommender and recommendee has a significant impact on the decision making process, which means that a recommendation itself is not evaluated merely by its information value. In fact they are delivered within a community of customers and a social context [108]. There is a trend towards browsing the Web for interesting items interesting people have. Platforms like 'like.com' for example come up with a variety of creative ways how to search and find those items[3]. Prospectively finding goods may not only be possible by browsing through pictures and text queries any more, but even finding a song by just humming it into a microphone or simply starting a discussion thread about the desired item in community networks. Realizing the effect these communities can have on customers' decisions companies begin to integrate social networking functions into their platforms. Especially building up a community from scratch is a difficult and highly vague enterprise. Therefore current trends on the Internet like social bookmarking - a way to store and share Internet bookmarks - should be considered as a opportunity to adapt social dynamics to e-commerce platforms. Few providers already offer the analog service of product bookmarking like 'thethingsiwant.com'[4]. Another approach of simple integration of recommendation is being offered by 'Criteo'[5]. So recommendation systems and social network effects can be acquired through external services. In the end recommendations of that kind will have a more emotional impact on the customer because of their social linkage. Therefore they will prospectively influence the customer's impulsive purchases.

3.3 Conclusion

With the active participation of the user in shaping the Internet, traditional definitions of the customer decision process have to be modified. Rather than having an initial desire or need to buy a product these users are inspired by the wealth of information that other users are sharing on the Internet. By using social platforms the users are enabled to share their experience on products they bought or consumed to motivate others to buy the same product. However only a small percentage of the Internet users are actively contributing to such communities. By making the customer realize that his contribution to the group is valuable, the number of active contributors grows. This poses one of the main problems to eShops or comparison sites which would like to implement such a feature. Having a large basis of regular writers is vital for the platform. This enables these platforms to expand, offering a larger number of reviewed products and therefore a higher benefit to the user. In comparison to recommender systems which are the tools most people on the Web use, social networks still got a niche character. By tracking the customer movement on the Internet,

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[3]http://www.like.com
[4]http://www.thethingsiwant.com
[5]http://www.criteo.com

valuable information can be gained. This information will make it possible to refine recommender systems to anticipate the customer desire. With the arrival of the semantic web, the foundations of perfect recommendation agents will be laid. However, these recommender systems, no matter how advanced they will get, won't be able to substitute the social context of communities. As a recommendation is not only based on the information value, social communities will continue to deliver valuable information to the consumer and will therefore become more important to a larger number of Internet users. As the trend of social networks has just started, many new developments in this sector may be possible. In the near future more and more eShops will trigger impulsive purchases of customers and thereby improve their sales by implementing such communities on their websites - internally or by using external suppliers.

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4 Chapter 4
Value Chains

Oliver Hoffmann, Romana Ahmad, Wolfgang Weinmair

One of the most important key issues of future e-commerce is the way how to create a substantial value. In this aspect, the Internet is a special topic with its own laws at a Virtual Value Chain, such as shorter Cycle Time, Collaboration and Intermediation. The control over these aspects are necessary for future success, you can discern this in some best practice examples. For beyond success, methods like mass customization and long tail business will become more important than today, especially for smaller shops. This leads in culmination to an exceptional, globally and regionally based Value Grid, which is comminuted with the old and perpetual topics of consolidation and differentiation.

4.1 Traditional Value Chain

4.1.1 Classical Concept of Value Creation

The traditional value chain scheme was developed by Harvard Professor Michael Porter in the late eighties. It explains different sequences of linear value-enhancing activities inside a competitive firm [137]. Generic value-adding to a product includes all conducts that are needed to turn raw material into sell finished products for customers. Different value stages range from R&D, over physical production up to marketing and after sales services. The actions can be classified in organization activities, primary and supporting processes that are intended to attain a superior competitive advantage. However this model isolates organizations activities from its environment and thus bears some inherent shortcomings.
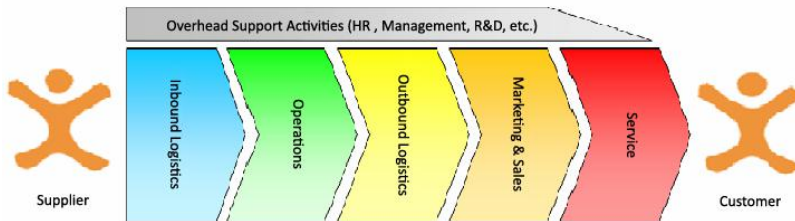
Figure 4.1: Classical Concept of Value Creation
Source: adapted from Porter, M.E. [137]

4.1.2 Recent Concept of Value Creation

To face the inborn weaknesses of the old model, it was extended in several dimensions. Realizing the importance of relationships inside and across value chains constitutes one of the new focal points. Its about emphasizing the firm's information exchange and its interactions with stake holders along the value chain or even among different value chains. Porter describes this as a value system. Building deep relationships facilitates the downstream of information and goods in the chain and yet adds an upstream flow.

The most auspicious approach is to intensify the awareness of the company's most valuable asset: its customers. If firms get closely connected with consumers and use their feedback thoroughly, genuine value enhancing interaction can take place. Discerning the occasion to learn about each other will aid firms to adequately match the demand of its consumers.

This depicts a wholly novel perception on the value chain scheme, where consumers do not longer stand at the end of the value chain, but are integrated into the process. They aren't the last stage but the starting point of all

intentional planning. So we don't face hierarchical linear value chains any longer, but dynamic structures with tangible and intangible elements.

Recent concepts of value creation also remarked that nowadays through eased communication, consumer start to build Internet based interest- and rating-networks. This marks a significant rise in consumers collective consciousness [120] and enables supplementary value creation by reducing the customer's transaction uncertainties, like quality, integrity and transparency. New schemes also consider the change within value chains. Forthcoming intangible raw material (e.g. information or services) and modern processes have been impacting on the design of value chains. For many companies the source of value shifts from real assets (physical goods, products) to immaterial ones.
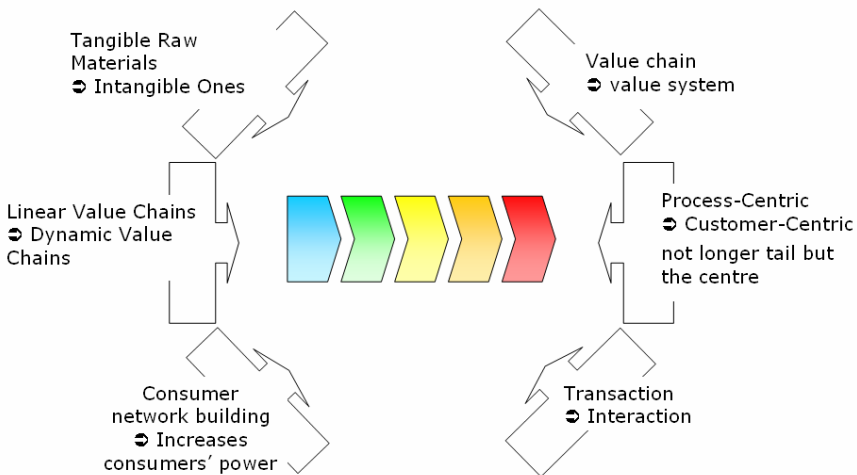
Figure 4.2: Recent Concept of Value Creation
Source: Own Illustration

4.2 Emerging Internet Technologies: Virtual Value Chains

The commercialization of the Internet has been accompanied by the rapid take-up of networking technology. This resulted in profound impact on the traditional value chain and the way businesses operate. The firms that have used e-commerce to increase growth and profits have followed the strategy of transposing off-line models into on-line contexts.

A closer look at today's leading businesses such as Intel, Dell, Nokia, Cisco and GE reveals a new business design, one that emphasizes a finely tuned integration of customer need, technology and processes. These companies use

technology to streamline operations, boost brands, improve customer loyalty and ultimately drive profit growth. Technology has resulted in Virtual Value Chain with the following attributes:

4.2.1 Shorter Cycle Time

Internet technologies are significantly reducing the cost and increasing the speed of information transfer between manufacturers, channel partners, and customers, challenging the dynamics of the traditional value chain. Shorter process time results in efficient response to customer request, small inventories and speedy flow of both information and payments.

This is very important factor for made-to-order items. It supports customization of items and also order tracking, both of which are important value adding services for pull-type systems.

4.2.2 Collaborative Value Chain

Relationships with end customers are no longer solely the domain of channel partners. The Internet/intranet has become the ultimate enabler for collaborative value chains-characterized by a high degree of integration among manufacturers and channel partners as shown in figure 4.3.
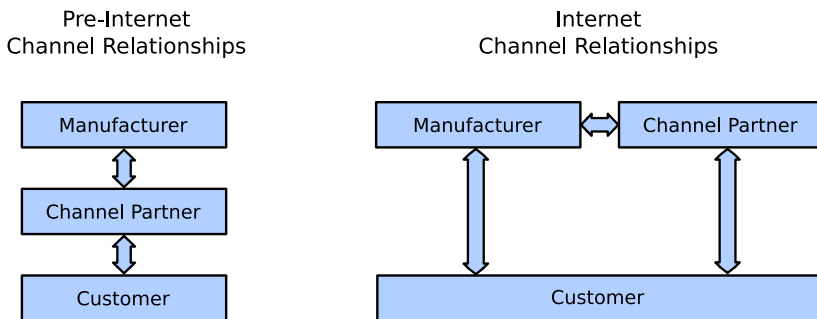
Figure 4.3: Collaborative Value Chains
Source: Own Illustration

Through Internet technologies, customers are able to seamlessly interact with both manufacturers and channel partners to obtain the products and services that best fit their needs. Key objectives of the Collaborative Value Chain include customer visibility, increased channel visibility, improved business process efficiencies [122].

4.2.3 Intermediation

In eBusiness there are different approaches to changing the value chain, namely Disintermediation, Reintermediation and Cybermediation [146].

- Disintermediation

  In some cases, it is desirable to remove one or more links in the value chain an approach termed as Disintermediation (e.g. Amazon). By shortening the Value Chain, there may be benefits in reduced costs or a more responsive and efficient service.

- Reintermediation

  Another approach to alter value chain is to introduce new step or steps to the value chain as new players find fresh ways to add value to the process. This is known as Reintermediation and examples here include shopping portals and electronic insurance brokers.

- Cybermediation

  Yet another approach is Cybermediation [126]which refers to the creation of new kinds of intermediaries that simply could not have existed prior to the advent of e-commerce and the Internet, in categories including Searching, Price Discovery, Logistics, Settlement and Trust. Obvious examples include comparison-shopping sites such as Kelkoo and bank account aggregation services like Citibank.

4.3 e-Commerce Best Practices

There are several e-commerce examples that have managed to integrate the above mentioned concepts into their value chain. A short overview of few of the successful pioneers among e-commerce is stated below:

Dell

Dell - $57 billion e-commerce player, and Google's strategic partner and key advertiser account first started selling systems over the Internet in 1995 and now generates more than $50 million per day in sales through its worldwide websites [121]. The two most important concepts that make Dells business model superior are Customer Integration and Logistic Model.

Dell uses *Direct Business Model* (see also [144]) with three central elements: one-to-one relationships with customers, products that are built-to-order for each of those customers, and the lowest cost structure of many of major competitors. In this way, it enhances customer-relationship via Revenue-Growing Activities like Customization and Personalization.

Dell uses the Internet to manage its supply chain, which enables it to focus on capital efficiency and low inventory-allowing customers to rapidly receive the

most recent technology on the market. Online orders, 50% of Dell sales, allow Dell to reduce the costs of order management and customer care and reduce the number of errors and returns. Online orders are validated real time to eliminate incorrect configurations and save order management time [121].

iTunes

The computer manufacturer Apple Inc. succeeded with iTunes Music in establishing the Internet first successful commercial on-line offer for digital music files with social net aspects. This success was enabled by three key factors:

- The first one is the very high absolute market share of the iPod (46.3% in 2005) [145], the only suitable device for the iTunes shops. Only with this strong market position Apple could implement a closed system of selling music and videos by following digital property rights [127].

- Another key factor is the very easy and transparent payment system which enables the customer to buy different contend from different sources in a very effective way [147].

- The last important key factors are the social elements in iTunes. The system has an integrated peer-to-peer review that allows the customer to have an open exchange with other users.

Amazon

Amazon was one of the first merchants that tried to reinvent the value chain by implementing the latest information technologies in its platform.

Amazon created an advanced fast-response logistic system, starting by the consumer side with the one-click shopping technology, over an efficient stock management, up to direct customer shipping from tail-partners. Reducing shipping costs and time are achieved by avoiding consignment sale and due to a mixed calculation where even free-shipping became possible.

Amazon was also one of the first big players who realized the importance of E-Tailing to minimize stock costs and stock risks. Partnerships across specialized mercantile concerns gave Amazon the possibility to offer niche literature and increase the inventory range dramatically without increasing the stock. However buyers aren't bothered with the underlying logistical attainment, as they only possesses one single shopping kart for all products.

Partnerships with targeting companies were built to develop algorithms for a new level of personalization. Therefore Amazon can offer specific books that highly match individual wishes. To increase the value of the final transaction, recommendation and facilitation tools like personalized price bundling or wish lists, were adjoined to the platform. Furthermore consumers may now act as sellers and consequently capture a fore position in the value chain, as they can directly resell their private books via the Amazon market place.

Another goal was to let seller and buyer jointly profit from social value enhancing effects caused by consumer reviews, friends recommendation etc. This helped to implement real life behavior in their market place and to bridge the gap between real-life and virtual behavior [143].

Today Amazon has the largest product range in the book, CD, and DVD market worldwide and can profit from cross-selling-effects since people, who are familiar with buying books on Amazon, is also likely to purchase other products via Amazon.

4.4 Evolving Trends in the Value Chain of e-Commerce

The first step to understand the best practice examples mentioned above is a deeper view into the recent field of **mass customization** research. This field of research, evoked in the early nineties [136], bases on a hybrid competitive strategy in order to use the advantage of individual production without the disadvantage of increasing high costs of production [140] it was enabled by *modern information* and *communication technologies* and the concept of *modular production*; this means to split up every step in the production process to get granular on it and get influence on the certain design of a step [141].
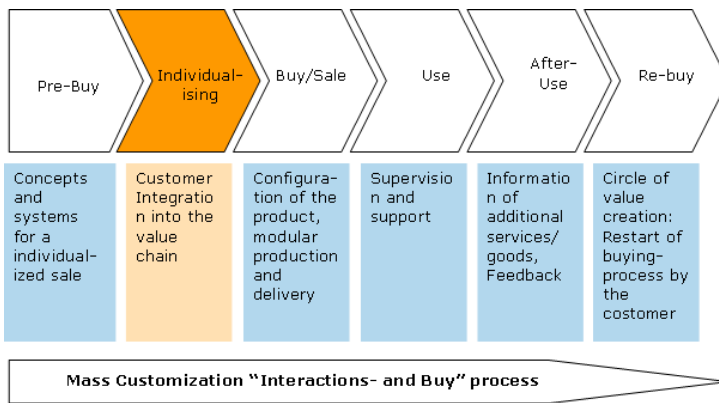
Figure 4.4: Mass Customization
Source: adapted from Reichwald et al. [141]

This concept was very successful throughout industry and had a large impact on the old value chain, a new way of value creation by understanding the needs and motivations of customers emerged [129]. Yet the concept of mass customization is not fully developed in e-commerce. By the further digitization of the value creation process in the Internet there will be the possibility of

selling individualized bundles of services direct to the customer, this will lead to some form of value circle between the different shops and sellers. Additional a community-based-information-approach will be helpful for identification of customer needs and may lead to a more inconspicuous way to integrate the customer into the value chain, a sensitive key element in the value chain of mass customization [133].

In a second step it is useful to think about the opposite concept of mass customization: **the long tail business**. There is no new concept of creating value behind this idea; you simply try to satisfy niche markets by having every product available [118]. On behalf of the immense logistics, this concept is only adaptable for e-commerce. So you can generate your profit by selling normal products with small margins in very large numbers.

The structure of a future Internet with its network of many small, linked social commerce shops may allow an interesting new combination of these two successful concepts. So especially for smaller niche shops, selling products on the long tail, it should be possible to optimize their value chain by consumer integration and netting through social e-structures; it will also become much easier for them to get into contact with a larger number of customers because of the additional individualization of niche products a way to open the niche.

4.5 Future Trends and Challenges

The future of e-commerce itself and hence the resulting value chains are governed by number of factors e.g. technology, products and consumers. The way value chains will evolve in next five years and the challenges that lie ahead are discussed in this section.

4.5.1 Value Grid

An upcoming revision is to see value creation as a multidimensional rather than a linear orderly progression of activities. This richer framework deviates from the fundamental logic of value creation of the old industrial economy with its aged assembly lines.

The innovative so called *Value Grid* outline considers vertical (up- or downstream from the adjacent tiers in their value chain), horizontal (same tier across parallel value chains) and diagonal pathways (integration/merging of different value chains across tiers) [135].

These supplementary degrees of freedom display potential value incensement conveyed to customers. Tactics are no longer a matter of possessing permanent activities in a value chain, but to continuously reconfigure ones roles and relationships within it. IKEA was a precursor regarding to user participation, where consumers can not only consume value but create it (by self-assembling

and transporting) [132]. Therefore they participate in a value circle where both - customers are also suppliers work hand in hand to co-produce value [138].

Latest technologies are opening up qualitatively innovative ways to generate customer value. The aim now is to let the consumers develop the product and not to unidirectional develop the product for the consumers. Well-established examples are user-integration in software development processes (e.g. user beta-software) and totally user driven products (e.g. Linux). Napster may also be considered as a central example, since it was totally invented and developed by frustrated users, looking for the possibility to download single songs over the Internet [149]. In constitutes an impressive prime illustration that supply now is not driven by suppliers any longer, but by consumers [148].

4.5.2 Challenges in Media and Music Industry

The importance of new intangibles raw materials has increased dramatically. The most recent developments in the media industry are driven by communicational innovations. Today it is no longer sufficient to connect people with content, but to connect people with people and engender extra value through community experience [117]. Social networking therefore is a key issue, as people highly value joining and participating in communities. These groups differ in preferences and share the same behavioral tendency [119]. The challenge will be to tackle these dissimilar communities directly and give them the possibility to process their own content [142].

To cluster homogeneous interest groups among the audience, producers abandon the static segment targeting analysis, which prevented firms from apprehending structural demand changes. The new procedural method is to identify dynamically groups via behavioral targeting [130]. The media value chain might be extended by learning from real-life social behavior and translating them to the virtual world [148]. Through just-in-time learning tools [134], it becomes easier to react on the market that shifts from supply-driven to demand-driven.

Hence firms seek for powerful well-built analyzing tools, giving them the opportunity to effectively spot the target audience and to learn about online grouping processes.

Consumers always value discovering their own music and create selections with music exactly how they wish for [150, 131]. The next-generation broadcast mediums will consequently allow separation of medium and content along with providing steady back channels. This furnishes clients with the ability to have an immediate impact on raw materials and on the value chain... They may directly buy content they listened some seconds ago. This recent value chains outline may also give rise to small market players as they can respond promptly to small groups demand developments.

4.5.3 Convergence between International and Regional Value Chains

The next important step is a look on the impact of these value grid concepts and the value networks at the value creation.

The first obvious change is the high potential of the internationalization of the value creation. Today, most value chains of smaller shops in the Internet are national value chains, except these of the major Internet shops like Amazon; their value chains are mostly global.

In a future value grid it will be possible to prise this international but stiff concept of value creation open. Through social commerce and a further and closer connection between single high flexible shops with its advantages mentioned above, it will be possible to integrate the local strength of certain regions into value creation.

Through this conversion, the rules for e-commerce will change rapidly: The affected regions will participate on a high level at the value creation process; the customer will anticipate regional, individualized products with a social constituent. On the long run, new technologies of decentralized production will provide the possibility of next-to-customer production, the quota of global logistic at the value chain may increase.
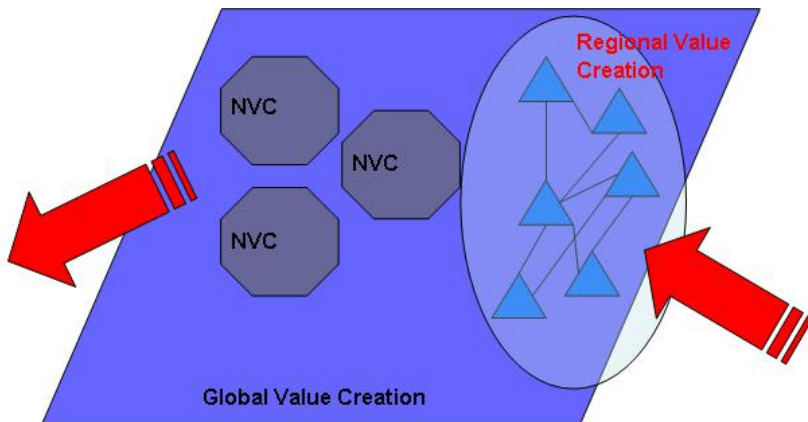
Figure 4.5: Regional and Global Value Creation
Source: Hotz-Hart et al. [128]

This may be a quite natural effect because of the present lack of assurance into e-commerce; through a regional orientation this lack will be compensated.

You can expect a high level of flexibility and authenticity (through social components and regional focus and sourcing) of these value grid networks, this will be there major competitive advantage in comparison to traditional

e-commerce companies; customers may also pay a price premium.

4.5.4 Consolidation

The entire online arena is observed to be in period of consolidation which is likely to continue until there would be only dominant players like Yahoo, Google, and Amazon etc that control the market. Yahoo has always seen shopping as key to their success, and with the purchase of Kelkoo they now can have a piece of the shopping comparison market. Microsoft is also said to be considering making a bid to buy eBay, a move that could dramatically alter an e-commerce, Web portal and search space already in a state of flux [139].

Small e-tailers currently comprise roughly one-fourth of online retail revenues, resulting in a profusion of small Web sites. By aggregating small players in key categories, larger companies could consolidate their lead, learn some of the secrets of scrappy marketing and boost margins. Two such consorts that exist by executing exactly this model are NetShops and Niche Retail, the latter of which owns sites like Joggingstroller.com [124].

4.5.5 Differentiation

In e-commerce, the issue is no longer to have an online channel or business, but how effective it is in highlighting the differences and advantages that are offered. If that is not clearly apparent, the dot com mantra that your competitor is only a few clicks away will actually become true!

In some cases, the differentiation might be in name recognition e.g. Hewlett-Packard or Microsoft [125]. With the elimination of business inefficiencies through better information management, commercial friction will largely disappear very soon squeezing the profit margins. As a result, retaining customers will be predicated on how much value can be created for the customers and what differentiates the business from competitors. The basic rules related to differentiation from competitors still apply [123].

In next 5-10 years there would be consolidation, integration and merging of businesses in e-commerce and the value chains with key differentiators would survive before, during and after consolidation.

4.6 Conclusion

As you can see, the principles of value creation will probably not change completely during the next few years, emerging trends like mass customization or long tail business will probably cover the whole area of e-commerce; regional sourcing and value creation enables a more individual and costumer-oriented offering, especially for smaller niche-shops. Most of the new value chains will consider incorporating the 'social aspect' like recommendations systems and

ratings. As technology matures and becomes more user friendly, more and more off-line business models will also consider going on-line as well though not completely switching to a pure on-line business. They may shorten or lengthen their value chains depending on the nature of business. There are some very successful examples for value creation in the field of e-commerce, it will be very hard to establish new value creation models without attending these.

A completely new possibility of value creation may become profiling in social Web Pages like YouTube[1], yet today there are no sights for any willingness to pay for those services, especially in Europe.

This is why you should concentrate on the amelioration of existing value creation models, there are still many possibilities for improvement, e.g. in the field of mass customization or long tail business for smaller e-commerce shops. In future e-commerce market will consolidate till few big players left.

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Chapter 5

The Google Economy

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The following report focuses mainly on the effects of Google products and services on e-commerce and its social aspects. Google's leading position in the search engine market and its upcoming wide variety of provided services in the field of e-commerce such as Google Checkout and Google Product Search influences merchants as well as customers. It has become more important for larger companies to be ranked high on the search result page, whereas smaller dealers have now the opportunity to compete against bigger ones by using Google Local. For customers the market transparency increases as a wide range of possible sellers is displayed. By providing Checkout Google furthermore offers a more secure payment system. On the other hand, given the personalized ads, the impartiality of customers' buying decisions decreases. It is evident that possible future developments in social commerce will combine Google products for even better search results and perfectly to the users adapted advertisements. The customized services can lead to social shopping portals by joining Product Search with social network services such as Orkut. In this case recommendations and experiences of your friends regarding a certain product state an added value for customers. Beyond this the integration of customers as merchants via Google displays a possible perspective as well. On social network platforms like Orkut users can establish their own shops using Google Checkout as a secure payment system and Google Base to advertise their products.

Due to the available bulk of information and data Google will probably obtain a dominating position in e-commerce. By offering all-in-one solutions for all customers' needs it will consolidate and expand the social commerce.

5.1 Introduction

It has become somehow inevitable to search in the world wide web without using Google as the leading search engine these days. Established in 1998 as a small start up specialized on Internet search by two Stanford University doctorate students, it has developed itself arguably to the most popular search engine in the last few years. As Google went public in August 2004 the shares were valued at $85 per share [157]. Within one year share prices increased to $403 by November 2005 and has led its shareholders to instant paper millionaires [167]. Currently Google's stock market capitalization amounts $149.2 billion, even exceeding the market capitalization of Ford and General Motors combined [156, 157]. No wonder that some observers are fearing another Internet fed bubble, but somehow there are no doubts that Google will find ways of ensuring its leading market position. Google's popularity is based on the ability to link innovation and business by combining both in a way, that namely makes money out of new ideas without charging fees from users and hence attracting and enticing new ones. Google is making a big impact whenever it enters a market or offers a new service.

The innovation strategy behind the company is clear: flat hierarchy model, easy working atmosphere and the 80:20 rule ensuring that the engineers are able to spend at least 20% of their working time for any side projects and new ideas, no matter what comes into their mind. "The 20% rule was a way of encouraging innovation at Google" [153]. This rule has enabled the Google engineers to develop various products such as for example Google Product Search, Google News and Google Talk. By acquiring several important companies and their technologies in recent years, Google was able to transform these technologies obtained into Google products and services as Google Earth and Google Analytics [153]. Due to the fact that Google has started to offer more and more new competences, it seems that it wants to be everything for everybody following its mission "to organize the world's information and make it universally accessible and useful" [179].

Since approximately 40% of all web searches have a commercial background and 75% of the purchases over Internet start with a web search Google has without a doubt a strong impact on e-commerce [157]. But as the Web and its users have changed dramatically in recent years, Google did not miss to grasp the new opportunity by dreaming up new things. Web 2.0 and the upcoming trend of social commerce has also led everyone to experts in special fields and enabled peers to share their knowledge and experiences. Nowadays "everyone can contribute to the collective body of knowledge" [176]. The user interaction has become more and more popular and desirable, as well in the field of e-commerce. Hence it is not a big step to combine social commerce with Google in the future. The recent e-commerce engine Checkout shows Google's effort to take an active part in this field. By taking a step beyond this current

development, the future prospectives seem to be clear: Google's heading to
incorporate behavioral targeting into advertising offerings will even more affect
e-commerce. Besides, with the combination of already provided social network
services and e-commerce engines, Google's market entry into the field of social
commerce will be only a logical consequence. For a complete survey, the status
quo of Google will be analyzed in the first main part of this report, whereas the
second part investigates future prospects.

5.2 Status Quo of Google

The first part of this chapter deals with the current market situation of Google,
describing its revenue sources and its leading market fields and leads directly to
the second part, which provides an insight into Google's core competences in
the field of search and information and its activities regarding social networking.
The last part is about the resulting effects of Google services and products on
e-commerce. As we will see Google's market power have effects on merchants
as well as on customers.

5.2.1 Current Situation and Market Position

While in the year 2000 Google held less than 1% market share, it quickly gained
dominance in the past few years and is now, in 2007, the leading search engine,
claiming 53.38% of the search industry market [174, 153]. Google's persistent
rival Yahoo lost its market leader position by the end of 2002, and is now, even
as one of the major players in the market, only holding 9.87% total market
share. Ever since 2002 Google has managed to maintain its market dominance
and has become one of the most established and admirable companies in the
world. But Google strives for more: as for 2007 it has been voted to the most
favorable global company to work for, with the most valuable global brand,
worth more than $66 billion and surpassing Microsoft and Coca Cola as the most
powerful brands [171]. To sum it up, Google's current market position seems
to be incontestable and the resulting market power leads to many discussions
among experts, users and rivals.

   Due to a recent user behavior study, 32% of the Internet users in the US,
visit Google's website daily [170]. This high frequency of visits and the already
mentioned fact, that many online purchases start with a web search, puts
Google into the role as a central access point to merchants in the Internet. Even
well-known web sites are somehow dependent on the ranking at Google's search
result page. This leads us directly to Google's source of revenue. Google mainly
generates revenue through online advertising, its core product, which comprises
at least 90% and more of the company's earnings. Additional to Adwords as one
of the two core products, Google has also established a complementary product
called Adsense. Both shall be explained later more detailed. Google achieved in

the first quarter of 2007 a total revenue of \$3.663 billion, whereas almost \$3.627 billion were only generated by online advertising. As Google's annual growth consisted of over 100% in 2004, it has leveled off at 63% in the first quarter of 2007 [162]. By offering more other search related products, Google tries to provide services beyond finding only content on web pages, but also a network for sharing information, pictures and experiences and in addition to create a lock-in effect for their users, as today, they can still abandon Google for better search engines.

5.2.2 Core Competences and Networking

The following subsection focuses on the one hand on Google's core competences in search technology and advertising and on the other hand on Google's activities in social networking.

5.2.2.1 Competences Regarding Information and Search

A few years ago search engines like AltaVista, Yahoo or MSN dominated the market of online search [175]. But due to Google's innovative technology in collecting documents from the Web (web page crawling) and its patented PageRank algorithm times have changed and Google arose and prevailed over the competitors. Compared to the method of searching primarily for keywords and their frequency, Google offers a superior way to calculate the relevance of web pages. The rating of a web page by PageRank relies on the incoming and outgoing links, interpreted as votes. The votes' weight depends on the importance of the site they are linking to or coming from. So the importance of page u is calculated by $\sum_{\{i \in B_u\}} c + (1 - c) * \frac{PR(i)}{|F_i|}$, whereas B_u is the set of pages link to u, $PR(i)$ is the weight of page i, F_i is the set of pages i links to and c an arbitrary constant [151]. In contrast to its competitors Google found an effective way for calculating these weights.

The concept of search was expanded to other Google products such as Book Search or Images that give the customer the possibility of a more specific and detailed search. Users also can look for imagery information such as maps or satellite overlays through Google Earth. Google Local is a similar location-based service in which users can search for locations such as restaurants in a bordered area. Since 2004 Google also offers Google Desktop, a tool that searches for offline information on computers as well as it tracks web searches.

Since search contains no direct source of revenue, Google is highly committed in the field of online advertising. At this Google's core products are AdWords and AdSense. AdWords, so-called sponsored links, provide the opportunity to create ads and choose keywords, so that ads appear fitting to the search results. These ads differ to the usual advertisement found on the Web. Instead of animated banners or images, AdWords are mainly text-based in order to

maintain a proper page design. The idea of AdSense, a complementing product is based on placing targeted ads on Google's partners' websites in order to extend the audience.

Google also provides to online shoppers a special search engine for products, Google Product Search. Users can look for product categories or brands and compare prices. With the reviewing system included in Google Product Search customers can exchange their experiences with sellers among each others. A supplementing product is Google Checkout. This online payment processing service guarantees an easy and secure system for online shopping.

The service Google Base provides users the opportunity to make content searchable via Search, Product Search or even Maps.

5.2.2.2 Activities in Social Networking

As shown in the last paragraph Google's core competences are in the fields of advertisement and online search. But apart from products that are related to search, Google provides some services focused on social networking. In the most recent history Google hit the front pages by absorbing companies involved in the Web 2.0 and thereby broadened its spectrum of social networking services.

One of the most attention attracting acquisitions was YouTube, a video sharing website. On this site users can not only view video clips, they can also participate by uploading and rating videos. Another purchase was Blogger, one of the World's most popular blog publishing systems which was bought in by Google in 2003. Google also participates in the trend of online communities. With Orkut Google offers "an online community designed to make your social life more active and stimulating" [166] and in the discussion forum Groups users can exchange information or opinions with others. Characteristics of social networking e.g. a chat program can also be found in Google Mail (Gmail). At the bottom of this chat service is the gadget Google Talk. Google's photo organizer Picasa provides software for organizing photos on a private computer and sharing these photos with friends.

At this point Google's business strategy is secretive. One possible reason for improving in social networking might be the amount of users Google gains with these sites. While all social networking services are for free, so-called positive feedback loops are made. The more people using a Google product, the more advertisers join, the more Google earns by AdWords and AdSense, the more revenue increases and the more money could be invested in gaining new users. Another positive consequence of these products is the lock-in effect. By engrafting the search function in other services the user is bound to Google. Search technology is not only used by products such as Google Desktop but can also be found in Gmail or Orkut.

5.2.3 Effects on e-Commerce

After having had a look on Google's products and competences the question occurs how Google has an impact on e-commerce. In the first part the influence on customers' decision will be examined and later the effects on merchants.

5.2.3.1 Influence on Customer's Decision

The most important impact on customers and their buying processes is caused by the ranking of search results. User consider the pages that are listed on top the most relevant to their keyword query and are more likely to visit one of these sides. A user searching for a car merchant will click on one of the first entries that he considers important and confident at the same time and normally will not have a look on the results ranked a position lower than 50. On the other side more shops are available for the user. Especially when searching for uncommon products Google Search might give you results that you are not able to find on your own in the mass of web pages.

Another influence on customers is caused by the sponsored links users find next to their search results. About 14% of the users performing a Google search click on one of the AdWords which are displayed in accord with the keywords [161]. The reason for clicking on sponsored links is not only confusion about which of them are natural and which are paid but some users also regard the advertisement as a support for finding a shop that satisfies their needs.

There is also a direct influence of Google on customers' buying decision via its price comparison service Google Product Search. In contrast to real shopping life where consumers only have a limited choice of shops to compare commodities and prices the online customer has the possibility to find the absolute cheapest offer for a certain product. In addition the users of Google Product Search can have a view on the rating of a seller and will get an impression of the price-performance ratio. Online customers using Google Product Search will change their buying decision in favor of the shops that provides the cheapest commodities and have good reviews. An impact on the consumer is also made by Google Checkout. Since Checkout benefits from Google's kudos user consider this payment method secure and trustworthy. So in case of doubt a user probably prefers a shop that offers the Google Checkout service.

5.2.3.2 Effects on Merchants

As explained in the last paragraph the ranking of the results of a keywords' search influences the path the user clicks through the Web. Because of that merchants depend on a high ranking position in Google Search. Not only for shops selling no-name products but also for well-known e-tailers like Amazon this is an important issue. About 30% of people visiting Amazon get there via

a web search, from where more than 50% performed their search with Google [170].

The PageRank is based on the weights of the "votes" of a page. The more a certain site is being frequented, the more users will create a link to this site. In other words PageRank is based for the most part on popularity. Sites that depend on traffic have to improve their pages in order to get a better ranking. But that could become difficult for new companies entering a market. Some tools for improving a page's rank are available, but without a basic amount of traffic it might become hard to succeed. Generally speaking Google's PageRank is a handicap for nameless businesses which act on a large market. On the other side the Internet provides all shops equally the possibility to operate worldwide and Google is a platform where these shops can be found. For example, by using Google Base merchants can gain more advertence for their products. Especially for businesses which are focused on niches Google can thereby be the means of existence.

The services Google provides in advertising may also help businesses achieving a bigger market share. AdWords and AdSense enable to channel advertising directly to the target group and thereby makes advertising more efficient. By using AdSense businesses get effortless in touch with potential customers. While the usual animated images or banners are considered disturbing among users, Google's text-based ads are well-matched so that more users will find them useful. Another item that increases the effectiveness of an advertising budget is AdWords' cost-per-click pricing system.

An interesting feature Google offers to customers of AdWords free of charge is Google Analytics. This service provides web statistics and log analysis and lets its customers know how users get to their site and how they navigate through. The information gained by Google Analytics can help shops to optimize their pages, for example by knowing where they should present their products in order to increase sales and improve their online results.

The price comparing platform Google Product Search is another free possibility for e-tailers of presenting their products to a bigger audience. By tendering Google Checkout in addition businesses can benefit from Google's good reputation. For businesses focused on local markets there is the opportunity to participate in Google Local. This free of charge service makes your business findable on Google Maps and addresses to customers close-by.

5.3 Future Prospects and Possible Developments

In this chapter the trends of Google's future developments in the next few years are considered. These can be divided in two groups: customized services which are analyzed in the first part and possible developments in social commerce that are considered afterwards.

5.3.1 Customized Services

Over the past years the development of new database technology and technical progress makes it more and more possible to offer custom-tailored online services as a bulk product for everybody.

In the following section possible developments and thereby arising chances for Google in the near future are analyzed, which are resulting from the implementation of customization and personalization into two mainstays of present company's success: search and advertising.

5.3.1.1 Personalized and Social Search

Today's success of Google is based on its search engine and the PageRank algorithm that was explained before. To secure this leading position, new, more effective and precise search strategies are of great value for the company. One of them is personalized search which left Google Labs in 2005 and is today integrated by default for any person signed in to their Google Account. Personalized search is mainly based on Google's Web History, which records users old search queries and visited sites. But also other information of user's activity on Google's services over time can be used for this personalized service [164], for example the personal information from bookmarks, emails, blog entries or even user's Orkut profile could be very helpful in this context. The long term learning process of user's interests and its search behavior enables Google to provide more appropriate and customized ranking of search results. Further development of the personalized search concept could be the integration of personal data from locally stored documents, collected and analyzed by Google Desktop. The local desktop is a very rich repository of personal information and summary of local context into keyword lists would allow high quality conclusions about many of user's interests [154].

The next step for improving the quality of Google's search results could be the integration of social or collaborative search concept. In comparison with personalized search, the results of social search depends not only on users own profile and web history, but also on search profiles of other users [158]. The concept of collaborative web search has been already implemented in I-SPY, a search platform which has been developed at University College Dublin and combines conventional engines with social communities and community-based search histories [180].

The classification of search results depending on number of views or even ratings of friends, colleagues or people with same interests, who already searched or visited pages related to the queried topic can make it significant easier and quicker to locate the right information at the right time. These results, sorted by with help of users' interaction and feedback, alongside conventional page rank results can make unknown pages of so called 'deep web' more accessible and be of special interest for groups of people, working or researching on the same

topic. In an experiment conducted by Max Planck Institute and Rice University with 10 users for one month, 7.7% of clicked results were returned only with integration of this small social network [173]. That shows the potential of this concept, especially in the view of the fast growing popularity and sizes of social communities.

Google's Orkut, with its millions of users organized in sub communities or groups, and the sophisticated personalized search experience of the company, are the perfect starting qualifications to integrate the social network in its various search services and to realize the concept of collaborative search in the near future.

5.3.1.2 Personalized Advertising

In our modern world people getting glutted by the huge amount of advertising, regardless where they are or what they do. For marketing departments it is getting more and more difficult to reach the target group of people and to motivate them to spend their money for advertised products or services.

Google as a company with advertising as the most important part of the business model has already discerned that the advertising of the future will be specially tailored for every single customer. "Google and the rest of the industry are just at the beginning of our ability to target ads. There are many new technologies coming" [177]. Already today Google is one of the leading actors in the field of the highly targeted advertising and on the way to set the ideal stage for real personalized advertising. Gmail users already get AdWords alongside their mailbox, which refers to the keywords Google finds in their emails [163].

Today Google's customers can access all services by only one, single login. That makes it comfortable for the customer and allows Google the exact identification of the user, which is an essential point for personal advertising. Furthermore through products as Google Desktop, which also ensures customer's loyalty, automatic login can be realized every time any of Google's web pages is accessed.

Through its wide range of services, Google collects more and more information about users. These databases with detailed user profiles are necessary for many customized services but it also can be effectively used for advertising. Information collected by Google Desktop for more personalized search or provided by users in their Orkut profiles, would allow Google more precise placement of targeted and personalized advertising alongside its web pages. For example users could get ads for products, which were bought by their friends or group members with same interests or the same taste. For many companies the guarantee that their marketing efforts reach exactly the target group of their customers they aimed at, is of a great value and a great step in the optimization of the whole marketing process. The other important aspect is also the image of the advertising and the attention customers pay to it. If people get only

the advertising they are interested in, their attendance and interest to look at the product behind will arise and with it the whole image of advertising. It could be considered as an important support for customer's decision and not as an annoying aspect of market economy. Both companies and customers would benefit from such developments that would even further increase Google's success and its revenues.

Beside of extension of already exciting AdWords, Google is obviously going to use its experience in target advertising and open up new markets. With acquisition of Adscape in the beginning of 2007, Google intends to enter lucrative video game market and earn money by placing personalized advertising in video games. Other examples for Google's ambition to become the market leader of personalized advertising in any media are Google's acquisitions in the field of radio advertising, mobile phone and video market. Also Google's Management makes no secret of the fact that the personalized advertising will play the leading role in company's development within next years and considers it as a "really, really big deal" [178].

5.3.2 Developments Concerning Social Commerce

In section 5.2 it was shown that Google is currently active in the field of e-commerce as well as in the social networking domain. In the following part we try to demonstrate on the basis of two scenarios how a combination of corresponding services of both domains could form social commerce services.

5.3.2.1 Social Shopping

As already mentioned above Google's Product Search provides a platform for price comparison, where products as well as sellers can be rated. Up to now this process is quite impersonal and hardly take any user preferences into account. Currently there are at least two methods which could be used by shopping portals to encourage and persuade the user to buy a product. At first the two concepts will be shortly explained, subsequently it will be shown how Google could make use of them.

A first approach is the fairly common use of recommendations. Many existing e-commerce sites offer the user adequate recommendations through using collaborative filtering. Collaborative filtering systems normally compare the users' interests and preferences with profiles of other customers and thereby proposals can be created [168]. Instead of comparing the user to other users, another possible way could be to find similar items to the selected product as it is done for instance by Amazon [172].

A second approach is to improve the ratings of the products, so that the ratings are more valuable for the customers. Normal product ratings are just the average of all ratings for an item and this is how it works at Google Product Search so far. But there are already attempts to provide customized ratings.

FilmTrust [159] which is a website for movie recommendations integrates a social network and so the user's relationships are also known. For each relationship the user is able to say how much he trusts this person. By combining the knowledge about the people related to the user and the trust values a personalized rating can be given [160].

But how can Google introduce these functionalities into the existing Product Search? Several services were pointed out before and thereby it became apparent that Google already has lots of information about its users. Especially their social network Orkut provides valuable insights into the user's life and thus combining Orkut with Product Search would be an ideal extension, which could bring up the identified aspects for developing Product Search from an impersonal search to a social shopping portal.

Firstly, recommendations could be offered through the union with Orkut. Such a recommender system could present two different types of suggestions. One possible way could be to involve the friends' activities and opinions. If a friend of a user had a look at a product and maybe had rated it positively then Google could recommend this item to the user. A second possibility is afforded by the copious pieces of information about the users' profiles. A profile at Orkut consists obviously of general information about the person but also contains information about his interests, his professional life and quite personal points like opinions, thinking and preferences. Besides the data in his profile the user's communities reflect in some ways the personality as well. Knowing all this about the customers Google could also provide recommendation based on similarity of the users. When a customer uses Product Search, Google searches for similar persons within Orkut and consider their purchases to create a suggestion. Due to the large amount of information about users which will steadily grow within the next years, determining the similarity based on the users' profiles could be far too time-consuming. Instead of using the whole profiles, recommendations on a "per-community" basis could be a solution as Spertus et al. found out that the community memberships give enough information to provide useful proposals [181].

Secondly, ratings could be improved too. As mentioned before Product Search returns only the average rating from all persons. Normally the customer does not know the people who rated the products and therefore he cannot judge the usefulness of the rating. Combined with Orkut, Product Search could offer the feature that the rating is calculated in a more personal way. Thus it could be attached more importance to the rating of friends and friends-of-a-friend than to the opinion of strangers, so basically the path length of the connection between two users could be considered in the calculation of the personalized rating. But Orkut could provide even more than this. By now it is possible to categorize your friends into six categories ranging from "best friends" to friends you "haven't met" [155]. Thereby the user can define with whom of his friends he has a closer relationship or whose opinion he esteems. By including

this categorization into the calculation of the ratings you could reach a likewise result as the above-mentioned approach of FilmTrust.

Extending the Product Search with the presented features would create an added value for the user as he would get more trustworthy and valuable pieces of information (e.g. the personalized rating). This would be definitely more helpful for his decision whether to buy a product than normal user generated information is. A further effect could be that these features additionally change the user's shopping behavior. Currently the customers have to start with stating explicitly which product they are searching for. Thus the Product Search differs notably from the offline shopping behavior. Through recommendations extracted from the activities of friends or similar persons, the user could start his shopping tour without searching for any product. Instead the user could examine the proposals and could start browsing around whereas he might find new products he had not intended to buy at the beginning of his tour.

The effects for the merchants depend on how early they adapt and contribute to this new system. For merchants who try to get in quite lately, some disadvantages could show up. Users might prefer the merchants which are contributing to this system longer because these merchants have probably some ratings of people the user more or less knows (where the path length of their relationship is relative short). Thus it appears that these multiplier effects are even stronger as in normal e-commerce portals. This also forces the merchants to improve their services and avoid getting a negative rating to keep their clients and attract new customers.

5.3.2.2 Integration of Customers as Merchants

Google's service portfolio allows another possible scenario. Instead of leaving the users only on the customer's side, they could try to integrate them as merchants as well. Websites like Zlio [152] already accomplished this and many users have already created their own online shop. This shows that there is an interest of the users to present selected products in their own shop.

Google could offer a framework for such a service through combining Google Base, Orkut, Checkout and Page Creator[1]. Google Base already enables users to "pro-actively add their content to Google" [169] and furthermore the items can be structured with attributes to specify the submitted content. By now these postings can be found through Google Search, Product Search and Google Maps [165]. Google Page Creator is a tool to create web sites without further technical knowledge. Google could extend this service and could make some templates for the creation of web shops available. This could support the user to build up an online shop for his products uploaded with Google Base so that items could be viewed even beyond the listings in the appropriate search results.

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[1]Page Creator currently is not released yet but can already tested at Google Labs (http://labs.google.com/)

These user-created shops could be utilized for instance to sell self-made products (e.g. from young designers) or could be exploited by small retailers to dispose their products. For the payment process Google Checkout could be used as it provides easy and secure transactions for the customers as well as for the merchants. Selling and buying products without worrying about the payment process might become an important aspect for the acceptance of such online shops

Another essential point is the accessibility, as obviously nobody will be interested in these shops if you can hardly find them. A solution for this might be a double tracked strategy: On the one hand, these shops could be connected to the search services which would be automatically the case when using the technology of Google Base. This provides a rather direct way to purchase products. Especially for more common items this channel could be important. On the other hand, these shops could be linked to Orkut. The users could browse the shops of friends, of people with similar interests or of members of a special community. In contrast to the Product Search this is a quite indirect buying process which offers the possibility to find items the user might have never searched for (e.g. extraordinary products). Particularly for small shops this could help establish a basis for disposing their goods. To have some kind of relationship to the merchant can be crucial for the customer's trust in the shop. Thus customers could be convinced to buy the product in this shop rather than somewhere else. Furthermore this integration of users could affect the normal Google search positively as well as create lock-in effects. Users who have their shops at Google and therefore are used to search via Product Search, should normally also tend to use Google Search or other Google services when they need some kind of information.

5.4 Conclusion

All in all, at present time there is no doubt about Google's dominating market position in the field of search and online advertising. As the "gate to the Web", Google already controls important access ways to information and knowledge on the Internet and with its increasing economic power, generated by revenues from advertising, it's on the way to reinforce and extend its market position.

With new services and cooperation with big partners like Amazon and eBay, Google constantly increases its influence in the field of e-commerce and making first efforts of integrating aspects of social commerce in its business model. The development of social shopping, even more customized and social based search methods, individual advertising and blurring boundaries between merchants and customers could play an important role in Google's future. The linking of different services from fields of search, e-commerce and social communication among each other is a clear trend, which Google follows, irrespective of growing concern about data protection in public.

One part of the company's expansion politics is the acquisition of new, small and innovative companies. With this method Google tries to expand its dominance in online advertising to other new and conventional markets and to become a dominated market leader for highly targeted advertising in any kind of media.

How Google shall be seen today is described by CEO Eric Schmidt: "One is as an advertising system. Another one is as this end-user system (the search, email, and other applications [...]). A third way to think of Google is as a giant supercomputer. And then a fourth way is to think of Google as a social phenomenon involving the company, the people, the brand, the mission, the values - all that kind of stuff." [178]

The combination of these four aspects offers Google Inc. a comfortable starting position for playing a dominating and influential role in various fields and trends of conventional and social commerce for the next years.

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Part II

Scenarios and Business Ideas

6

Social Shopping - The Online Home and Garden Shop of the Future

Helmut Müller, Senta Plein, Georg Schroth

The technical and social developments of the forthcoming years will give rise to substantial changes in e-commerce. This is especially important for the home and garden sector, as it today is still functioning in a rather traditional manner. In a world where the population becomes even more social and well educated, likes to shop online and abroad, but at the same time gets more discriminating than ever, it is crucial to offer the best web service available. Therefore an alterable platform is constructed which provides its users with room to evolve. Based on amounts of product data and complex, self-enhancing software, the web site is tailored to two target groups and adjacent networks. Rooms and gardens can be rearranged, recommendations given and questions answered by the web service, fellow users or both, according to personal preferences. All collectible forms of data are being used to improve the service and to satisfy the customer. Products as well as services are traded in the most convenient way and helping systems are integrated for those who do not yet know how to use the web service. Different features have been added, amongst others a special device which creates an augmented reality of the rearranged living space. Through all those possibilities the imagination of the customer is supported and thereby his decision-making process is simplified and improved. Thus

traditional magazines and their electronic successors can be displaced and competing modern e-commerce services can be kept at it.

6.1 Introduction

"Nothing Endures but Change". Heraclitus definitely wasn't talking about the development of the Internet when stating this. But what he was talking about was human nature, that is why it is up to date after all. For centuries it is the recognition of the importance of the "human factor", that draws the distinction between those businessmen and -women who survive and those who don't. This includes the awareness of the necessity of change as well as a certain intuition for trends.

Market laws do not stop at the invention of the Internet. This is why, despite the actual changes in the course of the Web 2.0 phenomenon, even larger changes are to be expected in the upcoming years. Those are reflected in changes of society and consumption which in turn alter the appearance of the Internet. Who wants to sell on a web page has to take all this into account. He has to use the new technological possibilities to satisfy his ever more discriminating customers. As retailers have to accommodate their sales areas to the wishes of the needs and wishes of their customers, web sellers have to adapt their web presences and services.

This is especially true for the home and garden sector. As it has been a very inflexible business segment for years, the upcoming changes present a hitherto unknown challenge. The suppliers of home and garden products and information will have to find a way to let their customers participate in the production in order to prevail. This section shall offer possible solutions to this set of problems and encourage the production of new ideas in this field.

6.2 Drivers

In order to be able to create the online home and garden shop of 2020, we will analyze important future changes in the behavior of the players in the home and garden market, the evolution of society trends and the development of technology.

6.2.1 Player

This section shows recent developments like the Amazon marketplace, or new production systems like mass customization, which will influence the players in the home and garden market. Home and garden magazines are not taken into account, for the reason that they mainly describe recent trends, but are not responsible for them.

6.2.1.1 Manufacturer

One of the main changes the home and garden market and especially the manufacturers will experience in the next years is the introduction of mass customization. Mass customization gives the possibility to produce customized goods with the cost advantage of mass market productions [212]. Especially for furniture, mass customization provides a variety of possibilities. First, furniture could be produced with different measures, so that it always fits into the room of a customer. Second, specialized producers of furniture could take orders to produce newly designed furniture. Of course, this is only possible with some restrictions. Nevertheless manufacturers would profit from such a flexible production system, as it opens a wide market to them without the need of intermediaries. Thus higher revenues can be achieved.

6.2.1.2 Home and Garden Designer

In the Home and Garden market it is difficult for little stores or designers of home and garden article to reach a big audience, as their websites are typically unknown or they even don't have any. To overcome this obstacle they can try to sell their products by cooperating with bigger department stores, or sell by themselves using services like the Amazon Marketplace, or the Amazon zShops [186]. The biggest advantages of selling on your own are the up to 50% higher revenue that is achievable [218, p. 8], and the very low seed capital that is needed. Consequently everybody connected to the Internet is able to open up an Internet store regardless of his technical experience, marketing experience and own equity capital. The main importance is the quality and originality of the product, which is sold. This can lead to the development, that these small merchants do not sell real home and garden products anymore, but their plans. After having purchased a plan the customer can send this it to a specialized manufacturer, which use mass customization. If the plan of the product follows some basic restrictions, the manufacturer should have no problems producing it. As selling plans requires less involvement than selling physical products, a lot more people could participate in the home and garden market. The only requirement would be a computer program which helps the designer to obey those basic restrictions of home and garden products. This development would globalize the home and garden market immediately, as delivery costs drop to the distance between the customer and the next manufacturer. Moreover not only the market would be globalized, but also the amount of players in the world market would increase. Dedicated DIY-people, architects etc. would have the possibility to develop plans of items, which then could be sold via Amazon Marketplace or a similar service to customers worldwide. As for selling own plans worldwide, only little seed capital is needed, this can be surely an opportunity for some people to found a start-up and consequently to design professionally.

6.2.1.3 Customer

Customers and designers of home and garden products will partly admix, due to the new opportunities of selling products without the need of establishing an own web page or even having a proper retail store [186]. Many people also read Home and Garden magazines [225], which means, that they have an interest in topics concerning the Home and Garden market. If these customers will be provided with a social network, where on top of discussions, they can find advice for furnishing or other Home and Garden ideas, they will surely actively use it. Finally active users provide an added value to other users and to the company, who runs the social network if it also sells home and garden products or does advertisement for them. Active users provide an added value to such a company, because discussions, which can be questioned, can replace recommendations, which are static. Through discussions it is also easier for interested customer to find a product that matches to his needs, thus a purchase is more likely.

6.2.1.4 Inexperienced Do-It-Yourself-User

Of course there are also people who are not experienced in DIY, but who want to try it, or need to do it for example in order to build up their new wardrobe. What they need to be able to do that, are instructions. Normally that works fine, nevertheless with technology becoming more and more sophisticated, augmented reality may be used to guide and help people in the future. Already now mobile phones, which are specialized on augmented reality can identify buildings [208]. In some years it is imaginable, that such handhelds can identify smaller items like screws. If a special instruction is loaded onto the handheld, it could guide inexperienced DIY-users through the assembly process, at least at steps where additional help is needed. This would reduce the probability for mistakes and the time needed for the assembly. Hence customer satisfaction will rise.

6.2.1.5 Retail Stores

Retail stores have to react on the development of e-commerce. As an example IKEA as one of the world market leaders, is taken to show recent movements, and what else retail stores could do to stay competitive. IKEA's reaction to the growing e-commerce market is to establish its own e-commerce web pages [184] in order to participate in this market. Furthermore brand recognition and the customization of furniture to local markets is important [194]. Nevertheless when the market will be entered by small designers, IKEA may find it hard to compete against the amount of choice of furniture, which is provided. A way out could be, that IKEA does not fight these independent designers, but cooperates with them. So they wouldn't sell via online stores like Amazon, but via IKEA. And IKEA could go even further and employ the most capable ones, providing them with help and insight into IKEA, and finally sell their ideas as

IKEA products. Both ways would enable IKEA to provide a broader choice to customers, which is in addition better customized to special local market needs. Combined with a good brand recognition, such a strategy could increase IKEA's revenues, despite the highly competitive market environment. A way, to achieve a better brand recognition can be, to turn IKEA stores into a sort of adventure park, where the main aim is not to sell furniture, but to experience the way of life of IKEA. That would lead to higher emotional identification of the customers with IKEA and therefore higher customer loyalty [197]. Consequently higher sales via IKEA's retail stores, but also IKEA's Internet stores, are likely. This solution is not limited to worldwide operating companies, as also local home and garden stores can achieve a high regional or national popularity. Besides that, the home and garden market experiences a consolidation period [205], thus we might experience in some years a majority of at least nationally retail stores.

6.2.2 Society Trends in 2020

As society has proven to be very stable factor during the past 15 years, it can be expected to develop rather smoothly in the forthcoming years. Therefore this analysis should be interpreted as an analysis of future trends that European societies will be undergoing in 2020 and does not claim that those changes will already be implemented completely.

6.2.2.1 Society in General

We can state that globalization and decentralization will continue all over the globe [214]. This means, that international cooperation and collaboration will intensify and global networks will become the basis of economical and political processes. This process, which has already begun years ago, supports the global exchange of talents in all fields of human life [213]. It's the fertile process, most prominently known in sports, to find the best man or woman in the world for the special task that needs to be performed. Hence, specialization will become an even more important global strategy than it is today. What helps this process to develop is that while local transportation costs will probably increase due to the rising energy prices, global transportation costs will fall due to better organization [209]. All over the world important changes in private life can be observed: People become older as living circumstances, hygiene and health care systems improve [211]. Thus the structure of societies will change as will the active part the old are playing. Some people even talk about a "retirement society" as well as a "fun-" or "event society" [201] concerning Europe. Political and economical organizations will have to take this into account. At the same time, the role of woman will change dramatically. This will be an overall change, even if it will not be targeted at the same aims in different regions. Even for Europe there cannot be stated a reliable thesis concerning the role of woman

in future. As a third world-wide trend we can distinguish the migration to the cities, especially concerning singles and unbound couples [196]. This is especially distinctive as 2007 will be the first year that more people live in cities rather than in rural areas.

6.2.2.2 Work

As globalization changes the functioning of economies all over the globe, work is situated in a state of constant change, too. For an instance, virtual co-operations will gain real importance, because they encourage efficiency, innovation and creativity and thereby help to increase enterprises return on investment [190]. This development is supported by the continuing drop in communication costs [209] and the advancing telecommunication tools. This does not mean, that telecommuting jobs will dominate traditional jobs [190], but it will cause important changes in daily life. For an instance, information will become the most important factor in business life. For one thing, the management of knowledge in general and especially implicit knowledge will be a key factor of success [193, 192]. The transformation of implicit knowledge which is stored in immense amounts in every running company into explicit knowledge which everyone can access will be a major challenge for the upcoming years. For another IT-knowledge will be necessary even for simple jobs [190]. So digital collaboration will become normal in every branch of trade. But even though energy prices increase, communication costs drop even further and digital communication will be very comfortable, business travels will not diminish [190]. In accordance with those trends, peer production will become important [209]. Peer production is a new form of production, which differs from firm production by using large groups of private people who voluntarily contribute in some way - paid or unpaid - to develop a product. A prominent non-profit example is the production of open source software. Therefore user generated content will become important in more and more fields [209]. In this manner, also profit-seeking organizations can gain value through social networks. In addition to that, virtual companies will develop into "information brokers" that as the need arises combine companies and persons who possess the individually needed core competences to cope with a special task [188]. Because of all those tendencies focusing on individual competences, also staffing policy will value liberty, trust and responsibility higher than for instance control or conformity.

6.2.2.3 Family

As the work situation changes, also private life alters. Because life is becoming harder again for almost every part of the society, families newly gain the importance they once had. But family no longer obligatorily means relatives. Especially in cities, where families live without the help of their relatives, new forms of living will form. One method to solve the problems of the different age

classes is multigenerational living. Young families and older couples or persons live together in big houses instead of being separated from each other. In that way, they can help each other out, just as they once did with their relatives. At the same time, those families who will still be defined through blood, will be build up along the feminine blood-line [196] or will resemble today's patchwork families, as livelong bonding has become an idea of the past. Physical social contacts will be complemented by digital contacts from all over the world. Using few lingua francas communication will be easy. So everyone can choose from billions of people the ones he or she wants to befriend with. But at the same time, physical contacts will dominate in number and quality [190]. Thus, all in all, new independent lifestyles will develop and it will be the growing number of retirees who starts with defining new role models on which to orientate [226].

6.2.2.4 Attitude

Part of those changes originates from changes in the self-conception of the population: Individuality continues its advance [217]. Mass products will become an absurd recollection from the past. Individual responsibility will be one of the core ideas, whereas social security might continue to be a general wish, but there will be no social excuse for personal failure [196]. In a post-material world, dematerialization will be reality [217] as society claims that self-realization is much more important than material wealth. Following the changes in work-life, flexibility [217] will be a valued trait and acceptance of IT will increase [190]. The change in mobile devices shall be deemed to be the main symbol of the first. In everyone's pocket, where there used to be the latchkey and where today you can find a handy, then can be found a mobile device capable for almost everything its owner wishes it to do, a real mobile office. The latter is caused mainly by the increasing ease of use of digital appliances. The only barrier to this development will be the discussion of privacy rights and personal security when talking about the "Google economy" (Gartner). This might only be a small obstacle, because IT will simplify life and people will always fall for that. At the same there is a small change that it might be the one omnipresent problem for e-commerce, the Internet and IT in general.

6.2.3 Technology

According to Moore's Law [262] and other proven empirical observations, technological developments of the past and the future describe an exponential growth. Therefore, it is getting harder to predict which innovations might form the market of 2020. But taking a look at the very recent research those underlying studies can show us a glance to the future technologies.

6.2.3.1 Sensor and Communication Networks

First of all we should take a look at the receivers and transmitters of information. As the size and cost of microprocessors will continually shrink [195], it is obvious to embed digital processing capabilities in an increasing range of real world objects, from electronic devices to furniture and even plants. Increasingly, these real-world objects will not only contain local processing capabilities, but will also be able to interact with their surroundings through sensing and networking capabilities. Wireless communication technologies like improved RFID [222] will be at the top of the list to connect objects and locations to each other, and to data collection environments. The result of these sensor mesh networks will be a proliferation of many applications that take advantage of this "real-world Web". Those, for example, could be the spread of intelligent houses [223] and gardens, or the autonomous self analysis of equipment and the subsequent communication steps to solve the problem. Implemented in furniture like chairs, they could adapt to the current user by recognizing and informing the environment (table, air condition, etc.). The location discovery would be one of the enabling technologies. Every wireless technology can provide some location information as a side-effect of its operation, some directly like the position of a Bluetooth hot-spot or indirectly by signal propagation time for instance. GPS and the arising European Galileo System [216] will be much more accurate in 2020 (up to a few millimeters with differential measuring) as they are so far and the signal will be also available in usual buildings. Together with the support of multiple wireless technologies it will be possible to continuously give a very good guess of the user's position. Another enabling technology will be the object identification. Here, besides radio identification methods like RFID, especially image-based identification will play a major role. High resolution cameras will use visual pattern matching techniques to recognize and identify an arbitrary object [185].

6.2.3.2 Camera Systems

But the arising innovations with respect to camera systems will not be limited to higher resolutions. The optical part of the camera will be replaced by artificial compound eyes, as they are known from flies [187]. They will be much more sensitive and approximately half a millimeter thick. Hence, about all camera systems will be combined with a lot of other components into one mobile device, without any quality restrictions. Further on, one can assume that also the number of recorded dimensions will increase from two to more than five. First of all you will certainly integrate at least two camera modules that allow a stereo view, and the calculation of the third dimension. Secondly, as the capacity of the memory and the processing will not be a restriction anymore, of course you will make movies rather than pictures. Thirdly, you will also continuously save your position information and the absolute time to set your movie in context.

Finally, as most of the objects in your environments will have something like an RFID-tag, the camera system will recognize them and integrate the information to allow a subsequent analysis. Altogether, there will be a comprehensive data collection, not only visually, that enables other systems on the mobile device to make use of.

6.2.3.3 Human-Computer Interaction

Of course, with increasing amount of information and functionality the demand for user skills would rise as well. But on the other hand the endeavors on human-computer interaction are enormous. The communication between a human and a computer should be as natural as possible like a conversation of two colleagues. Hence, the already developed speech recognition will not only detect words and phrases but interpret the user's wishes in a semantic way. Complex and ambiguous request will be understood and answered verbally [200]. Another weighty part of humans' information exchange is gestures [199, p. 11]. Nintendo's Wii 3D controller is the first early and very basic adoption of this technique. To interpret the individually different and very context depending gestures will be quite a challenge, but offers a very natural intercommunication with the device. Gaze tracking, which involves determining the angle or position of human's visual attention, is another valuable source of information for the computer to understand the thoughts of the user. This might also be possible by the use of computer-brain interfaces.

By 2020 they certainly will not be at the stage of the science fiction movie "Matrix", but they will be able to do more than interpreting distinctive brain patterns as they do now [202]. All the mentioned user input methods will give a great advantage to hands-busy mobile applications and collect an immense amount of additional data. This, for instance, can be used for emotion detection, where recent research analyzes the characteristics of the voice signal or includes facial expression and functional magnetic resonance imaging (fMRI), a technique that examines blood flow in the brain [191]. Further on, intelligent agents, who proactively and autonomously determine the appropriate action based on the situation, will support us in our daily life. This also includes hints on questions concerning taste when furnishing a room, or in the shopping phase, and informing us about persons that already made the upcoming decision. The intelligent agents will not only include data that corresponds to the user, but any they can get. Digital papers or organic displays form a nearly paper-thin rewritable display, which only consumes power while the image is changing and, therefore, uses virtually no power for static images [221]. Further on, some displays will be able to display videos in 3D without any extra equipment necessary. Additionally to the fact that the resolution will be photo realistic, they can be weaved into wearable computers. These clothes could also use retinal displays that "paint" a picture directly on the sensitive part of the

user's retina. Although the user has the perfect impression of a 3D world for instance, there is nothing in front of him then modified eyeglasses. Together with some sort of a tactile interface (chip implants) it is the optimal way of supplementing a user's view of the real world with relevant information, known as augmented reality [208]. The web interface will certainly completely differ from what we know so far; you are not going to visit a website, the Web will visit you and give you information where asked for in a combination of the just mentioned interfaces. Computing moves off the desktop and into the world via handheld devices and embedded systems in both mobile and fixed locations. In this new environment, the focus shifts to the overall experience users have as they interact with the interconnected devices surrounding them. Focused implementations of location based services linking a bounded set of devices in a target environment, as well as the explosion of Web 2.0 "mashups" combining Web applications into a new UI, are indicators of this trend.

6.2.3.4 Mobile Devices

So the mobile devices will be the initial point of a huge part of e-commerce. As in the past, those devices will state the sum of a tremendous amount of different technologies, all tied together in a tiny casing. The multitude of possible connection paths will increase to additional satellite networks, allowing the use of the Internet miles from anywhere [210]. Of course, fees will reduce and data rates increase to not predictable values but certainly in the range of several MBits. Personal and impersonal data can be acquired and processed on the go, like checking if an article of furniture fits into one's home with respect to size and taste. Grid computing will assist the mobile device on complex database researches. But with all these functionality one has forgotten the sociable behavior of the personal devices. Phones ring in cinemas and distract people when they are driving. There are many opportunities for interface improvements to make devices more sociable. Business models, such as advertising-fund content are annoying on small screen devices such as handheld devices. It would be more valuable if the device "knew" when its user was in a situation in which an interruption would be acceptable. So social, psychological and usability factors will become am major battleground as sociable device behavior becomes a competitive differentiator.

6.2.3.5 Service Robotics and Tools

Service robots operate, according to the International Federation of Robotics, "semi- or fully autonomously to perform services useful to the well-being of humans and equipment, excluding manufacturing operation". The service robot category comprises two subcomponents: Personal robots, that educate, assist or entertain at home and domestic robot, that are designed to perform household chores autonomously (such as lawn moving or vacuum cleaning). Japanese

government reports and industry research suggests that these new fields of robotics are destined to be an as large market in the 21st century as cars were in the 20th century. The Japan Robot Association predicts that service robots, especially personal robots, will have a market size several times larger than that for industrial robots by 2025. A 2005 Japanese government study forecasts that every household in Japan would have a personal robot by 2015 [215]. Other studies claim the service robot market could be as large as $55 billion per annum by 2025 [183]. Just as the driver of IT markets and innovation has shifted from enterprises to consumer technologies in recent years, the same is about to take place in robotics. In the next few decades, robots and associated technologies will doubtless play an increasing role in our lives – both personal and business. Robots can have as profound an impact on society as the advent of the mobile phone, Internet or computer. As this industry takes shape, Japanese firms will be at the forefront of innovation and development. But not only autonomous robots will arise but all-day tools like handsaws and screwdrivers will get enhanced by user supporting features like the already mentioned augmented reality. The will guide and assist to allow even unskilled persons to pursue their "do it yourself"-hobby. Imagine 3D arrows in your field of view, that tell you in real-time how to assemble a cabinet for instance.

6.2.3.6 Furniture

Of course, not only improvements with respect to digital technologies will arise but also within the materials research for example. To live up to the expectations of increasing mobility, one can expect that less weighty and more stable materials will be processed in furniture creation. Those are also estimated to be much cheaper and some even recyclable. Regarding the concept, most of the furniture will be modal, convertible, and can be combined. Due to the limited living space, furniture in 2020 can be easily reduced in space to make the most of the rooms and to be able to transport them very easy [198]. Mass Customization [206] will foster the trend to produce a variety of component parts with customized details, each of the components produced in mass, which can be then merged to numerous individual products. Here creativity and imagination will not be limited. More than ever, the design rather than the material will make the price. Not only professional designers but also communities could develop their own furniture with the aid of mass customization.

6.2.3.7 Mass Customization

When we take a look upon customer needs, we can identify, that over time the demand for customized products has risen enormously. Only about 100 years ago when Henry Ford introduced his new car "Model T" he only let the people choose the color, well as long as the color they choose was black. However this totally standardized product was one of the biggest market successes ever

with over 15 mio units sold [224]. Nowadays car manufacturer like Volkswagen provide for a single car like the VW Golf the possibility to choose between 1 mio possibilities to customize it [207, p. 4]. Consequently this development will also be seen in other industries like the home and garden or the fashion industry.

However, having a high customization of products can be problematic, because the more customized and therefore differentiated the products are, the more risk and uncertainty for the seller arises [212], that he cannot sell the products, which he has produced. Consequently this makes products more expensive [212, 219]. Moreover producers can't have an infinite number of assembly lines, for every single product. To overcome these obstacles a production system called mass customization can be introduced [212]. Mass customization provides the opportunity to produce goods, which are customized for every single customer and have similar cost advantages like mass-production [212]. This can be achieved through two different approaches which also can be combined, a postponement strategy [212] and a modularization strategy [212, 219]. A postponement strategy means, that the product is not differentiated until the very last steps of a production process [212]. These customizing activities are done upon the request of a customer, hence an efficient customer integration is essential [212].Thus it is a process design point of view[212]. A modularization strategy means, that a product is divided into simpler standardized parts, which can be combined in different ways to produce various product variants with characteristics, which are customized according the needs of the customers [212, 219]. Both postponement and modularization strategies can obtain economies of scale and scope [212, 219]. With the possibility of customizing products, furniture that doesn't fit to certain rooms won't be experienced anymore. If production centers become even more flexible, it can be imagined, that not only minor changes like the width of a wardrobe are produced according to customer needs, but a complete product is produced according to a plan, that was handed in by the customer. Although this would require some restrictions concerning the plan, but nevertheless, it would offer customers with an unimagined choice of new products.

6.3 Scenarios

In the following section the world in 2020 will be described with the aid of two highly consistent scenarios. Influenced by the drivers analyzed in the last section, both scenarios are oppositional to each other with respect to the development of the social society. As this development is one of the major influence factors for our following product we will also display the interconnections of the other drivers with it.

6.3.1 Rise of Economic Prosperity and Social Interactions

The members of the European Union achieved to give Europe a constitution, and broader fields of responsibility, especially concerning economic development and foreign affairs. The standardization of economic laws, the further opening of the economic markets like the service market, the assistance to trade and industry of the Eastern European countries through money and the introduction of the Euro boosted the European economic growth and cross-border trade. The standardization of Law and new laws specially designed to tackle cyber criminality support e-commerce and make it a very important part of business life. Confidence in online shopping is high, as the market matured and problems like having paid, but not received a product are only experienced very seldom. Europe's presence as one state with one foreign minister and therefore one voice, who states the believes of all countries makes Europe the main player in world politics besides China and the USA. The integration of Turkey into the European Union, the appreciation of Europe as a fair trade partner and economic supporter by the Arab world but also the successful reconstruction of Afghanistan helped to diminish the terrorist threat that Europe once faced. The Bologna Process fully unfolded its potential after 2010 and people are used to study, work, but also to shop in the whole of Europe. The European Union is perceived as one country by most of its inhabitants and the difference of languages is not a problem anymore, as English has become the official second language. The political battles of different national governments which have been so dominant for many years diminished and were replaced by a mutual understanding, that Europe can only prosper when it is united and reformed. All in all Europe achieved more than many optimists had considered possible, especially in the field of economic prosperity and the identification of its inhabitants as Europeans.

Technology development in the field of microelectronics has kept its speed. Devices like mobile phones are operated using voice. Touch pads replaced keys in all but retro phones. Visuality is everything and the problems of user-friendliness that the first devices experienced are not a problem anymore, because customers got used to it and appreciate the increased usability. Especially in the combination of touch pad and voice recognition. Computing power went up and even small devices can be used like proper computer. GPS is built in many mobile devices. Fast cheap flat-rate Internet access gives people the possibility to download programs on the go, or use programs in the net. Devices are able to sense not only different forms, but also buildings and exteriors. Consequently augmented reality is used widely, for example when constructing furniture or repairing electronic devices, but also when demanding information on food, sights etc. Mass customization became normality not only in the fashion industry, but also in other fields, like furniture and books.

Between 2010 and 2020 many e-payment systems, that were once established, couldn't gain a critical market size and consequently vanished due to network

effects. Finally only few e-payment possibilities are still available. Among them are PayPal, Google Checkout, e-credit and some traditional payment systems, like electronic debit. The most influence was gained by m-payment. Reasons are the increased mobility of people and the cheaper and better Internet access possibilities of mobile devices, like mobile phones. E-payment is considered as safe and convenient, and only very few purchases are aborted during the payment process.

As competition is high since e-commerce has become an important market, customers have become spoiled. They expect only the best quality and the newest design, but their particular attention is turned to service. Make sure that your customers have a good time at your site or in your shop and make the information- and decision-making process as easy as possible and you will sell whatever you want to sell. This includes fulfilling the customers demand for reciprocal personal support. Reciprocal meaning that the customer wants his recommendations exactly tailored to him and at the same time longs for advice given not by an algorithm but by a human being. Those customers do not care about sharing all their personal information with the vendors, as they know it will make their life very easy. They do not bargain, as there is the omnipresent and smooth possibility to switch over to the next retailer. e-commerce means commerce without any allegiances. Therefore the merchants are in a constant comparison situation if they cannot create a personal bond between customer and brand or company or whatever. Trade is making your customer feel at ease whereas buying has lost all its strain-potential. Since work is reduced or done in some other part of the world and at the same time, immaterial values grow more important, average working time is reduced all over Europe. People want to fill that newly gained time with things they consider worthwhile. This is why voluntary and honorary work is very popular and people define their social status no longer through work but through the value they commit to the society. Thus political engagement is very popular and the voting public consists mainly of 'smart citizens'. At the same time people are willing to contribute to social networks and digital projects in their spare time, if they believe that they are doing something worthwhile. So young people like to commit their knowledge about new trends while old ones try to share their gained wisdom with those who need it. Therefore many websites based on the social interaction of their members work well on a solid basis of active prosumers. Computer literacy will be required in almost every profession. Even barbers need to know their bit about using IT, to show their customers what they might look like with a new haircut or what is the newest trend this week. Young people gain extensive competences in this field at school whilst old ones get to used to knew applications extremely well because of their user-friendliness. The majority of the population lives and works in cities. Their children go to school physically, but once they are there, most of the education is done by newly developed computers, which provide individual education for every

single student. The teacher's role has completely changed. Where he once had to combine classes and social education, he now can concentrate on social education only. Thus education, which is constantly improving for almost 20 years now, has reached a very high level and the social gap between children from all walks of life can be bridged by the intense social care of the teacher. The ecological threat is widely acknowledged as existing, but ecological products cover no more than a niche-market of well situated or simply weird citizens. Immaterial ideas of self-realization have replaced Christianity for the young generation. Dematerialization is taking place all over Europe. In some countries it is even insulting to buy a present for a close friend, as a real present has to be personal and therefore has to be the work of your own hands - or brains. In accordance to this trend, private work is popular, too. People like to cultivate vegetables in their gardens or to reconstruct their attics on their own. All in all the situation can be described with John Naisbitt's words: "The more we globalize our economic activities the more people celebrate their own social identity".

6.3.2 Rational New World

Technology has brought us convenience. Smart interfaces, as shown in 6.2.3.3, allow us to access any information we need at any place, not only with our own mobile devices but with terminals that surround us in our daily life. We even do not have to ask for information, we get provided with it just as our personal device detects that we are interested and in the mood (6.2.3.1) to accept new remarks. Our technological environment, and this includes the office as well as the home, is trying to make our life as efficient as possible. Service robots assist us with specialized tasks. Intelligent agents (6.2.3.3) work through and filter all the accumulated data, recorded by the spanning sensor networks that do not miss out a move. Only the quintessence reaches our attention. Companies supply their employees with the latest technology for free to potentate them the access to this highly mobile network and thereby to their business network. Moreover, also employees with a technical profession have to be acquirable at any time due to the rising specialization in a more and more complex world. One will not see a clear differentiation between work and spare time anymore. Work is not limited to a place or a daytime, rather a minimum workload has to be accomplished. Companies do not pay for the time their employees invest but for the results. Hence, effectiveness and performance are the highest goods these days and further, new technology features are the catalysts of the process. To be not accessible is the only luxury a business man cannot afford.

Society abandons social structures. More and more individual responsibility is passed to the people and decisions dominate life. Therefore, those decisions have to be made fast and correct. A substantiated base which is less depending on single, subjective opinions is necessary: Statistics and ratings as the sum of all

experiences of thousands of users, acquired by objective sensors and subjective comments. All prepared, well conditioned and weighted with the individual expectations of the consumer, these effective reviews give a perfect impression of a product at a glance. Therewith, only pre-filtered alternatives with clear differences are available for personal and final choice.

In such an optimized and complex environment, all-rounder cannot compete with specialists. Most companies are engaging highly professional freelancers for the most part to be flexible enough to compete in the constantly changing business. This reflects also to the work at home. Interior designers setup our furniture, gardeners look after our garden and of course, technical equipment is installed by specialists as well. The assignment of professional design companies that take on our decisions is common. Only the final choice between two or three alternatives will be left to us, to arrange some individual feelings. Only few major broker concerns arise to coordinate the specialist assignments by analyzing our individual requests. Mass customization has influenced most of the production sites and retains the appearance of individuality. This can also be found in the creation of individual websites. Due to the arising cyber criminality, software can only be created by professional programmers. Service portals offer frameworks to create personal websites out of a range of prebuilt features.

The number of companies providing a service is increasing rapidly, especially of those that give advice on decisions. The fast success of Internet services motivates more and more people to become an entrepreneur themselves. They continuously create new services and offer those in the ubiquitous Internet. Most of them are virtual project corporations that exist as long as their service or project. These virtual corporations are powerful networks comprising small and large, multinational companies. Performance, speed, change and "survival of the fittest" are key slogans in this new, highly competitive business world. Hierarchies are blending and one will find himself more in an organism then in an organization. As continuous change will be a business principle, those who succeed in bringing their skills to perfection, their knowledge and adjusting their capabilities to the speed of change and accept lifelong learning are the winners. Those who are not willing or able to match these demanding performance criteria are the losers and have to live under poverty line as the area of social security as we know it belongs to the past. This leads to an ego based performance society which has no room for weaker members and helping each other.

The globalization has fostered the specialization and optimization of processes by allowing companies to produce at the most appropriate location, known as production site tourism. Further on, outsourcing of talents diminishes the dependency of local specialists. Instead of moving people around, data is transferred; a development that is pushed also by ecologic reasons.

6.4 Product and Service

To build up a social home and garden shop, we of course, have to base our decisions on the assumption that scenario one, which is the "rise of economic prosperity and social interactions", will occur. Additionally, in our view, this scenario also has the best chances to turn into reality as we do not believe that a completely performance oriented and thereby existence-threatening world would be stable for a longer period of time. In the following we describe the target customer and the service itself. Here we include also value added services like the handheld device which enormously expands the range of possible applications.

6.4.1 Target Customers

When a merchant wants to launch a new product or service he first has to think about the customer group or segment, which he wants to attract. As not everybody has the same needs, desires and technical experience, products can be very popular with one customer segment and at the same time very unpopular with another one. Consequently the merchant should identify which segment characteristics match best with his product and vice versa, and what can be done to encourage customers to use the merchants service [189].

A very powerful tool to perform such a market segmentation and identify target customers is the Sinus-Milieu analysis. It divides the inhabitants of Germany into ten subsets of customers, who first do have the same social background regarding education, profession and income, and who secondly have the same personal orientation, means, whether they are very modern or traditionalists [182]. Our target customers according to the Sinus-Milieu analysis are the "Experimentalisten" and the "Moderne Performer" [182]. The main characteristics of these two subsets are, that they are familiar with the newest technology trends, want to experiment in their life and try something new [182].

Our product aims at the customer group "Experimentalisten" because they grew up with mobile technology and use Internet-applications very often, so that we can expect from them to familiarize with our service very fast [182]. They care for their society, are creative and interested in interaction with other people. Furthermore they are young, many of them have much free-time and have some entrepreneurial spirit [182]. For the reason that we only provide a platform without any input and expect that the input will be generated by the users, we need consumers, who are also producers. This combination can be found best in this customer group .Therefore we expect, that they will use our service not only to let someone arrange their homes, but in addition to it are highly productive and arrange the homes of other people. As this would be rewarded it could be an encouragement for example for students, to perform this professionally and become a freelancer, which is the profession of

many "Experimentalisten". Besides that we proceed on the participation of this customer group in the social community that we provide, since a social network is worth nothing, if you don't have a certain number of users who contribute continually.

The second customer group our product is designed for is "Moderne Performer". This customer group wants to have different options in their live, are unconventional and value flexibility [182]. In addition many of them do have own start-ups, or challenging jobs [182]. Consequently they value time and do have money [182]. Hence these customers are the main consumers of our service. Mainly because they are not preoccupied because of privacy concerns, or because it is unusual to use such a service. Secondly, they do have the money, to afford new, also valuable furniture and as most of them start with their new jobs, they also do rearrange their flats [182]. Due to their high affinity to multimedia gadgets [182], they won't experience any problems using our service, quite the reverse they will value the easiness of having someone, who arranges the own flat, without having to spend much time on that. As this customer group already utilizes a variety of communication technologies and likes to interact with other people, we expect them to value, use and partly contribute to our social community [182]. All in all the encouragement for the "Performer" to apply our service is that they can let their flat, home, garden be arranged time-saving in a new way, according to their own desires, combined with the preview opportunity of our easy-to-use electronic handheld and the social network, which provides further information and interaction options.

We try to win these two customer groups in order to have a perfect balance between producing and consuming customers, for the reason, that our service doesn't work, if we have a lot more consumers than producers, because consumers will loose interest, if they see, that no one wants to help them arranging their new home. Of course if we have too many producers, the situation also gets difficult, especially from the revenue point of view. As customer groups in real life are no closed systems, we also think, that satisfied users will tell their friends of our service, so that other people, who don't belong to the two milieus that were mentioned above, will get to know our product and try it out. The basis for such viral marketing is our handheld device as it surely impresses people, that they can see, by using augmented reality, the "future" of a room or a garden [203]. Finally in a best case scenario this can provide our service with a huge consumer and producer base, so that the social community will also benefit from network effects. Nevertheless the two above mentioned customer groups suffice for our service to work well.

6.4.2 Service

The best way to satisfy both target customers will be a social platform where they can complement one another. As both groups tend to be rather interactive

and flexible, transfixed and formal web services won't stand a chance. Naturally all services will be available in every single European language - even Luxembourgian or Estonian - to make people feel at home, but most conversations and interactions are English based, as this admits the broadest audience.

6.4.2.1 Social Platform

Thus social interaction of the users is necessary for the success of an e-commerce website; the basis of the product will be a social platform. It will be supported by the homogeneity of user interests and the heterogeneity of their time preferences, which are necessary to gain the needed critical mass of users. Because of their ability to participate if they want to, the idea is not to refer to the users as customers but as members, even if only part of them actually presumes. This is why the website provides a flexible network, which can be formed and changed by its members. At the same time, this network is able to enhance itself automatically, meaning, it can link partial networks, if they are alike concerning content or topic. These partial networks can be individuals or groups, discussion topics or pictures. They all are interlinked in a sort of neural network, just like the conjunctions in human brains. Thus there are many possibilities for the members to use the service. They can just have a look around for new ideas or suiting products. For those who already have an idea in mind, there is the possibility to make up their mind, which product to buy or which combination to choose. But as individual taste and situation are important, the most useful aid in the home and garden sector is personal advice. It can either be generated by the large data based recommendation system of the service or by other users. To make this interaction as easy as possible, members can create their own groups or join those of others. There, they can interact about a specified topic, work together on some task or help each other in general means. With the aid of the provided user-friendly design tools every member is able to create personal solutions on their own or help others solve their problems. As three dimensional pictures can be taken of rooms or landscapes, a user looking for help with the rearrangement of his living room can just place this data and a brief description of his taste in the network. His query can be answered by everyone, but in addition to this it will be announced in groups with similar tastes and individuals who already answered analog requests. Those exchanges of ideas can be paid for or undischarged depending on the query in question. If the query is challenging or interesting in other terms, the socially engaged community will answer it. In addition to that, a search- and a price comparison engine are installed. Both of them not only offer the specific products searched for, but also similar products, which might fit the searches needs as well. If possible, personal details are added, e.g. that one of the products would perfectly fit into the searchers living room or that he has bought this material before. Thus the website provides different answers for all sorts of questions concerning home and

garden. But the web service not only provides help for those who want to buy, but also to those who want to sell. If a single member provides home or garden articles, other members might be interested in; he can easily open a personal shop and display his products. For example, if one, in his spare time, creates special carpets he can sell them via the platform in a very convenient way. Someone else might be developing a system of shelves, which are extraordinarily simple to erect, take down and re-erect. He will want to have them tested by real customers or he will open a store to attract the attention of a shelf-producing company which is interested in buying his system. The large and well organized ones of those one-man-shops can even be integrated in the delivery service of the web service, which will be explained later on.

Figure 6.1: Possible social home and garden shop interface
Source: Own Illustration

6.4.2.2 Data Processing and Recommendations

To generate useful recommendations, and thereby make your members life as easy as possible, a perfectly up-to-date information management is vital. Therefore information is gathered wherever possible, which can be done very easily because the protection of data privacy is not considered important. User behavior is tracked, like reaccomodation queries, searches that have been made, the personal decision behavior or emotions concerning objects or styles. At the same time, conversations are screened for useful information whether the interlocutor has been a human or the digital information service. In addition to that, pictures taken and owned by the users are scanned for information concerning style and taste. As most people will photograph things they like rather than things they regard hideous, there isn't even the necessity of comments or ratings on the pictures, even if they are useful if given. And, naturally, information about the users' properties and former (near-) purchases are saved and stored in internal data bases. There, detailed profiles of every member are created and can be used whenever it seems reasonable. For example, the different profiles are checked for interrelations. If similarities occur, they are saved, too, and used for subsequent decisions and recommendations. If the two individuals have expressed the desire to get to know new people, the system can even recommend the two to get in touch with each other. To prevent the phenomenon of information overload, special regard has to be paid to the appropriate selection and presentation of information. Hence the collected personal information is used to filter the data taking into account the interests of the individual. In addition to this, the current situation and mood of the user is tracked to depict the appropriate information in the right moment. Specific search, for example not only provides hits on the specific item, but also on correlated ones, which might suit the searcher as well. But the extend of this extension of information depends on the present state of the user. If, for example, he needs a fast price comparison to make a quick decision, he won't be glutted with useless information. If, on the other hand, it is Sunday afternoon and he is just spending his time looking around for a special kind of flowers, he will be shown other flowers which live in the same surroundings and fit to the same tastes. Another way to make the members lives easier are explicit recommendations. They can be given 'on demand', meaning that the user actually asks the system for answers or advice, but they can also be given without the prior explicit formulation of a question. For example if the user is searching for something, an agent might advice him also to search for something slightly different or where else to have a look. Or, if the user is very active in a special field or in special groups, he might be informed if there is a new development or he might be recommended to contact a person who needs help in this field. He also might be alerted if some product emerges, that fits his taste extremely well. All this information and those recommendations are depicted in the style that suits the user needs best. Even the welcoming page is personalized up to the last detail for every

individual, see figure 6.1.

6.4.2.3 Technical Realization

The whole web presence is available not only via PC or mobile phone, but with all sorts of devices. Everyone has at least one mobile device with him all time, so it will be accessible from everywhere. Even if you have forgotten your device or do not want to take it with you all the time, there are 'web stations' in all public places. At the same time, all sorts of pieces of furniture have displays and processors integrated to guarantee a comfortable usage of the Internet. Thus the web presence is omnicompatible with any device and adjusts itself to the circumstances it is accessed in. In addition to this, with some devices it is possible to access an augmented reality interface, as we will see later on. The information management is based on semantic filtering systems, which are able not only to recognize words, but also their meaning and up to some level the structure of sentences. They are combined with recognition software for pictures, which can identify objects in visual data. To support the users in their creative work, complex design programs are accessible. In addition to the object recognition, there are programs which recognize the forms of a room out of different pictures and programs to rearrange rooms and gardens. Combined with an immense product database and databases concerning styles and fashions (e.g. Mediterranean or Zen style) they form an easy-to-operate surface which provides the user with all the possibilities he needs.

6.4.2.4 Sales Platform and Logistics

The last of the main services the web service offers is sales. To match customer needs, the buying-process itself has to be as easy as possible. This means, that if you have requested a reaccomodation and want to adopt it, you can order all the necessary equipment in just one process. The same naturally works with reaccomodations you created on your own and with every product you can virtually test if it is the furnishing for a sitting room or a vase. But products are not the only things you can order. Embedded in the network there are Dutch Auctions in which you can find the cheapest craftsmen in your region. You simply place your query at the platform, the craftsmen bid and the cheapest one will get the award. But this does by no means mean, that the decision which craftsman to hire is reduced to the price. As quality definitely matters in this field, other users have already commented on the quality of the various alternatives and you are not obliged to choose the cheapest one. The ordered objects will be delivered all-in-one, if possible, meaning that the web service is acting as an information broker [188]. The orders are delivered via intermediate stores, to guarantee their on-time arrival. In case a craftsman is hired, the products can optionally be delivered to the craftsman. As always, all data concerning the order processing will be stored in order to be able to use it later

on. All services and products offered can be paid for in different ways. For one thing, traditional payment systems like electronic direct debit, e-credit or even offline payment methods are offered for those members who are not willing to learn how to pay else wise. For those who like the convenient new methods of paying online, PayPal3.0, m-payment and the most popular e-money providers are integrated, too. Those members who open a shop at the platform have to accept all traditional methods as well as PayPal-cheques and at least one form of e-money. This makes payment is as simple as possible for the buyers and increases the payment-time, which is convenient to the vendors.

6.4.3 Handheld Device

Handheld devices in 2020 are the sum of an enormous technological development. As described in 6.2.3, we will face a broad spectrum of improved and approved technology as well as the emerging of fascinating new developments. The Internet will not be limited to the desktop or an unpleasant use at small mobile phone displays, it will surround us in our daily life. The handheld device will be the interface between the real world and the web. It connects us by identifying the people and objects in the environment and broadcasting our own identity, if asked for. Of course, e-commerce companies as we know them today will not be able to ignore this trend and therefore, have to implicate handheld devices into their services. And this does not only mean to accommodate the interfaces of their applications to the individual device, but rather to use the arising, unique features and abilities of those. And there will be a lot of them, not only directly by technological reasons, but due to creative ideas. In the following we will describe a handheld that would be the perfect addition to the previously described web service.

6.4.3.1 Information Gathering

We have already shown, that in any scenario (6.3.1 and 6.3.2), information is one of the highest values in 2020. To obtain it, is a major request of the customer and therefore, the mobile device, of course, needs high speed access to the Internet at any time and any place. This can be achieved by the use of diversified networks, like on the one hand satellite connections and on the other hand location based links. The latter is also capable to inform the user of very recent news as the access points can act autonomously in a limited range. With all these interconnections the user can request any service as if he would be at his desktop. But additionally he is also linked with all the location based services that surround him as hot spots. That way advertisement displays, for instance, can adapt to his needs, shops can inform about individual offerings and much more. Further on, adjacent persons' devices are automatically contacted and asked for their recent news if the owner has a certain similarity. In case this person recognized something of high interest this could be valuable for us

as well. This means information processing on the go and in time. A concrete example would be a home and garden fair. Entering the area would mean to ask everybody next to you if he or she has found something really interesting and even filtering those who have similar preferences. With the aid of the network the device could also search the Internet for more information and further on inform our friends' devices.

But how should we know where to find these interesting points? An improved global positioning service that allows the localization with the precision of a few millimeters, implemented in the device can help us. Using new satellites, fix points on earth (differential GPS), and also range limited network access this is possible also in usual buildings.

Still, we lack of the identification of the object as we want to preview it in detail before moving to it. Radio identification chips like the already existing RFID but with processing capability will respond to our request and will give us the information we need. We can assume that any object that has some value will imply those chips. But due to some artistic reasons or at antiquities, for example, those might not be available.

In this case the optics of our device should be able to identify the article by pointing at it. The optics is actually one of the most important parts of the device as it is prerequisite for a lot of features. Using artificial compound eyes (6.2.3.2), it is possible to reduce the camera system to a few micrometers at very high resolutions. Attaching two camera a stereo view and thereby a three dimensional impression of the real world can be realized. Hence, the computation of a three dimensional model of the environment is possible which offers a vast amount of new applications. Object recognition is only one of them. By introducing the fourth dimension, a three dimensional video is recorded implying the ability to orientate and calculate the exact position of the device relative to the environment. This will be quite an impressive preview where the user can feel on-site. Directly comparing products that do not stay next to each other physically, demonstrating, and sharing these experiences with our friends are certainly comprehensive features.
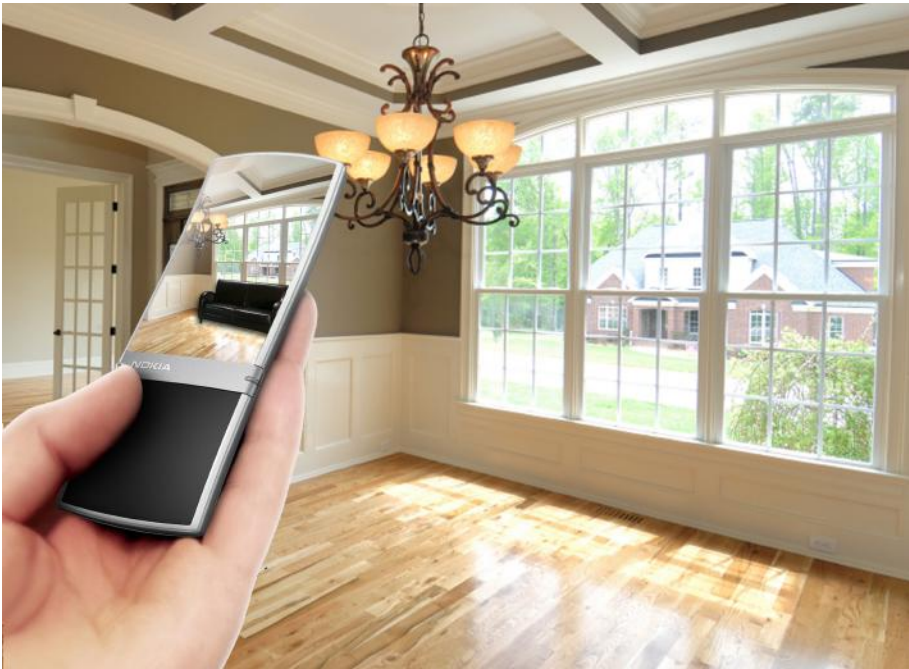
Figure 6.2: Augmented reality as a major feature of the handheld device
Source: Own Illustration

6.4.3.2 Interface

With all these enormous capable ways to gather information the question arises
how the human can process all of it. The answer is quite simple as the device will
have to do this for him. Intelligent agents will collect and arrange the information
and will even generate new out of existing by identifying similarities, relations
and developing statistics. As already mentioned in the section "Services",
a model of the preferences of the user will be created, describing his needs,
interests and behavior. In the case of the device, much more data can contribute
to this model, like movements or emotions. With the aid of this model the
intelligent agents will pre-filter the information and display only the ones of
real benefit. The social behavior of the device will have even more aspects
then presenting the information depending on the user's mood, as it will also
considers the characteristics of the environment.

Further on, the device will follow the developments of new user interactions:
A natural language voice communication and a touch display will fasten the data
flow between the device and the human. Additionally, one should consider that
3D displays will be available and will certainly impact the design of information
presentation. In fact you could read text from five sides of a cube. Therefore,

our interface will allow us to view an article of furniture in all detail and from all sides by rotating the device appropriately. Fitting it into a virtual model of our house will give us a perfect impression of what the new article will look like in context. That way we will also be able to explore other users home and garden if they allow us to do so. Sharing and presenting new interior design ideas in such a comfortable way will certainly foster the trend of Do It Yourself.

But nothing can be as realistic as reality itself. So the best way to display new ideas and articles in the context of an existing environment is to just overlap these two different worlds, the virtual and the real one. This is called augmented reality. Here the reality is recorded with the stereo cams and a three dimensional model of the scene is build up to allow the computer to know where individual objects are located. Thus it understands the geometry of the environment and can also recognize individual objects. The textured 3D models of the articles, which we want to add to the reality, are now placed at the proper position in the 3D scene, replacing the originals if needed. Finally, both, virtual objects and recorded reality are combined and displayed to the user. Hence, the user will have the impression of a changed reality as shown in figure 6.2. As the device will do all the processing in real time, you can imagine to point with your display in a certain direction of your room to see it enhanced on the screen they way it is supposed to look in the near future.

But applications of augmented reality are not limited to that. Home workers will no longer look up how to mount a cabinet for instance. Our device will show them with arrows and short adapted movies what to do next. It will guide us to the next store and also support us within the store to find the right stuff.

Altogether the device will be able to help us at a lot of decisions. The suggestions of it will mainly be based on the experience of many users and the algorithms of our intelligent agents. It is obvious that such a powerful tool cannot be omitted. Embedding our service and software into this device will be a key factor for the success.

6.4.4 Value Added Services

Since working with your own hands is popular as material values have become less important, Do It Yourself is one of *the* trends in the home and garden sector. To gain new user groups especially among target groups who never learned how do all these Do It Yourself works - mainly women - Do It Yourself courses are offered. Those courses range from very basic usage of tools to complex explanations how professionals work. They can be integrated into modern tools, including the measures and forms needed or they can be viewed on external devices. To make the user understand, they work on the basis of an augmented reality. On the display there can be seen the current situation with integrated helps and hints. E. g. it is able to distinguish between different sorts of screws and can tell the user which one is needed at the moment, it can

visualize the usage of the tools needed or it can point arrows to the parts or working surfaces considered important in the upcoming steps. Thus the Do It Yourself courses are almost as good as the aid of a professional, exceeding their capabilities at least when it comes to their patience. But if someone likes to do things on his own, this does not mean, he likes cleaning and lawn mowing. Thence a shop for domestic robots is integrated as well. They can be ordered for all occasions: to clean all sorts of floors, to mow, to help the children study vocabularies, to do the dishes, to water the garden, to repair and maintain the other robots or whatever bothersome housework one might want to get rid of. They work autonomously and know when they need to recharge their batteries or to drive into the sunlight if they are solar cell-driven. In addition to this, they know where they are via location systems and thereby can learn which regions of your garden or house need more attention than others. Thus their owners can concentrate on the important issues of life without ever forgetting to water the rhododendrons again. Another additional service is the integrated helping system. It is backed up by semantic software which makes it possible to communicate with it almost feels like talking to a human. The idea behind it is to offer the inexperienced member an intuitive aid to explore the web service and to accommodate it with answers to its questions later on. This will mainly be important for the group of 'Moderne Performer', as the group of 'Experimentalisten' is well adapted to new technologies or for older generations. First, the new member has to decide which form of helping system it wants. There are different appearances (e.g. a cartoon figure, a sort of travelers guide or just a plain text box), diverse communication styles (from 'nothing but hard facts, please' to 'talk to me, I got no real friends') and various standards of knowledge (from first-time-Internet-usage up to I-can-read-source-code). Thus every user gets just the help he wants and no one is glutted with information he doesn't need. This helping system, just as the recommendation system, can be asked for help explicitly, but it also is capable of engagement, if it is obvious that the user needs help or could be aided. A rather funny but none the less useful feature represents the random generator. It is based on the idea of a competent shop assistant who assists the customer with suggestions on how to arrange his room or his garden. When the measures of the object in question have been entered, there is the possibility to choose out of main categories like 'kitchen', 'living room' or 'multifunctional' for rooms or 'Mediterranean', 'North Sea' or 'low mountain range' for gardens. Then you simply press the create button and a random suggestion will be created. Subsequently you can either recreate if the proposal does not suit you at all, or you advise the generator to alter the idea to suit your imaginations. You simply say 'lighter', 'more flowers', 'different armchair' or whatever you want the software to meliorate, and it will do its best. When your 3D-display - ideally the one integrated in your living room wall - depicts the room or garden of your dreams, you simply save it or order directly. Afterwards you are asked to tag the room you created, which

will help you and others to retrieve your room and in addition to that helps the software to learn new adjectives and styles.

6.4.5 Value Chain

Our product is an intermediary between home and garden manufacturers and shops, and the customers. That means we give manufacturers and shops a supplementary distribution channel. The primary activities of the value chain, that our service covers are mainly Marketing and Sales, in order to make our service popular, and Service, which deals for example with technical problems using the handheld, or questions about the social network. In addition we do have inbound logistics and outbound logistics, in order to make an all-in-one delivery possible (see 6.4.2.4). All of the supporting activities, but Procurement, can be found in our company. We don't have a real procurement department, as the customer chooses, during the purchase process, from which supplier he wants to buy the goods. We only forward this request and then receive the goods to make the all-in-one delivery possible. Obviously we have a firm infrastructure for our employees. Furthermore we have, although it is very small, a Human Resource Management, which deals with topics like finding new employees, developing employees' skills and other activities. Nevertheless this part is mostly organized by the management and for trainings for example external knowledge is bought. Technology development deals with the development of our homepage and is the biggest unit of our company.

6.4.6 Revenue Sources

As we are an intermediary between customers and different parts of the home and garden players our main revenue source are provisions, that we receive from home and garden product producers and designers and from the craftsmen, who win the Dutch auctions. We charge a certain percentage from the price that was paid. As we receive the money first, and also have all the data needed for the calculation, it is easy to realize. Maybe it has to be thought about a minimum charge. However this should be evaluated in direct discussions with the appropriate players in the home and garden market, when modeling the business plan. In addition we sell Do-It-Yourself courses for interested users for a small price.

A further revenue source is specialized advertising, which also provides an added value for the customer. An example would be a customer, who is interested in rearranging his home in an Italian style. If there is a home and garden magazine, which has a story about Italian homes and different furnishing propositions, our service could suggest the customer to buy the magazine, or surf the web page. Nevertheless, this is a small revenue source, as we don't want to have an overwhelming amount of advertising, for the reason that this

lets a web page look crowded and the main aim of our service is to sell products as an intermediary and provide everything an added value for the customers.

Another added value for customers, which can be capitalized is a premium account. Without a premium account you don't have any restrictions, which is important for our service to work (see 6.4.2.1). But with a premium account you can either get a faster customer service from our company, or your requests in the social network, about how to rearrange your home for example, have a higher relevance in the search results. Furthermore it also shows specialized home re-arranger, that your request is serious. Hence the probability, that you get several professional propositions is higher.

A revenue source, which in the end also serves our customers is the vending of processed data. That means, that our device finds out by exploiting different user requests, that a sort of product is needed, or a certain style is very asked. This information could be sold to furniture designer, who wants to become or stay a trend-setter. This can be problematic because of privacy reasons, but as customer data is anonymized and only given to trustworthy companies, we think, that the problem is manageable.

6.5 Conclusion

The online home and garden shop of the year 2020 that we provide is designed for two specific groups of modern customers. We do concentrate on the "Moderne Performer" to have a wealthy clients, who can afford our service. In addition we need for our service the "Experimentalisten", which contribute to our social network and act as prosumers. Both groups like to interact and are familiar with state of the art modern technology. The Shop itself consists of several ideas, which match well together, and first of all ease the customer decision making, buying and installing process of Home and Garden products.

For the communicative users, who want to have first-hand experience, we provide a social network, where one can discuss about everything around home and garden, ask for advices, show a 3D-model of his own home and ask for advice or just ask the members how well our service really works. This helps most of all, to reduce concerns of users about our service, but also helps to generate new ideas for the users, which they can directly fulfill via our service. In addition it helps, to connect the users emotionally to our service and let them spend a lot of time browsing our web page, and not another one.

As not everybody likes to rely only on social networks, our service also provides automatically generated recommendations about which products to buy. To do so we track user behavior, and search for interrelations between users. Furthermore we take into account, what the user wants to say without saying it, by showing correlated items and paying attention to the user's mood. We hope by that to find out the hidden needs of the customer, which emerge

by offering the product to him. And after having found it, he can for example discuss with others, whether the item is really useful or not.

After having purchased one or more products, we manage the all-in-one delivery to assure the convenience. Optionally we can also set up a Dutch auction, to provide a cheap craftsman, who builds up the delivered item. Having all these features, we think that we will have a very convenient and user-friendly service, which helps the customer to find the right product, without having to spend a lot of time on it, neither on the product search, nor on the delivery and the installment of the products. This is especially valuable for working people, who don't have a lot of time, like we can find in our target customer group.

We support our customers by giving them an even better impression on how their future home or garden will look like, by employing a specialized handheld. This preview is an important part of our selling strategy, as it is a lot easier to decide how to rearrange a room or garden, if you can see the result upfront. And that is exactly what offers our service. One click later you purchase the item, and some days later it is delivered and a craftsman builds it up. That is convenience of the future. If no craftsman is ordered augmented reality makes it easy to assemble the purchased item.

As you see everything in our product is build around serving the customer with the most modern technology. From finding an appropriate item, providing a preview and discussion possibility and finally an easy all-in one delivery. You will never need to leave our web page, and will find many arguments to come back.

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7

Chapter 7

The Social Future of Price Comparison

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The analysis of the main drivers concerning price comparison in the year 2020 reveals the following important factors. Despite the growing online shopping market, retail stores will still exist. User demands for individualized products, being networked and having an intriguing shopping experience ascend. And from a technical point of view, even smaller devices with mobile Internet access are developed and the Semantic Web emerges. Bundling the drivers leads to the assumption that a combination of online shops together with real buying experiences at retailers is likely to arise. The focus will not lie on price comparison, but on product comparison. Mobile devices like augmented reality eyeglasses will be used to liken products which get individualized values according to the customer's profile. In addition the user's friends and his community are considered to give him more personalized suggestions. A live consulting service with community members and collaborative shopping rounds up the service in a social way. With value added services like paid expert advice it is a profitable service that will get used everywhere.

7.1 Introduction

Price comparison engines today already create a great benefit for its users. Saving money by looking at a comparison of online shops is a widely used service in the Internet. Websites like preisxxl.de[1] provide a list of about 400 price comparison engines for different product categories. Although these are profitable and well working businesses, price comparison engines and the whole e-commerce market seem to change. Due to the uprising Web 2.0 phenomenon, the participation of active users and the increase of user generated content, even price comparison sites realize a change from comparison shopping towards social commerce. Customers are not only searching for products but want to look around and browse through the Web. The upcoming customers do not only focus on hard goods like electronics anymore, but also look for soft goods like fashion. Therefore, price comparison sites need to discover this development and prepare for it. Taking the new prosumers into consideration it seems clear that social shopping will shape the future of e-commerce [266].

Looking at this recent trend and the already existing impact on the e-commerce market, you can see that the Internet and the whole e-commerce market are changing very fast. Although the Web 2.0 phenomenon has not yet reached the mass market, it is astonishing how online shopping behavior has changed in the last months. Therefore, it is hard to tell how price comparison and online shopping will look like in the future. Will the price still be the dominant factor for the decision making? Will social aspects play a more decisive role in online shopping? Answering these interesting questions will lead us to the possibilities of the year 2020.

Therefore, this report will deal with the future and the social development of price comparison. First of all, an analysis of several drivers and influencing factors on the field of e-commerce will show how the future can look like. More precisely this report will address the development of the market, the future user demands, new technologies and some disruptive factors. Taking these drivers into consideration, the second part of this report will focus on one likely scenario of how the price comparison engine of 2020 could look like. After a detailed description of this scenario the report will also present a short business model of this new service of the future.

7.2 Driver Analysis

So, the first step in trend research is to analyze important trends and project them into the future. This will be done in respect to price comparison in the following. First, the e-commerce market will be investigated as it determines how many products are available online and offline. In the next section, the user

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demands will be identified for the reason that the customer plays an important role and this influences the market. Finally, technologies which are important for price comparison will be shown up.

7.2.1 The e-Commerce Market

A quite important driver is the market. It has to be investigated what e-commerce will look like in 2020 in order to know if price comparison can exist in the future.

7.2.1.1 Development of Online Shopping

In the following, the relation of revenues induced from online shopping and from real shops will be determined. According to a current Shop.org / Forrester Research study, the revenues of online shops in America increased significantly during the last ten years - around 25 percent growth per year was usual - but in 2007, the revenues are expected to increase only by 18 percent. Forrester Research believes that this is not an accidental outlier, but that this trend will continue [229]. Nevertheless, online sales will still increase very much and are far from reaching saturation.

In 2006, online retail sales represented six percent of total retail sales [229]. With a relatively low average growth of ten percent each year, in 2020 this percentage would reach 20 percent. Taking an unlikely high average growth rate into account, 15 percent, the percentage of online shopping in respect to real shopping would reach 35 percent. Thus the truth lies somewhere in between 20 and 35 percent. Although this being a huge amount, there will still be many retail shops. Another reason for this fact consists in the user's need to really touch and feel products in real stores. Moreover, real stores will also exist because customers must be able to buy cheap things instantly without paying shipping costs and waiting for the delivery to arrive. To conclude, with even more online shops than today, price comparison gets an essential part of e-commerce even more than today as it provides an overview of the market that is needed for the customer to buy efficiently.

7.2.1.2 Social Aspects of e-Commerce

Moreover, social features make online shopping more convenient for the customer and help shopping portals to maximize their revenues. Till today, most online shops built up platforms with an efficient buying process. This assists customers in planned purchases, but it does not encourage spontaneous shopping. In order to achieve this, portals must offer social and collaborative features.

Online shopping will not be a tedious process any more. Instead, customers should not be aware of the difference between shopping and non-shopping activities. The main difference to real life shopping consists in the user interaction.

This is a point where huge improvements can be made and online shopping portals will improve. Gartner also proposes the establishment of virtual environments like "Second Life" where shopping can be done more according to real world. There are already projects developing virtual shopping environments like VR-Shop [230]. There, community features like real-time collaborative shopping, voice-chats and seeing the other user's 3D avatar which is an electronic reproduction of the person's body are implemented. Companies ignoring this social trend will disregard a part of their revenues [267].

This focus on social commerce will lead to better user acceptance and higher involvement of customers in the shopping portal. The improved integration of social aspects will lead to an increase of the revenues for online shops.

7.2.2 User Demands

Another very important driver for the development of the e-commerce market is the customer of online shops or the user of e-commerce services. In order to establish a successful Internet based business it is important to know and fulfill the needs and demands of the customers. Online shops or e-commerce services will only be able to survive if they can adopt to the user or customer demands of the future. Consequently, it is important to take a closer look at some customer or user trends. Will the customer still prefer to buy at retailers? How and where do future customers want to buy online? What do they want to buy online? Analyzing the trends and answering these questions will help to discover the aspects of the social future of price comparison.

7.2.2.1 Networking and User Interaction

One of the most obvious developments of the Internet and therefore also of e-commerce business is a change of the user's behavior towards an active and participating "prosumer". This social phenomenon can be discovered in the existence of thousands of weblogs in the Internet. These are platforms where the users can post information, share their experiences or create forums for discussions. This new type of user can be described by an upcoming desire for information exchange and networking. He is not only using the Internet as a source of information but actively generates and contributes Web content. Although this upcoming type of user already has a strong impact on the Web, the prosumers are only a small fraction of the total number of consumers in the Internet.

The success of online communities like Facebook[2] in the USA or StudiVZ[3] in Germany shows that the new type of Internet user is willing to share information and definitely wants to be networked. By providing platforms for interaction

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[2]http://www.facebook.com
[3]http://www.studivz.de

and self-presentation these communities support the user's needs. The same development can be discovered for customers of online shops. Social communities like Dealjaeger[4] are even willing to hunt for good prices to share them with their community. The exchange of product information and product ratings among the e-commerce customers and the rise of social shopping and collaborative purchasing really helps the customer to distinguish between high quality and low quality goods [248].

The development of the user demands shows that social shopping will shape the future of e-commerce [266]. As a result it is likely that the price comparison engine of the future must have a certain kind of interaction platform to attract the new type of user. Customers have to be supported in talking to each other and in collaborating with each other [248]. Installing a community on the price comparison site could be one possible solution.

7.2.2.2 Shopping Experiences

Another aspect that could affect the development of future price comparison engines is the question if online shopping will be able to imitate or even replace buying experiences at retailers. Therefore this chapter will look at two already existing online buying approaches.

One interesting but not new form of creating a different shopping situation is the so called visual shopping. Visual shopping sites like browsegoods.com[5] or like.com[6] are product search engines that try to present goods in a different way. Although these sites only use another form of data visualization these services allow the user to browse through goods without exactly knowing what they were looking for. This form of visualization therefore tries to imitate real shopping sprees at retailers where the customer can be inspired by the exposed products. This form of e-shopping is more likely to cause impulsive purchases.

Another aspect is the approach to install virtual reality interfaces on e-commerce sites. For example by building a 3D representation of a store, these virtual warehouses promise to make the e-shopping experience more natural, attractive and fun for the customer [249]. By allowing customers to meet and interact with other customers or salespeople this approach can even satisfy social needs [236]. Similar to visual shopping this approach also tries to get closer to the real-world shopping experience.

Besides these approaches and the growing number of visual shopping sites there are some hints that do not support the thesis that these forms of shopping will prevail. The growth in online sales for example has slowed rapidly and analysts say that this will continue. One reason for this development is due to the practical and psychological limitations of online shopping. Although the

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[4]http://www.dealjaeger.de
[5]http://www.browsegoods.com
[6]http://www.like.com

new approaches try to imitate real life shopping situations, shopping online cannot replace the more pleasurable in person buying situations that can be experienced while talking to a salesperson or discovering the shop atmosphere. Another important aspect is the fact that no approach or emerging technology can imitate the complete haptic of goods. As long as the customer is not able to feel the materials or the workmanship of a certain good, online shopping will not be able to replace retail shops. Even the online-giant DELL is realizing this trend and is now offering its PCs in Wal-Mart stores. Therefore, it is not likely that these forms of online shops that try to create new shopping experiences will prevent their customers from buying at retail stores. Shopping online will not replace the buying experience customers can gain in real shops. Therefore, an option for price comparison engines could consist in the additional offer of a mobile service that can even be used at retail stores. [260]

7.2.2.3 Individualized Products and Services

The third trend in the field of future user needs is the increasing demand for individualized products and services [250]. Even today a lot of well-known and good working approaches for this trend exist which are mostly achieved by mass customization [259]. As lifestyle and self-fulfillment get more and more important, famous retailers like Nike discovered that their customers are looking for individualization. Customers of Nike shoes for example have the possibility to create their own shoe on NIKEiD[7]. They can choose from several colors, styles or even personal symbols or labels. In the end, Nike tries to provide unique products that try to match the lifestyle of their customers. Another famous example is the service of spreadshirt[8]. There you can design your own t-shirts according to your personal preferences. This trend is not only limited to the look or the style of products but also includes individualized services. Last.fm[9] is a personalized online radio station that provides the user with music according to his preferences and reference group.

The success and growth of these services suggests that the individualization of products is likely to increase. Last.fm for example has already grown to the largest Web 2.0 community in Europe, with about 15 million active users [227]. Another proof for this development could be seen in the so called long-tail phenomenon. Big online shops like Amazon already make a huge amount of their profits from niche products [232]. This trend definitely has to be taken into consideration for future online shops, e-commerce services and especially for price comparison engines. As the products, their features and their style get more and more personal and individualized, it also gets harder to compare them referring to parameters like their price. Although the price will probably

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[7]http://www.nideid.com
[8]http://www.spreadshirt.com
[9]http://www.last.fm

remain an important factor, it is likely that the price comparison service of 2020 will have to do more than just a simple comparison of two fees. One possible solution would consist in the evaluation of additional features of a product like the style, so that these engines will set up individual comparisons according to the customers preferences and his lifestyle.

7.2.3 Technological Trends

In addition to the market and the user demands, the technological development will be one essential driver of the future of online price comparison. Looking at the brief history of the World Wide Web and the significant impact on our everyday life, it is likely that lots of new technologies and services will appear and potentially some of them will revolutionize our way of life in the same manner.

But keeping the focus on price comparison services, the key issues for the progression are the development of the Internet and the changes in the users' interaction. How will the information retrieval differ? And how will new user interfaces transform the way price comparison will be used. Thus in the following part we concentrate particularly on trends in these areas.

7.2.3.1 The Development of the Internet

Beyond doubt the Internet will constantly grow within the next years. In 2005 the size of the indexable Web was estimated with 11.5 billion pages [242] and the Internet data traffic grows currently with rates of 100% per year [237]. It becomes apparent that in 13 years these facts will lead to a huge amount of information stored in the Web and lots of data transferred via this network. Even today there are huge amounts of information which are either not accessible or hardly locatable, because they are not or not well enough structured. With the increase of available information in the Web it becomes inevitable to "rely on computer processing of the information" [245] and therefore some kind of semantics, e.g. ontologies or folksonomies, needs to be assigned to the content [245]. Gartner expects that by 2017 the techniques to semantically annotate the data will be fully developed and so the Semantic Web will be matured [235].

Price comparison services will strongly be in the need of the Semantic Web as the growing e-commerce market will also bring along an increasing amount of information. But they can also derive benefits from it in two ways. On the one hand this will enable automatic discovery of the products, on the other hand it can extend the price comparison with additional features, e.g. comparing corresponding and similar products. Such development will definitely change the e-commerce market. Basically it will bring up two possibilities for online shops. Either they will follow the trend or they will refuse to add any semantic description to their products. The latter would protect this online shop from being found by price comparison services. This could be an intention when

the shop cannot keep up with competitors, in particular when this shop is clearly more expensive than other shops. But the above mentioned tendency of the emergence of niche products will bring forth a huge variety of resembling products which will be hardly found without semantic help. Due to this fact as well as to the growing size of the Internet, it will be likely that the majority of providers will support the semantic development as they will need the help of third party services like price comparison to guide users to their products.

A further highly crucial trend is the emergence of ubiquitous computing which describes the idea of "integrating computers seamlessly into the world" [270]. According to Moore's Law the technological development will continue with an exponential growth [262] and so the processor size and the price for computing power will decrease very quickly. Thereby it will be possible to equip all kinds of objects from everyday life with sensors or processors and confer a "smart" behavior on them [253]. It is expected that by 2015 all these sensors attached to objects will form "a new Web" [257], where objects will communicate with the user but especially among each other [253]. Already today there are pilot projects where products are tagged with RFID chips and the mainstream adoption is foreseen within the next 10 years [244]. So it can be assumed that products will soon be able to communicate and hereby will influence the way of shopping in the future.

7.2.3.2 Human-Computer Interaction and User Devices

Apart from the development of the Internet a second major technological driver will be the Human-computer interaction and user devices. It is not enough to have information somewhere in the Web, but it also has to be accessible for the user. An interface is needed with which users can retrieve desired data. Basically three main trends can be foreseen for future devices. Firstly, the size and weight of devices will be reduced, while performance and capabilities will be increased [247]. Secondly, there is a trend to mobile devices. In 2007 more than 1 billion mobile handset devices are expected to be sold and in 2010 there will be 120 mobile phone connections per 100 residents in Germany [228]. Furthermore, as many mobile PCs as desk-based computers will already be shipped in 2010 [247]. Thirdly, the Human-computer interaction itself will significantly change and keeps tending to reach an easier and more convenient interaction with the user. Expected innovations can be classified in three phases. First, new interfaces for already existing functions will evolve [256] where accelerometers, touching and pressure sensors etc. will be used. Current products like Nintendo Wii and Apple iPhone give a hint what will be possible in the future. In the long-term future, social devices will come up with new features. By 2012 there will be devices which are able to use face and gait recognition, emotion detection and as well gesture control [246]. But also speech recognition will be adapted until then [243]. A third step will be interfaces which integrate many different

"devices and systems to create an integrated sociable experience"[246]. Such interfaces could for instance automatically recognize what a user is doing by taking all present information about his context into consideration.

The mentioned trends all together will change the usage pattern. Small and mobile devices will provide access to information in the Internet from everywhere and easy-to-use interfaces will allow us to use services all the time in all kind of situations. This brings up the question which devices will emerge and which of them will be useful for price comparison services. In the following we just point out two alternatives to demonstrate the range of devices. On the one hand "notebook replacements" will come up [247] which will have the functionality of conventional computers. Devices like Ultra-Mobile PCs already exist and might replace today's mobile computers from 2009 on when shortcomings like weight and battery life will be improved [247]. Until 2020 such devices could become so small that users will carry them around as they do it today with their mobile phones. On the other hand, there will also be devices which will differ clearly from mobile units nowadays. Further progresses e.g. in the field of augmented reality (AR) will influence the emergence of new devices. This technology enhances the user's perception through adding an overlay of a virtual layer to the real environment [231]. Virtual items are displayed interactively and aligned with objects in the real world [233]. For displaying an augmented reality to the user several devices will be possible. In current research projects glasses with head-up displays are commonly used and therefore will come to maturity early. AR is not limited to head-mounted displays only, but could also be used with hand-held devices. Hand-held mirror displays could be used as well as normal mobile units like a PDA or mobile phones [234]. A mainstream adoption of this technology is not expected in less than 10 years [243], but as it is currently emerging and a lot of fields of applications exist where it could definitely be of some help, we assume that there will be user devices using augmented reality in 2020.

7.2.4 Threats and Opposite Trends

Although the analysis of the market, the user and the technology gave us a lot of information how price comparison engines are likely to develop, there are some disturbing factors that could also have a huge impact on the development of the whole e-commerce market. Therefore the following chapter will present some threats or opposite trends that could subvert the predicted developments or influence the development of price comparison engines in a negative way.

7.2.4.1 Privacy Concerns

One of these disruptive factors could be an emerging concern of the user or the online customer concerning his privacy. In order to provide the user with individual products or services the customer definitely has to release a certain

amount of private information for example information about his personal needs, his attitude towards certain topics or his shopping preferences. Without these specific information no online shop or e-commerce service will be able to supply the customer with accurate benefits. As a result of this development most of the e-commerce services will somehow have to track their users, which could cause irritations or even resistance. When the customer of online shops or of individualized services do not feel comfortable with the personal service but rather become aware of the tracking, they might get an aversion of registering online, setting up personal profiles or even won't shop in the Web or use online services anymore.

Even today you can discover some opposition to this trend. Opponents of the most successful search engine Google for example already stood up against the tracking of users. On pages like google-watch.org[10] or noluv4google.com[11] some users complain for example about the Google mail account that tracks all sent and received e-mails. These users are afraid that the company Google will collect all kind of private information, preferences or the shopping behavior of them.

7.2.4.2 Free Rider Problem

Another problem, that could influence the development of price comparison engines might be a downfall of the Web 2.0 community. Although you will find a lot of active users on the Internet, that are willing to share their information and create web content, even today most of the Web 2.0 platforms are run by only a small percentage of the users. A change of the online and browsing behavior of these active "prosumers" could have a huge impact on the e-commerce market.

Therefore it would be very dangerous for platforms like Dealjaeger [239] when most of their users will not contribute information to the community anymore. This kind of free rider problem, which could occur when the users only want to receive information but are no longer this active and willing to share their experiences, can even ruin whole business models.

7.3 The Future Development of Price Comparison

The following chapter will deal with the possible development of what we today consider as price comparison engines. Having looked at the development of the market, the user, the technology and some disruptive factors which also could have an impact on the development of price comparison engines, this chapter will try to bundle the located drivers.

All in all, the driver analysis pointed out that the future price comparison user will be an active and networked person, who will mostly buy online, use

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[10]http://www.google-watch.org
[11]http://www.nuluv4google.com

social platforms and look for a shopping adventure. Through mobile Internet devices and the Semantic Web the user can receive services and information wherever he wants. In addition, the user is looking for very personalized and individual goods. Taking the results from the driver analysis into consideration, several scenarios for the price comparison engine of the future are imaginable. The two most likely ones will be presented in this chapter.

7.3.1 Virtual Supermarkets

One scenario for a future price comparison engine emerges from the idea that in the year 2020 almost everybody will buy online. The price comparison engine of the future will adopt to that situation and provides their users with a new online shopping adventure combined with an automated price comparison.

One possible solution can be seen in virtual supermarkets, where the user of a price comparison engine has the possibility to walk through the shop. The price comparison engine of 2020 will provide a virtual world, where the user's avatar can discover different products. Due to the enormous range of goods, a price comparison engine will have to install different shops for every type of product. That means after entering the price comparison site the user will have to choose from for a example an electronic market or a furniture shop. When the user is not interested in browsing through the offered goods, there will also be a direct search function. This would be used when the customer already knows what he is looking for. Another important aspect the price comparison engine would need to have is some kind of communication platform where the users can interact, recommend and rate certain products. These platforms will bring a social factor to the price comparison engine of this scenario. But the best thing about this scenario is the idea that the price comparison engine of 2020 will not provide the user with different shops where he can get different prices, but automatically offers the best price. Therefore the customer does not use the price comparison service and afterwards will have to register at the online shop he choose, but the customer directly buys at the price comparison site. The whole buying process is made by the price comparison site. The price comparison engine therefore will take the role of a distributor or middleman for the customer.

All in all, the price comparison engine in this scenario will consist of three parts. The first part is the possibility to walk or browse through virtual shops. The communication platform where the customers can interact and rate the products can be seen as the second important element. The third and actual service of the price comparison engine of 2020 is the automated and centralized price comparison.

7.3.2 Mobile Value Comparison

Another possible scenario is based on the probable presumption that even in 2020 shopping at retailer stores where customers can touch, try and evaluate the products with their hands will still be the most exiting shopping experience. Therefore, the price comparison engine will have to develop to a mobile service that could be used during shopping sprees.

The mobile price comparison engine of 2020 will suggest the customers similar products, which he is watching at the retailers. Due to the fact that the future price comparison will be based on a community where customers can set up profiles, this service will be able to give personalized recommendations according to the user's needs and lifestyle. Therefore, the price comparison of 2020 will be a comparison of personal values for certain products that can differ from person to person. Although the price will remain an important factor, other elements like individual preferences, personal styles and reference groups will be taken into consideration, too.

All in all, this scenario bundles almost all drivers, which were discovered during the driver analysis in chapter three. This is why this scenario is more likely to happen and will be presented in a more detailed way in the following chapters.

7.4 Price Comparison in 2020

This chapter will deal with a more detailed description of the mobile value comparison scenario mentioned in the previous part. To begin with, this report will present a short shopping tour with the value comparison service called YOGA, which stands for "Your Optimal auGmented shopping Assistant". This typical shopping spree with the new service should give a first impression of what this new form of price comparison is able to do. After that, the key features of this service which already had been used in the shopping spree will be presented in a more detailed way. Afterwards, this report will focus on the service description of YOGA, where the device of, the navigation through and the community behind YOGA will be presented. This chapter ends with a short part about the benefits for the users of YOGA and some weaknesses of this service.

7.4.1 Shopping with YOGA

Figure 7.1: Mockup of YOGA - A look through the augmented reality glasses
Source: Own Illustration

John Smith decides to go shopping after he has left off his work. For days he wanted to buy a new wristwatch as his long lasting old one was destroyed during a hike. On his way home he stops at his preferred local wholesaler. As he exits his car and enters the showroom area, he decides to run the appreciated new shopping application on his mobile device called YOGA. Mr. Smith started to use YOGA after most of his friends and leisure time fellows highly recommended him to register for this advanced, easy-to-use shopping application. He closes the navigation and traffic applications he has used during his drive on his mobile device and activates the YOGA service. A small frame appears on his augmented reality glasses which indicates that YOGA is connected with the online account and is ready for use.

Mr. Smith strolls down the different shop compartments and enjoys getting inspired by the latest exhibited products. As he approaches the clock shelves, he turns YOGA into action by commanding spoken instructions into the tiny headset integrated in the glasses frame. He is very pleased with the variety of different exposed models and brands. From afar he spots a watch that seems to suit his expectations. As he takes his hands on the model, YOGA has already started to identify autonomously the product via its RFID price label and its visual appearance. It classifies the item according to all his shared preferences YOGA has learned during common shopping tours and appraises the weighted evaluation of all sundry communities he is signed in. In the meantime, YOGA

has already queried thousands of worldwide online shop prices for this product and regards their community grading. Everything Mr. Smith notices from this extensive disquisition is the personalized YOGA value which instantly appears on his head-up display. This value includes all his personal partialities, the grading of his online community fellows as well as the product price and the seller's valuations of other users. The material, color, style, technical characteristics, tenancy and the credibility of the possible vendors are compared to Mr. Smith's and his community's predilections. Mr. Smith now wants to see the manufacturer's product presentation trailer which he can access easily using the YOGA platform. It shows the lucent clock-face and that it comes along with an automatic clockwork that needs no batteries and works for one week if not using the clock. YOGA has also detected that a member of Mr. Smith's job community has already bought this wristlock only in a different color. It is Mr. Brown and he is running for errands in the home do-it-yourself corridor a few meters away, as YOGA found out by dint of GPS localization. The "Live consulting" button flashes-up. Mr. Smith wishes for a conversation with his colleague. On his way towards the sought-after corridor his look pauses for a moment on a rack of new mobile phones. Again Yoga instantly starts to show him the personalized value. Mr. Smith continues his path and meets Mr. Brown. The following encounter is very helpful for Mr. Smith. Together they talk about the product trailer and the clock's minutiae. Mr. Brown elucidates that the power reserve only works steadily for three to four days and not for a whole week as mentioned in the product trailer.

Thereupon Mr. Smith reconsiders this product. He memorizes that YOGA did not only put on view the value for this clock, but also listed a variety of close products and substitutes with a higher personalized utility value. He now starts to survey this product list. On the top of the roll, Mr. Smith finds a product he did not know that it already existed. It is a novel outdoor clock of a South-Korean manufacturer with a built-in barometer, Galileo mountain hike navigator together with an emergency call functionality. YOGA has identified his strong affinity to outdoor tours by interpreting his past purchases and his fellowship in the outdoor community forum. YOGA portends that this wrist clock is exhibited in the outdoor department of the wholesaler. He visits the department and regards the light and robust brushed magnesium chassis of the wanted commodity. He picks on the clock. It really fits very well. As he meditates over his past cracked clock, he becomes sure that this clock is tough enough to master upcoming hikes. As this is a very specialized item he asks for consultancy from a designated expert on this field of the YOGA platform. YOGA therefore establishes contact with a high-mountain guide who elucidates him all of the item's features. After this final conversation, Mr. Smith is sure that he has found the right solution for him. He picks the item and pushes the buy button. YOGA orders the item instantaneously from a trustworthy online shop. Within two days the item will arrive via airmail. When Mr. Smith leaves

the shop, he quits the YOGA application. He is pleased over the item and the fact that he can already use his new outdoor clock on the upcoming mountain hike of the following weekend.

7.4.2 Key Features

The previous part gave an impression how the shopping process with YOGA will look like. This description gave an overall view and so some of the features were already shortly mentioned. In the following, we will elaborate the key features and describe why they will be needed and what kind of information they provide. As we analyze the social future of price comparison, we try to focus mainly on features with social aspects. But as the driver analysis indicates a fundamental change in the market, we also include aspects which are related to the "social" future to a lesser extent.

Basically we see three main features price comparison should come up with. Instead of a normal price comparison of the same products we see the need of *product* and *value comparison* which are explained at the beginning. Afterwards the *live consulting*, a support and consulting service will be delineated.

7.4.2.1 Product Comparison

Today's price comparison sites like billiger.de[12] or shopping.com[13] provide a service for comparing prices for certain products. Without doubt this service itself is already a great benefit for the user and provides lots of information which the user could not reach in this extent before such services emerged.

But as obvious as the advantages are the shortcomings. To start a search the user has to know pretty well for which product he wants to get a price comparison. Normally there are two ways to get the appropriate results: Either the search form is used or the user browses through the directory of categories. The former needs a proper input to get a useful response, otherwise thousands of products will be returned. If the user starts with using the directory he does not have to know the exact product from the beginning on. But when he has reached a certain sub-category here again a decision for a certain product is required. Another weakness becomes apparent when the driver analysis is considered. Even if the e-commerce market will grow a lot more slowly, it will still continue growing in the next years. Thus the user's task to find the right product will be made worse by the appearance of a lot of new products found in online shops. The rising niche product market as well as the user demand for customized and individualized goods involve a new way of price comparing as they are hardly integrated in this process.These issues are already addressed by current developments of online shops as they try to show

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[12]http://www.billiger.de
[13]http://www.shopping.com

alternatives and recommendations to the user. Providers like Amazon[14] and Criteo[15] offer content-based and collaborative filtering [269] and so the user gets a recommendation according to the item he is looking at. Like.com[16] tries to find alternatives with a completely different approach. Product photos are automatically scanned, analyzed and then described, e.g. by the color or the features of a certain good. Another approach is to use semantic information of "folksonomies" where users add tags to items containing semantic annotations. Through the arising formation of tags the relationship between different items can be extracted [245]. A new way of doing this is to analyze the structure of the user network. Specialists and opinion leaders shape the user's opinion. Therefore, their recommendations will be weighted to a higher degree [240]. Besides, there are further approaches to integrate semantic information e.g. from the product description and classification taxonomies [271].

YOGA tries to solve the revealed problems through providing an automatic product comparison. Hereby not a manual comparison of products and their characteristics is meant as it is possible on the mentioned comparison sites, but an automatic indication of similar products with the same features when searching for an item. If a customer wants to get a mobile phone with multimedia features, then for instance some Ultra-Mobile PCs could be displayed as well since they provide analogical features and are intended to use in similar situations like the desired mobile phone. Such feature is especially relevant for mobile price comparison services like YOGA. In usual online portals all items stored in the database can be found, but when being at a retailer customers cannot see the whole spectrum as there will always be just a small selection exposed. Being at a retailer which has only products of one manufacturer should not limit the user's choice but should also show products of other manufacturers. Thus a way of finding similar items is strongly needed to reach the full product range.

Although the mentioned solutions for this problem do exist, they have not yet been used for price comparison engines. One problem probably is the inaccurateness of the recommendations. If a customer starts a price comparison for a wide-screen TV he does not want a proposal for a television set with an aspect ratio of 4:3, even if these products might be related somehow. Overcoming this difficulty will enable these approaches also for price comparison services. But how can better results be achieved? For YOGA a mixture of the mentioned approaches can be expected. As the breakthrough of the Semantic Web will be reached before 2020, the product comparison will primarily be based on semantic product descriptions. Through automatic reasoning largely similar products will be found. Certainly the product descriptions will not be perfect and will not include e.g. all design aspects. For this purpose technologies like

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[14]http://www.amazon.com
[15]http://www.criteo.com
[16]http://www.like.com

the one used by Like.com will be integrated as well. Customers looking for a price comparison take a photo of the item and send the data to the comparison services. The picture will be analyzed and compared to pictures in the database. The different approaches will provide completely different quality of results, therefore a simple intersection is not applicable. As the results of the semantic comparison will already be of quite high quality, the final outcome should be based on this list. The results of the picture analysis could be used to give products a higher relevance rating in this list.

YOGA thereby provides a product comparison which displays really similar products so that it makes sense to compare these items. The user thereby gets a perfect overview of the products from a certain market segment and is able to make a better decision.

7.4.2.2 Value comparison

As the name implies, today's price comparison engines mainly concentrate on analyzing and listing prices of a product. The price has been the all-dominant and decisive factor for settling a transaction with the help of these services. But a major change can be recognized for this aspect. German consumers have been looking for making a good bargain for a long time and so they have been focusing on cheap products only. But this mentality is out-of-date and customers prefer quality and service again. The price is still a very important factor but is not the only criterion anymore [268].

In addition to the price, trustworthiness becomes more and more important. e-commerce just as commerce in general is a risky domain [264] and therefore trust is required for transactions, as it helps resolving feelings of uneasiness and uncertainty [254]. Trust is particularly needed when the vendor is unknown due to the lack of credible information [254]. Indeed this affects the whole e-commerce market. But keeping the focus on comparison services it becomes apparent that in this domain it is a very crucial factor. Using a comparison service results in getting the best offers for the specified item and the online shops vary regarding to the query. Thus typically the user does not know the vendor and each time he uses the services the customer has to trust a new vendor.

Several price comparison sites recognized this need for trust and for instance Billiger.de[17] gives a trust guaranty for certain online shops. Shopping.com combines the price and the trustworthiness as it highlights the "the lowest price from a trusted store"[18]. Commonly, online shops can also be rated by the customers, but normally just the average of all ratings is displayed. This does not necessarily inspire confidence since the user does not know the persons who submitted their opinion. This could be overcome by integrating user's

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[17]http://www.billiger.de
[18]http://www.shopping.com

relationships into the total rating and assign a higher value to the opinion of friends. Approaches like FilmTrust [241] already implemented this and show how a personalized rating could be given.

The new importance of lifestyle and self-fulfillment, which we identified in the driver analysis, is a further evidence for a needed change of price comparison services. Users take an active part in the Web since they create content or design own products and apply themselves to online communities. This behavior could be used for customizing the provided results.

So today a user first has to find the right product which fits to his needs, then he can start a price comparison and in the end he has to decide which of the online shops returned in the results might be the most trustworthy one.

YOGA presents a very comfortable, easy and quick solution. Instead of having several values for the price and trustworthiness, YOGA bundles all required data in only one value which is then used to compare the offers. Hence this value helps the consumer in the decision making process. This value itself basically consists of two parameters: the price and a social factor. The price is obviously required since it will always be a decisive factor for transactions. The second factor, the so-called social factor, again contains several influencing variables. To begin with, it takes the rating of the vendor as wells as the reviews for the product into consideration. Here the community is utilized and the ratings are personalized. A higher value is attached to the opinion of friends and people close to one, like a friend of a friend. These relationships are stated explicitly through the user's contacts. Furthermore, other community members who are like the user are integrated as well. Without a direct connection similar persons can be inferred through the user's profile and his membership in sub-communities. Through focusing on persons who are somehow related to the user, the ratings become customized and thereby much more valuable for the customer. A third dimension of the social part of the YOGA value is the lifestyle factor. For each product in the result list a value is calculated which indicates how much this item fits to the user. For this purpose all items need a lifestyle description and this process has to be user-driven to match the user's needs. Thus users can add characterizations by "tagging" the items like it is done e.g. at Last.fm. So products could be described by specifying the target group, e.g. tagging it as an item for "students" or "techies", and by everything else which describes the type of product. In their profile, users state explicitly as well as implicitly what they like and what kind of person they are. The areas in which the user is active, e.g. in which sub-communities he actively participates, give another hint for the user's way of life since these communities are tagged by the group members as well. Combining these two mentioned aspects with the customer's purchase history generates a bunch of information containing user preferences in the form of tags. So it is possible to infer that one user e.g. prefers high quality goods and another likes to spend money for all kind of technological innovative products.

These three input variables, the personalized rating of vendors and products as well as the lifestyle index, form the social factor and give users a personal recommendation value for all items. Together with the price it can tell the user in a simple way if it is worth to buy the product. Instead of returning a list of all obtainable vendors offering this product, only the one resulting the best YOGA value is displayed when a comparison is run. Of course the other results can be accessed too, but normally this should not be necessary. Different products found through using the product comparison are displayed with their value as well.

To get a perfect balance of the factors combined in the value, the user has to state his preferences at the registration process. This is needed since some users might value the price still as the most important factor and others attach quite little importance to it. Moreover, it is imaginable that the user's preferences change over the time, e.g. due to new circumstances of life. Therefore, this balance of factors can be changed whenever the user wants to change it. But to achieve a good value without the active involvement of the user, the value is also adjusted automatically. The user's purchases are tracked and compared to his settings. If they differ too much, the weighting is adapted and the next time YOGA should be able to provide a more precise value. Since users have to know how much money they will spend for a transaction, the price and the social factor will be separately displayed so that the user can double-check these values. This should just be an additional information so that users can assure themselves, but for the comparison of products only the YOGA value should be used.

7.4.2.3 Live Consulting

One big advantage of offline retailers is still their advisory service. Even if customers are already sure what they want to buy, they often want consulting of a professional. A widespread behavior for instance is, that people go to a retailer and receive an advisory service and afterwards, when they are well informed, they buy the product from an online vendor.

Online shops normally do not provide such a service but offer different possibilities for users to get a product appraisal. Amazon e.g. offers product reviews of customers. Users are able to write and read reviews which consists of a rating as well as a textual description. Moreover, transparency through reports of experiences is in great demand. Trendwachting.com sees the "transparency tyranny" as one of five major trends in 2007 [265] and already lots of online platforms provide advice and reviews like IgoUgo[19] does it for traveling.

YOGA satisfies this need for advice through offering "Live consulting", a service where YOGA community members help and advice each other. The

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[19]http://www.igougo.com

users can interact among each other either by giving them a call or by contacting them via a voice-chat.

The basic feature of the live consulting service is to contact customers who already bought the item the user is searching for. A user might be looking for a new mobile phone but wants to get some reviews before. Therefore he can access a list of community members who have bought this phone in the last months or who seem to be some kind of expert or "opinion leader" , as described in [240], in the appropriate market segment. This list is sorted in a manner so that persons who have a similar profile are displayed at the top. Additionally the user's status is displayed so that it can be seen which of them are available at the moment. Thus, the user gets the chance to immediately contact a person who has experienced the desired item in the last time. Thereby he gets a valuable insight into the assets and drawbacks since the contacted person might e.g. report on initial problems or annoying features. Obviously this kind of consulting is pretty different to advisory service of normal retailers. The latter is usually not adequate for an impartial advice due to his job to sell the offered products. Certainly reviews of YOGA community members are not impartial either but since they do not take advantage of a successful transaction they will not try to influence the user. The customer will probably start with the user on the top of the consulting list since it is ordered by profile similarity. Thereby he gets connected to users with a related mindset and so the received comments and recommendations should be highly relevant to him. Furthermore through the personal interaction with the community members the user gets a feeling whether he wants to rely on the received review or he continues obtaining opinions by other members.

In addition, it is indicated when a community member who purchased the desired item is in the same store or close to it. If the customer wants to meet this person, he is guided to him through indicating the direction on his display. If the community member comes to his field of vision, this person is marked so that the user recognizes him and is able to talk and discuss with him.

Moreover the customer can also contact his friends and ask for their opinion. But some of his friends might know the product the user is looking for and others might not. Therefore a note is added to friends who have scanned this product with YOGA and so the user is able to choose one of his friends who has already seen it.

Due to the possibility to contact community members who really know and have experienced the product the trust is strongly increased. Especially the chance to meet them and speak to them directly is highly conducive to this aspect. As it was already pointed out in previous sections, trust is a crucial factor for successful transactions and so this positively affects the number of closed transactions via YOGA.

7.4.3 Service Description

After looking at the implemented key features, YOGA as a service will be described. It is a service that enables the user to find the products that fit best to his needs. The customer gets inspired by products seen in real shops, receives recommendations for similar products and can call experts to provide him with help- and trustful information. Permanent mobile Internet access makes instant user communication, product comparison and online shopping from everywhere possible.

In the following, the device used for YOGA, how navigation works, how it is implemented and finally the community around it will be described.

7.4.3.1 The Augmented Reality Glasses

It is always necessary to take a closer look on the input and output device for a service as the service cannot exist without the device. The "augmented reality glasses" are the first choice as a human-machine interface, because they are quite user-friendly and fit to the shopping situation where free hands are needed for touching and feeling products. YOGA can also be used with other devices but these glasses will be widely used by the year 2020.

In this version, the device consists of a head-up display that is included in the frames of the glasses, a camera, RFID sensors, a headset and a GPS / Galileo receiver.

The **head-up display** is designed semitransparent. It is lucent when there is nothing to be displayed and parts of it become opaque when some information is shown. This permits to display messages to the user while he can still see the real world. As the user goes through real shops it is important that he sees his environment and in addition information from YOGA. These eyeglasses are already very small and will get even smaller the next years [252].

The **RFID reader** is used to identify products that are nearby the user. With this information, all products to be considered are known. This permits the service to find the kind of product one is searching for and display similar products. The location of one specific product can be discovered through triangulation with three RFID sensors. This RFID technology is currently entering supermarkets and will soon be used in nearly all major shops [255].

It is necessary that a **camera** is available. The first reason for that consists in the need of identification of the product, its position and its size. On one hand, it makes highlighting the product in the head-up display possible through translation of the physical room coordinates into display coordinates and on the other hand it complements potential issues with the RFID receiver. As a second reason, the user's gestures have to be recognized. This is proven to work quite well in video gaming consoles like the PlayStation EyeToy and it can be enhanced to work in more difficult situations like in real shops where also other people move.

Moreover, a **headset** for communicating with other users is attached to the glasses and serves two tasks. It acts as speech input device for commanding the service and as speaker that gives feedback to the user. Besides, the user can talk with other users like per mobile phone.

Finally, a **GPS or Galileo receiver** has to be installed in order to determine the user's location. This enables YOGA to find users who are currently standing near to him, for example in the next street, and who could help him in his decision or even go shopping together with him.

All in all, this device has all features required to communicate efficiently with YOGA. One advantage in using it is that the reality is augmented and not virtual, that means the users can see through the glasses and act like they would in the real world. Furthermore, it is comfortable to wear and intuitive to use. Finally, this device or similar devices will be available in the near future. Prototypes exist and are used in factories.

An alternative solution would consist in small portable computers like Ultra-Mobile PCs which evolve more quickly. There are several drawbacks consisting in the facts that the user has to look to the display and back if he wants to interact with the service. The navigation is more difficult as the screen and therefore the input device is quite small and gestures are not recognized. Also, the user does not have the advantage of having his hands free as he must hold the UMPC in his hand.

7.4.3.2 Navigation Through YOGA

Having looked at the device, the navigation through the service can be described. In principal, there are two input methods: gestures and voice.

Gestures serve the more important purpose, they are the real navigation tool through YOGA. To activate gesture mode, it is necessary to give a voice command like "gestures on". This circumvents accidental command execution when the user for example just wants to reach for a product. Gesture mode can be disabled by a "gestures off" voice command or it is disabled automatically after a certain time period like the "automatic key locking" feature on mobile phones. When in gesture mode, the user can select an item in his head-up display by holding his hand on the virtual position of the item and close his hand to a fist and open it again. To drag an item, the user virtually grabs the item with his hand, i.e. forms a fist, and moves his hand to the point the item is to be dragged to. Then, he opens his hand again and the item gets dropped. It is also possible to scroll through a list of products by moving the wide spread hand downwards - or upwards - over the list. Altogether, the described gestures are very intuitive and easy to learn as they are took from real world examples.

The second input method is voice. As mentioned above, it enables and disables gesture recognition. Besides, a speech recognition system can convert speech into a sequence of words. This way, a user can also send text messages

easily. According to [238], speech recognition for mobile devices will be adopted mainstream in the next two to five years.

Combining voice and gesture input, the user is provided with enough methods to be able to do everything that is needed. Just as important is the fact that the user does not have to get overstrained. As these two techniques are fairly intuitive, this point also receives enough attention.

7.4.3.3 Functionality of YOGA

As the user is now provided with the methods for navigating in YOGA, the implementation will be described. What does the user do and how does the system give feedback to him? These questions will be answered in the following section.

Before using YOGA, the user has to register on the online platform or via the device in order to set up his profile. He especially adjusts the importance of price versus social aspects and enters his affinities according to questions like "What sports do you do?" or "What hobbies do you have?". These parameters are necessary for computing the value of a product. When entering a retail store, he goes to the division where the product he likes to buy is located. Looking at a product for a certain amount of time, the RFID receiver and the camera scan it and request more information for it by sending the product identification code to YOGA. The platform looks up the title, the description and the image in the product database, finds the highest value where the product is available in a trusted online shop and it reads the tags that are associated with the product. By comparing the tags with the community's and the personal tags of the user and combining it with the price, the value for the product is computed. Then, similar products that fit equally good or better to the user's needs are detected by the product comparison technique. Having completed the search for information, the server sends the information for these products back to the user where it is displayed on the head-up display. The user now has all the information about his product and even better matched products without having done anything.

Now it is time for the user to react. First, if that product was accidentally not the one he was looking for he can reselect the product by gestures or by looking at another product. It should be noted, that in most situations this is not needed as the user is provided with information for similar products that fit better to his requirements. Therefore, it is not necessary to take a look at all products the retailer exhibits what can get quite annoying, but only at one of them. Second, the user can scroll through the list of suggested products and if he likes one he can see a detailed 3D view of it. As virtual worlds will emerge in the Internet, detailed virtual product images will be available for nearly every product. This view can be rotated, zoomed and thus inspected carefully and it helps the user to get an idea of the product. While looking through the list,

the device scans for nearby RFID codes and hence detects products that are both available in this store and shown in the list. When choosing one product that can be identified, an arrow in the head-up display leads the user to the position where it is located in the shop.

Sometimes, the user is not sure about what product has which advantage and he is worried about doing the wrong buying decision. But he can use the service of live consulting. While being in the shop, he asks YOGA for help on a product and the server searches for available users, preferred from his community, that can be called using the headset. After a call, he is supposed to rate the consultant to show other users the usefulness of advice from this user. By showing the rating box immediately after the call, it gets convenient for the user to do his selection and the problem of users not giving ratings is prevented.

In addition to telephone consulting, YOGA also searches for other users that are currently nearby and who also look for similar products. This functionality is implemented with the help of the GPS/Galileo system which sends the current position of the user to the YOGA server. The user is told that there is another user for example over the street and that he should talk to him and could perhaps go shopping together, because collaborative shopping is always more fun than alone and one does not get stuck in a decision so easily.

Finally, having found the product he wants to buy, he is provided with a list of the highest valued online shops. He chooses one shop where he wants to order and finalizes the ordering process. In the next years, systems will exist in the Internet that store confidential data in a central point. They provide online shops with the information that is needed if the customer approves the data transfer. This in addition to online payment services makes it easy to purchase online without having to register newly at each shop. The approval can be done via voice matching.

7.4.3.4 The YOGA Community

The only thing missing in the description of the service so far is the community around YOGA. As it has a great influence on this social price comparison service, it is essential that it is described.

Each user that wants to use the service has to register. This is necessary in order that everyone has his own profile with his individual preferences. The online platform can be accessed from everywhere, as it is available in the Internet, and it enables and motivates the users to communicate and to exchange knowledge and experiences about products. Several tools support this community, one of them is the emergence of sub-communities. Because not all users have the same opinion about lifestyle and product selection, it is evident that smaller groups are formed. The user can join several sub-communities and create new ones. Each is described with so-called tags that characterize the people who reside in it. Possible tag names are for example "teenager",

"shiny", "old-school" or "techie", the users can create new ones or choose from existing ones. In addition the users have a cloud of personal tags where they can describe their type of living and their character. These tags are used for the computation of the YOGA value for products as shown in 7.4.2.3 and thus are a powerful instrument to find the products the user wants to have. Another feature supporting the community consists in the user's contact list. He has friends that usually have similar interests and thus are very likely to have the same taste for product choice. Products that are rated from friends in one's contact list are weighted more than those from people that are not his friends or even not in his sub-community. This puts the emphasis on close friends and gives the user a homelike feeling.

By allowing users to visit the YOGA platform online, it is not only possible to bind the user more strongly to his social community, but also remind him of tasks that are due. For example after purchasing a product he should rate the product as well as the shop where he bought it, similar to the reminder in eBay for rating merchants[20]. Besides, users can look for products on the online platform without going to retailer stores although then the unique YOGA experience of feeling and testing the product in a retail store is not utilized. But this way, also pure online shoppers can be reached that are very enthusiastic about their online life and do not care about real life too much. They can play their part in the community by offering live consulting and communicate with other users while benefiting from product suggestions and value comparison.

All in all, the YOGA community is very diverse and this attracts all kind of people with disparate lifestyles and opinions. It also incorporates the user through lists of the most active users what will be described in more detail in section 7.5.3. Although only little has to be done to preserve the community, it is possible to put much effort into it, support friends and members and profit from the service.

7.4.4 Benefits for the Customer

The most important factor why a new product or service will succeed or prevail is based on the benefits for the user. At the time when a customer realizes that a certain product or service can really be helpful, the first step is done. Therefore it is necessary to point out why YOGA will be accepted and valuable for the customer.

Basically most of the ideas behind this service are not totally new and innovative inventions. The key features of YOGA like product comparison or the possibility to get help for buying decisions is known for years. Even the approach to offer personal recommendations to the customers is common today. But what really makes this kind of comparison a special shopping service is the unique combination of these improved elements. It picks up these basic ideas,

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[20]http://www.ebay.com

improves the convenience of every single aspect and combines them in a very concerted way.

Today no service in the Web is able to give as individual and personal recommendations as YOGA does with the value comparison. Therefore, YOGA really takes this kind of service to another level. By offering one very simple figure that can be split into the price of the product and a social factor, the customer immediately sees if the product will fit his personal needs and requirements. Through the profile and the ratings of his reference group YOGA is even able to tell him whether a certain product fits his style or not. And this can be done in a few seconds. Therefore, every user will not only receive very specific consulting but he additionally will safe a lot of time as he does not need to spend time on searching through uninteresting goods.

The next benefit lies in the comprehensive consulting of the user. YOGA offers a live consulting tool, which gives the customer the opportunity to get very personal and direct help. On the one hand this service is able to identify members of the YOGA community who are in the shop where the user is right now and on the other hand you can always call community members who have bought or have been interested in the product he is watching at the moment. Therefore, YOGA gives you the chance to ask every question you might have concerning the product and therefore receive a very detailed and individual consulting. The direct interaction and personal contact between the community members automatically lead to a more trustful recommendation and help more than what an anonymous salesman can offer.

Another important benefit for the user is due to the fact that YOGA is a very user-friendly service that is perfectly adapted to the shopping situation. As we know that the experience during a shopping spree at retailers can not be replaced or simulated this service perfectly adopts to this situation. By using the YOGA service with the augmented reality glasses the users will have the possibility to feel the haptics and quality of a certain product and do a price or value comparison at the same time. The augmented reality device does not require the hands of the customer. Therefore, he is free to do whatever he wants to do in the shop. He is not restricted by the use of this service.

Besides, the mobility and its user-friendliness is another simple reason why this new form of price comparison will be accepted. It is a very obvious user motive that is even true for all price comparison engines we know today. By using these services the customer wants to save money. Although YOGA has a lot more to offer than just a simple price comparison, saving money stays an important factor and a key benefit for the user.

All in all, YOGA will prevail because it is a unique combination of very individualized, personal, mobile, user-friendly and time and money saving consulting services.

7.4.5 Weaknesses of YOGA

Although the strengths, opportunities and benefits for the users of YOGA are very clear, there are also some things this service can not provide. This chapter will illustrate some weaknesses of this service to point out when this service meets a problem or reaches its limits.

Probably the most difficult task concerning the use of YOGA will lie in the acceptance of the retailers. YOGA offers a comparison of products that are located in online shops. Therefore, the retailers will have the status of an exhibitor and are only used as a source of information and inspiration by the YOGA-users. Only spontaneous and urgent purchases will be made at the retailers. At the end of a successful shopping tour with YOGA, the customer buys a product that perfectly fits his needs from an online shop. Consequently the retail shops could identify YOGA as a potential threat that takes away their customers. As the retailers can set up their own rules on their premises, they would probably forbid the use of such a price comparison engine. As a result YOGA will need a certain kind of rewarding system for the retail shops to ensure their support.

Another weakness is the fact that YOGA can not be used properly for every type of product. One of the strengths of YOGA lies in the possibility to explore a certain product in a shop and simultaneously make a price or value comparison. Therefore the use of YOGA is made for the comparison of material products. Although it is possible to compare the service e.g. of two insurances on your head-up display, you will not really profit from using the augmented reality device. The same problem occurs with decaying goods like fruits. Therefore, the full service can only be offered for material goods.

The third weakness that occurs with the use of YOGA is the multiple registration at the online shops. Buying things online means that the users of YOGA will have to register at many different shops. This automatically demands a certain effort from the customers which could cause the user to refuse the use of YOGA. But this problem will probably be solved by the initiation of a single sign-on procedure which will provide the future user with one net identity and therefore only one single password. This would be a similar service to what Google established with Google Checkout. This kind of net service that could be run by a third party provider would definitely solve this problem.

7.5 Business Model

The following sections are intended to highlight the YOGA project under the perspective for investors. However, this business plan is not a quantitative approach to the implementation of YOGA, but a qualitative one. It discusses important milestones of the project, key features and means of income. But it abstains from detailed calculations as e.g. cash flows, revenues and profits

as a forecast would cover a planning interval of rather five years around the year 2020, what would be a pretty unreliable prediction. At the beginning of the project it is important to become aware of the fundamental objectives. Therefore the mission statements of the report's authors' are framed as below:

YOGA wants to

- help users in their personal buying decision,

- offer users the bundled advantages of offline buying experiences along with the convenience of online price comparison,

- interweave communities and their excellence in providing an assortment of social information for buying decisions,

- not only offer but organize information expediently for the users,

- ease product exchange and

- provide a transparent buying platform for participating users as well as a lucid selling hub for partaking shops and exhibitors.

7.5.1 Classification of the Service

Consequently, YOGA is a mediation service for interests of users and sellers. The last years were marked by the rise of online shops, mostly offering lower prices of merchandises in comparison to local stores. The selling numbers of local retailers have decreased incipiently, but afterwards leveled off on a stable state. In the meantime the growth rate of online stores crossed its zenith and started to slacken incisively. It appears that online and offline stores have both specific dissimilar features and that particular groups of buyers value them differently, considering the product they want to acquire. The impasse consists of the uncertainty of offline consumers whether they get a good price on the one side and the vagueness for online buyers about the product quality and promised properties on the other side.

Therefore, one core accomplishment of YOGA is to converge both markets in a harmonizing way to exit this dilemma. As offline buying experience still seems indispensable for many buyers, YOGA wants to give the users the possibility to browse physically for products in retailers and subsequently to buy online. Furthermore, not only national but all international prices are instantly taken into consideration. Not only Internet based but also offline search costs are thus reduced dramatically. The seminal comprehension of individual and group specific preferences into the buying procedure is the novel ingredient. It allows to augment the allocated efficiency and to make buyers be better off by using the community experiences and preferences. As a result the decision is not longer obtained by regarding the price but by an automatically generated utility value including all preferences with regard to product, seller and social penchants.

This bears witness of rational, considering price, as well as emotional, i.e. haptic and preferences, buying decisions. Thus, YOGA does not only offer social price but product comparison, as it recommends not only the lowest price for an item but the most valuable and worth the money product. The efficient compilation, conditioning and presentation of price information and various predilections - may they be individual or collective - is the major achievement of the platform and is attained by the usage of most recent complementary technologies. YOGA operates on a two sided market, as it brings together two sets of users, buyers and sellers, both attracting each other in order to exchange items against means of payment [261].

7.5.2 Target Group

By the year 2020, the YOGA solution will mainly be used by early adopters, women and men that are open for new kinds of services. Generally they are very socially interactive, like to live in the offline as well as in the online world and value social advice. They are unconventional in their course of action and are in favor of multi-optionality and flexibility. The service is designed for multimedia enthusiasts who use the latest communication devices intensively not only for professional but also for private purposes. By the majority they are well educated and have a positive attitude towards the future. They have an average to above-average income, are price conscious as well as spontaneous in their buying behavior. Shopping is not only a way of receiving goods, but of discovering new solutions for them and of collecting impression and stimulation for their lifestyle. They are familiar with the usage of the latest technology and applications from childhood on and do not hesitate to try the latest consumer electronics. Consequently, they posses the latest communication devices on which they can run the service. The target group will therefore consist of people under 40 years old. They are always searching for uniqueness, excitement and interaction. Using the Sinus-Milieu scheme, we would classify them as the Modern Performer and Experimentalist group [263].

Since our service is designed to be used very intuitively for everyone, also other older or more conservative participation groups may follow later on. However, in 2020 they will not constitute the strongest group as they initially hesitate to use new services and only switch to them when they are already well established.

7.5.3 Incentives for User Participation and Rewarding System for Retailers

Of course YOGA can only be beneficial if users are willing to provide experience and personal information; ingredients that are needed to compute personalized product values. Consequently, motivation for users committing knowledge to the platform must be provided. Therefore, the service ranks consumers anent

the number of supportive information they are conveying. Active users are the main asset for the superiority of the service and rewarded with special platform credits. The facts may cover experiences, social ratings and pundit consulting. If they share their experience with their social interest groups via reviews and recommendations they get credits as well. These clues help YOGA to figure their personal and social value scheme. Finally, they will also be rewarded if they directly counsel other users with their expertise they may have acquired in a particular product field. In the end, all credits are monthly added up and the users are ranked in different fields of product segments. A certain percentage of the revenues are distributed over each product field's top ten users. This also encourages active users to bandy the service under their friends as this accretes overall revenues and thus the remuneration premiums. The rewarding competition begins anew each month.

On the other hand both kind of sellers, online sellers as well as retailers, have to work together with YOGA to make this service possible. The service favors offline browsing combined with online buying and must consequently proffer an interest compensation mechanism, ensuring that both sellers will cooperate. The easier party to integrate into the YOGA idea are the online sellers. Their business model already fits in the system and has been proven for years. The general idea is to communicate their products, prices and stock quantities to online price comparison sites with the intention of receiving orders. YOGA easily connects them with a large group of potential buyers, which is interesting especially for small online shops as they are facing the same conditions as big players inside the platform. But also big online wholesalers will profit from the vast user base.

Yet the business design of local retailers has to be reconfigured. Its most important advantage is to easily reach the local audience. Only retailers can offer the possibility of touching, scenting and using the real physical item. Consequently a large number of consumers like to browse their shops in order to try products, but in the meantime their purchase numbers are already in decline. Many retailers complain about the fact that compared to online shops they face higher rental, consultancy and employee costs and are therefore less competitive. Hence lots of visitors only try the products there and afterwards buy online; a change which cannot be banned by retailers. YOGA tries to turn this drawback into a vantage for local retailers. It does not stop but enforces this change and combines it with a new rewarding system for exhibiting retailers. If a consumer buys a product online - after having regarded the products at a retailer - the retailer gets a befitting financial reward from the online shop that finally shipped the item [251]. The platform is international and thus the final shipping shop may be settled anywhere around the globe. In a case of customer product complaint, the consumer might bring along the dysfunctional product to a local retailer who serves as a local service point for manufacturers. Retailers are also remunerated by producers for this service. The sustainable

impact of the alteration of established retailers cannot be underestimated. In fact it implies that the whole business focus of local retailers might change from selling to marketing and service. YOGA turns the Win-Lose situation - online shops versus local retailers - in a Win-Win one, since every kind of seller profits from YOGA.

7.5.4 Revenue Sources

As we already lined up the additional utility for consumers, vendors and exhibitors and their incentives, we now want to pinpoint the profitability of the project. As income sources we do not want to charge any basic or membership fees for buyers as well as sellers. These kinds of base charges are very likely to retain individuals from joining the platform, as they would have to pay in the beginning without receiving any benefit. The charge is also not vindicable over fixed expenses, as they are extremely low in comparison to the trading volume. In order to foreclose any entry barrier on both parts of the two sided market, YOGA consequently avoids any periodical dues or access fees.

Hence only genuine transactions will be assessed. This simple and variable levy system bears a lot of advantages with regard to seller and user incentives, flexibility and administration for the platform. As mentioned above, no thresholds are built up for users and they face a transparent and inviting fee structure. This also comes along with a running simplicity for the platform, as the outstanding amounts do not have to be encashed periodically. As transactions occur and as it is intended to work together with a payment provider, at the moment the ordered item is paid, the service's payment provider automatically splits the adequate part of the payment flow to YOGA. No debt collection services as well as requests for pay will be needed. A variable fee model also has the benefit that revenues instantly grow with the diffusion and increasing turnover of the service.

After choosing the variable fee scheme, the question which element of the two sided market will be charged for our service - consumer, vendor or both of them - however remains. YOGA understands itself as a service who is strongly consumer orientated. Therefore it tries to make buying as comfortable and low-priced as possible and does not charge any transaction fees from them. The business philosophy is that if a lot of consumers on the one side of the market can be attracted and accumulated and a strong market position can be got there, YOGA will also be very enticing for sellers on the other side of the market. Consequently, they are willing to pay the transaction costs, as they can access a great market thereby. Hence mainly online shop sellers are charged in the form of commission fees. These fees are rather low, but considering the volume of market transactions over YOGA, the generated revenues will be huge.

Another source of income will consist in the provision of special manufacturers' information. If the user is browsing in a local retailer and examines a product he

is interested in, he can request a product trailer or special product information data. This is an advertisement on demand service that gives the producer the chance to explain and to promote his product, what will help them to enhance his product sales. As manufacturers are the main beneficiary of this service, the producer will be charged for the supply of this information. In short, online shops and producers are the core revenue sources. The basic transaction costs for buyers are zero, which is a strong pro for buying via YOGA.

7.5.5 Value Added Services

In addition, the platform can offer special services to individual users matching their personal requests. For example undecided buyers can ask experts for their advices. YOGA then connects them on- or offline with adapted users who are willing to share their expertise with them. These experts offer consulting advice in a professional manner and make their service available for the entire community. They may even earn their livelihood by offering these services to other consumers. They have to be qualified in their field of expertise and are rated by the community as well. They are directly paid by users who want to get this personalized premium service and YOGA provides the platform and community for that. For this reason, a share of their income arousing from this premium service is kept back by YOGA.

Other services users can access are professional product reviews authored by magazines and professional test laboratories. The information is also billable for the demanding user. These both premium services are the only revenues source generated by YOGA buyers and are not necessary for purchasing.

7.5.6 Competition Strategy

Price comparison by now is a well developed service which is used by a large user group. The question is how to attain a crucial market share and maintain it. It is also the question how to defense this novel solution from other competitors and how to achieve and preserve enduring market advantages for it. As being a service provider in a two sided market, it is essential to get a deciding market power in at least one of these market sides.

In the beginning, it seems easier to reach the goal on the consumer side through a network lock-in effect, as most of YOGA's promising innovations pertain to that party. Sellers historically hold a variety of different distribution channels and thus it will be more difficult to reach a dominant position on the vendor side. However if once a prevailing sway towards buyers is reached, this will also come along with a vertical leverage effect on the selling market side. YOGA's main pivotal assets on the consumer side are its conclusive rootage on a vigorous community, the value product comparison framework along with its low entry barrier, achieved through the intuitive appliance and the transparent

charging scheme. Regarding this assets it becomes clear that many of them might be difficult to perpetuate from other competitors or close substitutional services. Only the value comparison scheme, the user interface or the business model idea could be saved by patents. But it would be very easy to dodge the patents by slightly altering the YOGA idea or to elude patent regulations by settling the service's administration in unlegislated countries. The simplest way of establishing a persistent competitive advantage therefore seems to concentrate on the implementation and dispersal of the community platform. This business model is already aligned with effortlessly reaching a huge user crowd. But it has to be said that also barriers for competitors to imitate the business model are rather low. Therefore, it is indispensable to quickly reach a critical user basis to allow the community to exert positive external networks effects, as the user utility increases exponentially according the Reed's law [258]. YOGA therefore has to avail the first mover effect in the new social product comparison market and accumulate the biggest network. Therefore, penetration marketing has to be used in order to enhance awareness and popularity of the services and to grow faster than its competitors.

Furthermore, it is essential that the clients have confidence in the platform and its independence from special producer or retailer interests. If this non-partisan attitude is doubted, consumers will not trust in an unbiased value rating system any longer. So YOGA renounces possible revenue sources which arise from direct advertising or the compilation and selling of buyer user profiles. Building a strong trade name, expanding the market influence and establishing close relationships with importers, producers and wholesalers may also result in low long-run purchase prices, what constitutes a benefit that can be passed towards the users.

7.5.7 Strategic Partnerships and Prospects

YOGA's business activities are focused only on the activities where it is able to afford a outstanding quality - its core competences. Nevertheless it is always necessary to look for strategic partnerships that also have built expertise in different fields closely connected to the YOGA system. Especially in the field of payment and distribution, alliances should be built up. These partnerships become more important as the platform transaction numbers increase and can be seen as a consequential extension of the service. The authors would like to offer YOGA's consumers a bundle of three distinctive competences, EasyFind, EasyPay and EasyGet:

- EasyFind

  The first pillar of the triad - EasyFind - is attached to YOGA core expertise of finding most suitable products. To offer EasyPay and EasyGet partnerships have to be established. In the end, all services should work together smoothly and invisible for buyers.

- EasyPay

  A cooperation with a payment service supplier could ease payment trans-
  actions for the clients, and is termed EasyPay. Buyers and sellers only
  have to open one online payment account which is used when they are
  buying online via YOGA. It would not be necessary to declare account
  details any longer after a purchased acquisition as this partner routinely
  runs all financial clearing processes.

- EasyGet

  It is also advantageous to set up strategic partnerships with a worldwide
  operating logistic service provider; the EasyGet pillar. Considering the
  huge number of transactions generated via YOGA, this might be inter-
  esting for both sides as well. The volume of orders furnishes distributors
  with immense absolute cost advantages, what could permit new, more
  transparent shipping charge models. For example the shipping costs for
  every item sold through the service could be evanescently small consid-
  ering its market worth and have to be paid by the selling online shop.
  This could be marketed as ZeroCostsShipping, because costs are indeed
  rather low and not specified or charged from buyers any longer. Besides
  the marketing argument, YOGA could also get the possibility of exactly
  monitoring the distribution channel's quality.

7.6 Conclusion

To conclude, some aspects of YOGA will be picked up and implicated on
currently existing products. But first it is necessary to have a look at the drivers
again. That online shopping grows is quite predictable, but the question remains
how many people will continue shopping in retail stores. There are positive
indications that real shops will still exist in the year 2020, but this is not for
sure. Also, privacy concerns and the free rider problem are risks that offense
online shopping and online communities. In spite of these risks, the authors of
the report are sure that the future of price comparison will be social. Especially
the user demands for individualized products, touching and feeling products and
interaction in communities exceed the risks by far. Besides, many customers
are not aware of the privacy risks or tolerate them in favor of gained advantages
of YOGA. It provides product comparison which is necessary when so many
different individualized products exist that can be compared. This is a huge
gain of information over traditional price comparison, because not only single
products can be likened but also similar products that not necessarily belong
to the same product category. Furthermore, the value of a product is computed
individually for each person which bundles customized product recommendation
and ranking of products. The value embodies the usefulness for the customer

as well as the price which simplifies the decision making process tremendously. Moreover, the user is very well consulted. He has several possibilities to gain usage information and knowledge about products, including the most important option namely "Live consulting". Together with the user-friendliness of the augmented reality glasses with head-up display, gesture recognition and speech input, there is no doubt that YOGA will thrive. Also the business model suggests the success of this service. First, the revenue sources are clear and reliable as customers will directly buy over the platform because of simplicity. Second, the value added services provide prosperous ways of gaining more users and revenues. Also, not only the users get benefits but also the retailer stores are rewarded in order to receive their active encouragement. Altogether, YOGA is a powerful combination of all kinds of features and thus it will succeed.

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8

Chapter 8

Me Label - The Online Fashion Boutique of 2020

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The online fashion industry is influenced by a number of different driving factors, namely the customer, the shop, the designer, legal issues, developments in technology, the market development and competitors. By looking at the future development of these drivers, one can see that especially the possibility for self-actualization of the users together with an opportunity to interact socially, the over-aging of our society and the development of a digital subculture needs to be catered for by a future online fashion boutique in order to satisfy the customer needs. This can be achieved trough various online events and by creating a platform where everybody can present their own fashion that was designed online and is produced by using mass customization techniques. Our proposed shop SaSeO offers a solution to all these developments and the problems connected to them.

8.1 Introduction

Developments in the Internet and in technology have speeded up recently. Nowadays the user does not only want to search the Web for information, but also wants to contribute actively to it. This results in many Web-blogs and Wikis being set-up every day. But this development has just started. Where there are only very few users that are actively contributing to such communities today, the future might see almost everybody actively shaping the Internet. As the fashion industry is heavily dependent on its customers and the Internet offers interesting new outlet opportunities for them, we will try to give an overview of how the fashion industry might react to the developments of the Web within the next years up to the year 2020 with a focus on the online outlets.

To be able to do such an outlook, it is important to see what factors are influencing the development of the fashion and online industry. The key drivers that we have identified in this context are based on the development of the customer base, namely the over-aging of our society and the trend towards single households with a high spending power. This will lead to a much higher focus on quality of life and self-realization. Together with a rise in the number of Internet users and the construction of a global digital subculture, these are challenges that e-shops have to challenge. They might do so by focusing on the customer even more than today by implementing information management systems in order to generate revenue and therefore securing their survival. At the same time they will have to account for the need of the user to differentiate himself. This might be done by offering individualized products by the means of mass customization.

For the fashion industry, the designer is one of the most important assets. He is responsible for creating trends that the customer wants to buy. Their status might be attacked by the advent of the new mass customized products where the user can be his own designer.

The development of new technologies such as the always-on mobile handset, human-computer interfaces and the customer avatar to try on the fashion items instantly together with the semantic web to access data quickly on the Internet will aid the customer to differentiate himself from the rest of the population.

8.2 Key Influences on the Future Fashion Market

8.2.1 Customer

When talking about the customer of an online boutique in 2020, two levels have to be analyzed. One is the social background or better the changes in society that might influence the customer's preferences and needs for the future, the other is the customer himself. Internet user structure will take center stage and points like different Internet practices and online fashion are tackled.

8.2.1.1 Development of the Society

For the German society four main value ranks are observed: first partnership and children, second self-realization and free time, third gender equality and fourth income and wealth [281]. Concerning the first point, single households, temporary partnerships and patchwork families will dominate the social background of the majority of the people in the future. Classical families (father, mother, two children) will become rare [279] as e.g. a higher job-mobility is needed and the number of children desired will still lie at around 1.7. Germany will have a large silver economy meaning that the group of people in the generation 50+ increases [299]. Part of the characteristics of this generation will be a huge buying power, time to spend and the usage of the Internet not only for research interests but also for communication and e-commerce [305]. Due to these people the health industry is growing, wellness and quality of life take center stage [307]. Generally e-communication will be frequent and networks providing communication platforms (on-/offline) will be important. Social topics and general issues are part of the future online-discussions; opinions and experiences about pollution, politics or education will be exchanged for example. As there is more information available the concern about buying a social product will raise. Trends like Lohas (Lifestyle of Health and Sustainability) from the US, are going to spread fast and lead to greater balance between working life and free time [308]. Genders are more equal in about 20 years, the fact becomes visible in the business world as well as at home. The same expectations will be used for men and women and the government helps to combine family and job by offering places in day-care centers [281]. Concerning jobs competition will increase due to globalization and mobilization. People have to be more flexible; if they have a job they tend to work harder and earn more than now; the gap between poor and wealthy will expand [307]. Costs for retirement provisions will be a huge share in the monthly budgets.

In addition to the social values international exchange will require more openness for changes and trends from outside. Innovations develop and spread fast in the future e.g. due to the already mentioned communication. Fast adoption and flexibility will be necessary for being up to date. In Germany there will probably also be a new variety of people from different countries as the population itself declines and immigrants are needed.

8.2.1.2 Composition of the Internet Users

The percentage of the Internet-user will still raise, especially in the group of the generation 50+ as they got used to the Internet during their working life. Regional or gender differences in the use of the Internet will little by little disappear, as for example technical topics will become more popular among female users [292]. Low budget and education remain critical points for not having access to the Internet also in the future. Although in case of the budget

the problem will be more or less tackled via Internet access over mobile phones, a technology with a huge diffusion rate and cheaper prices than computers. New priorities in education will also help to reduce the gap between on- and offline and lead to a growth of Internet users as well. Overall it can be concluded that almost all ages or simply all kinds of groups of the society will be represented on the Internet.

For the use of the Internet another line can be drawn between digital natives and digital immigrants. Digital natives are people, who grew up with the use of the Internet, whereas digital immigrants became fascinated at a later point of their lives and adopted many or most aspects of the new technology [311]. Digital immigrants are part of the generation 50+ in the future and a huge group of consumers on the Internet. But other than the digital natives they will mostly be only users. Digital natives on the other hand are often going to have a more active role, depending on their involvement or priorities they will be designer, producer or seller as well [285]. For the social web three trends are expected to occur. First, a higher interaction between customers and enterprises, and second, the spread or source of economical or social changes out of the communities and a shift of social activities to the Internet [280].

Personal online networks keep growing, people search for communication and interaction platforms and communicate via networks easily across boundaries. Communication provides the possibility to adapt faster to changes. As people will have access to information and a chance to discuss questions a live long learning process for upcoming developments will be supported in the future. The location factor will also be important for customers, as offers can be localized and content with correlation to the direct environment will gain importance. Thus in a connected world the global village will have a fixed share. Popular social web services in the future will be amongst others information driven offers such as reference books or evaluation forums [280]. Other important factors for online shopping are and will be e.g. fast product research, price comparison, in time delivery or live-chats. There will also be a shift from the occasional buyers to regular consumers, as personal advice and security will increase - two criteria that customers criticize at online shopping today [289].

Community fashions play an important role; depending on the communities people join, they dress differently; e.g. business fashion, sports fashion and trend fashions are part of the common fashion. But there are also more eccentric fashions and a faster change due to easy, regular communication. Today most Germans prefer to buy fashion offline as visual presentation and physical interaction are important. But with the technical improvements and innovations the virtual product presentation will catch up [273].

The time spend on the Internet increased e.g. due to personal networks or advantages like the saving of time while shopping online. With increasing involvement in fashion, as already mentioned, there will be users who create their own designs and styles. Thus high involvement can be seen in an active/creative

way where digital natives dominate the scene. E-shops have to be prepared for them by offering e.g. design platforms. Such users are of great value for the e-shops as they are able to generate new trends. But involvement can take place also in a more passive way via recommendation. Here digital immigrants will probably be more represented and as they are a huge consumer group with a high buying power e-shops have to keep them in mind as well. As recommendation will be important in general, e-shops or sellers should offer different recommendation categories like expert opinion or personal favorites.

8.2.2 Shop

In order to be able to make predictions concerning online boutiques of the future it is important to look at several aspects which will generally influence shops in 2020 irrespective of whether they operate online or not.

8.2.2.1 Customers

Also in 2020 the main driving force behind shops are still the customers. Nowadays shops are limited in their possibilities concerning the amount and type of products offered to the customer. Therefore only certain groups of customers are pleased with an offer of one shop. But as an ambition to maximize the profit is still present in the future, shops will have to adapt on all possible groups of customers and satisfy all their wishes regardless of the fact whether these products are available directly in this shop or not. It means that in 2020 there is a need for providing unique solutions and target value specific offerings and stores will have to take structural changes into consideration in order to fulfill individual customer needs [278]. Additionally customers will still attach great importance to an individual advising as it contributes enormously to the satisfied shopping experience [326]. Due to a complete adaption on customers it is important for a store to find out the weak points that lead to the dissatisfaction of people. Therefore a future shop is ready to collect at any point of the shopping process feedback and new ideas for improvements from the customers and to store every bit of this information, analyze it and this way take customer driven decision concerning the changes of certain selling processes.

8.2.2.2 Information Management

Related to customer needs is the aspect of handling and managing information. Today many online shops do not care about information management but it is for sure that those shops will not able to survive in 2020 without a sophisticated system for managing information. Each customer action in a shop represents an important information to the shop owner that can be used for analyzing and this way understanding wishes and customs of the users. Detailed customer

information facilitates systematic use of promotion and services and implies a cost reduction as resources are used more efficiently [297]. Future stores have huge data warehouses storing business relevant information for a long time. Today many managers take decision upon their assumptions and best practices, but in future the data driven decision process will be predominant. Detailed user information will be the basis for an increase in revenues. Key performance indicators like conversion and revenue per visit and profit per order or per customers will be the main key performance indicators that will dominate the decision making process [278].

8.2.2.3 Products

Providing a customer with products he is satisfied with is quite difficult as everybody possesses his individual perception and imagination. But nowadays products have low level of user customization and combination facility. Products in 2020 have very high level of modularity and can therefore be combined and configured upon wishes of the customer. For example a jacket could consist of several undependable parts of textile which could be combined together by the customer. This way by 2020 a customer will even become a designer because he will have the possibility to combine and design his own clothes [298]. Moreover buying products will become an experience as all products will have background information stoked to it. For example shoes could have such information like how running shoes are made, which producing techniques are used during the production and how to take care of them to maintain long lifetime. So in future shopping will not only be buying things but also improving ones skills and expanding ones knowledge.

8.2.3 Designer

As a fashion boutique is in the first instance about designers who create fashion the major developments in this professional group have to be discussed. Nowadays professional fashion designers dominate the market with their products, but in 2020 this market will experience some tremendous changes as individuals will access the fashion market. Professionals will have to adopt on this changes and the way and place of communication between these two groups will be affected.

   As fashion is in fact created not for professional designers themselves but merely for customers it is obvious that there are a lot of individuals who are well informed about the fashion needs and expectations of people and would like to design their own fashion and bring it to the market. But nowadays there are unfortunately various barriers for doing this as there are simply not enough tools for creating own fashion and additionally an individual has not enough funds to bring his own product to market as an own shop is needed. In 2020 the customer is expected to be completely integrated in the fashion design

process. Technology developments like Avatars and improved human-computer interfaces provide amateur designers with sophisticated tools to create their own fashion virtually without a lot of effort. Due to increased modularity of products clothes are expected to be created in a modular way by combining and configuring various textile components. Additionally future online shops are organized in a manner that they consist of multiple shops and this way a customer can create his own virtual space where he can present and sell his products.

The fashion market nowadays consists of few very famous professional designers like Giorgio Armani and Christian Dior which are very exclusive but well known all over the world and many fashion designers and labels which address the main masses but only have a limited influence on the global market. But in 2020 these fashion designer groups will have to be adapted on one new group that will reduce their market share and could even be a seriously taken threat, the customers. Due to this fact the role of professional designers will change basically as they will not only have to design fashion but also think about selling it on the global market. In 2020 a professional designer is an artist and a seller as well [325].

Famous professional fashion designers like Karl Lagerfeld and Calvin Klein are rumored to design utopian clothes which are not intended for everyone. But as amateur designers will find their way into the global fashion market, the professional designers will have to adopt on a co-existence with them and maybe react on the needs of 'normal masses' and accommodate their style on customers' needs and liking. On the other hand as amateur designers usually tend to take a leaf out of professional designer's books, they will also in future tend to imitate and integrate these unconventional ideas of the professionals in their designs. Therefore virtual boutiques in 2020 are not only the place for selling and buying fashion. It is the location where amateur designers and professional designers meet together, co-exist and try to impress the customers. But what is even more important is that future online boutiques give these two groups of designers the potential to inspire each other and this way to create an even more exciting fashion as it is the case today. In future virtual boutiques will stimulate the synergy effects between individuals and professionals.

All these developments can already be observed in the online game Second Life where players can create their virtual shops, design clothes and try them out. Fashion designers like American Apparel Inc. and Adidas have already discovered this virtual market and sell their products there. "Because Second Life creators own their products and can sell them, the game has attracted both professional designers and amateur designers" says Linden spokesman Catherine Smith [300].

8.2.4 Legal Issues

8.2.4.1 Intellectual Property

The existing national laws concerning intellectual property are harmonized on an international basis in the future [294]. Taking the situation of patent protection for computer software related inventions as an example, the Japanese, European and US regulations are discussed and compared at the moment to reach consistency [274].

China and India will develop further, they will both respect intellectual property and prosecute infringements. As they generate their own products in the future, China as well as India has a great interest in protecting their inventions, too [275]. In general the WIPO (World Intellectual Property Organization) as a specialized agency of the United Nations which is going to develop a balanced and accessible international intellectual property (IP) system, will ensures e.g. the save border-crossing of protected goods and services [324]. Picking up the case of software patents again, business ideas and processes in the EU might then as in the US be enough to get monopoly claims [317]. Fees like the ones for the usage of a mouse click in an online order form, or an avatar as described in the European Patent EP1537495: 'Improved Communication Using Avatar's' will have to be paid. For e-shops copy right as a worldwide intellectual property protection will ensures the exclusive right to control reproduction or adaptation of the concept.

8.2.4.2 e-Government - the Government on the Internet

The government will create new contact points for interaction due to e.g. the integration of technical systems and will be much more present on the Internet then today. In addition to on line elections or political discussions and speeches in the future the eGovernment develops new services. To facilitate the everyday use of the Internet event-driven agents and avatars will be offered that help to search for information without regular interaction with the user. The agent as a service of the eGovernment portends to deadlines, changes in laws and regulations, checks offers (contract), intellectual property, etc. Help will also be provided for complex, abstract problems and questions with assignments, allowances and legal topics which are amongst others interesting in the context of online transactions. Proactive services of the eGovernment will be e.g. information about important events or product information that might be relevant for consumers. The new role of the government will lead to integration into activity networks, organizations, co-operations and interactions and to support of participants in the future [322].

8.2.4.3 New Regulations and Data Security

Technical improvements and standardization will lead to more security and transparency on the Internet. Data security plays and will play an important role as more personal information will be given. Online identities will be widespread and new regulations have to be made concerning the relationship between and the abilities of such identities. Conditions will be imposed and standardized that an online identity has to fulfill in order to identify the real person behind. Registration codes e.g. may ensure the uniqueness of an identity. Interactions between the identities will be tackled, too, on different levels such as social or economical [320]. Thus questions like the ability or fields where an online identity can represent a real person have to be fixed in the future as well as questions of liability or responsibility. The online identities will help the e-shops to identify a customer and in case of crime to track the line back to a real person. As national law will be harmonized at least at the level of the EU, regulations for transactions are transparent and known. New forms of cross country co-operations are possible in the future and will help social commerce shops to interact and work together with business partners in an efficient way.

8.2.5 Technology

We foresee a trend which we put into the phrase *The Daily Life Goes Online*, that means that nearly every action we do in the future is affected in some way by the Internet [293, 296]. Most of the mentioned technologies and developments do not influence the online fashion Boutique in a direct way. Furthermore, and that is the important point, they lead to a greater acceptance of Internet and computer for daily life processes. This is especially for social shopping sites of a great importance because they need many experienced and active users to come up with high quality services. Beside these enablers, social fashion boutique will benefit from the developments of the semantic web and Home Technologies as well.

8.2.5.1 Avatar

At the moment everybody associates Avatars as ones graphical representatives in computer games, especially in so-called massive online multi-player games like World of Warcraft or the actively discussed Second Life. In the future, an Avatar is no longer bound to a special game, service or website, furthermore it is a conglomerate of different technologies. The Avatar in 2020 ascended to one's personal Online representative for real life belongings. To archive that, there is a need for an easy to use, feature-rich and secure identification system, like Microsoft's vision for an identity Meta-system [304]. This point is very important, because then it is guaranteed that a special person is behind a corresponding avatar and, for example, prevents the user from phishing attacks

and similar abuse. So it is possible to close contracts with the same conditions as in real life or even to vote online, as already mentioned in Chapter 8.2.4. Besides this, a further benefit of the Avatar is that it bundles all ways of contacting somebody in one single point. The only contact information needed is the Avatar itself. Then the avatar decides which device is feasible for the type of communication regardless it is a voice call, an email or an instant messaging attempt. First approaches already seen today like Instant Messengers with the possibility of sending SMS or initiate Voice Calls with the Nickname as only needed contact information. Another example is ENUM, providing a translation from a telephone number to DNS-entries, but it is not yet far enough developed to be used in daily life. There are many problems to solve, for example the legal issue who is responsible for the assignment of these uniformed contact information [303], but due to the irresistible convergence of telephony and Internet, there will be services linking them together.

8.2.5.2 Mobile Devices

In 2020 mobile devices play an even more important role than they do nowadays. So believes for example Erkki Ormala, Vice President for Technology and Policy at Nokia, that already in 2015, 5 billion people will be reachable by mobile phones [287]. But not only the amount of cell phones will increase, especially the type of usage will change. We foresee the trend of usage away from only voice calls towards an always Internet enabled handset. This is indicated by the high penetration of 3G devices, which will in 2010 already available to 1 billion people worldwide [286]. Another study says that the sales generated by mobile media will grow unstoppable, which can be seen as further indicator [282]. That is why in 2020 applications requiring always online mobile devices are not longer gadgets for technology buffs, they become a common feature [323].

Beside the interconnection possibilities the calculation power and storage capacity of mobile devices in 2020 is a multiple greater then high-end personal computers nowadays [321]. Another point is that the additional features a Mobile device offers have improved much. The included camera will take photos and video clips in noteworthy quality. Together with the fast Internet connection, features like video calls are no longer unhandy gadgets, they are the preferred way of communication. Furthermore Mobile payment with narrow field communications has its breakthrough in Europe. Nowadays similar techniques are available, and in Japan already heavily used, but in European countries, especially in Germany they are encountered with skepticism [321].

8.2.5.3 Human-Computer Interfaces

Nowadays the possibilities to operate a computer are limited mainly to the keyboard and mouse. This is a highly unsatisfying situation, because it is

not very intuitive. In 2020 there are a multitude of new intuitive methods for generating input and handle the received information. Speech recognition, which already is working quite fine, will be no longer an exotic method for input, it will be built-in in nearly every device and enables a great improvement of comfort [312]. Also disabled people will receive a better chance to operate computer as efficient as non-disabled people.

The next big topic is that in 2020 computers are able to understand gestures of the users. This enables the computer to many people who are nowadays over-challenged with it. Today, for example, first developments into this direction can be seen with the controller of Nintendo Wii. Or to give another example, Microsoft has presented "surface" a table with integrated display, controlled just by moving one's hands and fingers over the display which leads to an extremely intuitive way of controlling [277]. Nowadays, these methods are feasible for some very special functions, but in 2020 they are supporting the user in every kind of work at the computer.

Furthermore the user is no longer confronted with a two-dimensional solid desktop. Rather he has the feasibility of three-dimensional graphics user interfaces allowing him to sort and handle his information. For example there launched a early version of a three-dimensional browser, spacetime[1], enabling easy information handling features. But most of these features are limited to some popular websites and are not applicable to other pages. In 2020 this limitation are obsolete and together with a gesture-understanding computer the user can easily handle a huge amount of information without losing the overview. In addition new Monitor technologies allowing a realistic 3-D illustration of the scenery without needing special glasses [315], as already shown with the prototype "Free2C" from the Fraunhofer Institute [272], will be common in 2020.

8.2.5.4 Semantic Web

The amount of data available in the Internet doubles every year, and it is very likely that this rate continuous in the future [306], or becomes even faster [291]. But anyway, in 2020 mankind will be flooded by an extreme amount of data. To make relevant Information out of this data-pool accessible, the semantic web is needed. With this technique it is possible to recognize semantic coherence and thereby help to filter relevant from irrelevant Information. In 2020 the meta-data used by the semantic web is generated by "intelligent" automated tools. Even today there are methods for classifying the content of websites, for example like in [310, 316]. Such methods will be available not only for text, also for other media like image data. For example, semi-automated methods for generating meta-data for pictures taken with a mobile device are already existing [314]. The mentioned methods are not perfected enough, because for example

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[1]http://www.spacetime.com

the classification rate is too low. But in 2020 they has improved enough, so there is no need for humans entering the meta-data by hand. That is why these information are available for nearly every sort of data with the consequence that all these processed data can be compared, because the computer understands their meaning. This feature is extremely important for an online fashion shop, because clothes do not possess clear-cut nomenclatures like for example a digital camera. So only with the semantic web and the meta-information available it will be possible to compare and find similar clothes or shoes and provide the chance to compare them. Nova Spivack sums the Web in 2020 up with: "Web 3.0 will combine the Semantic Web with social media, enabling a new generation of richer, more shareable, mashable content." [309]

8.2.5.5 Home Technology

In 2020 the face of Home Technology will have changed much. Beside the advances of home entertainment like television and the ubiquitous computer, which cross-links every part of a house together to a single network, for a fashion boutique is especially one topic of immense importance: the mirror! Because it is to a certain extent the interface mediating between fashion and customer. In this domain are currently many prototypes developed like the Philips MiraVison[2], an intelligent bathroom mirror. It allows watching TV or the weather forecast while getting ready for the day. The next step in this development leads to the virtual mirror. This mirror allows in 2020 to try on clothes, without having them available by means of projection techniques. In Bloomingdale's in New York there is a very early prototype installed, but there are various inadequacies, for example the clothes are looking very static and not real enough. But there are already nowadays ideas to cope with these problems [283], and in 2020 this techniques will be developed far enough, to be used in the daily life.

8.2.6 Market Development

There are three key factors influencing the market development. These are the development of the Internet, the development of e-commerce and the progress of the fashion industry. All these factors are influencing how social commerce and especially social commerce in the fashion industry will change over the next years.

8.2.6.1 Internet Development

The main factor that enables e-commerce is the Internet. Without a proper platform for customers to find the products they want, the ways of shopping

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[2]http://www.research.philips.com/technologies/display/mrrordisp/mirrortv/index.html

online are severely restricted. We will therefore start our analysis of the market development with the analysis of the development of the Internet until 2020. A survey conducted by the Pew Internet & American Life Project on the Future of the Internet, completed by 742 Internet leaders, activists, builders and commentators shows how the Internet might evolve in the next 13 years [313]. Whilst the experts agree on the technological development, the impact of this element is in question. The survey sees the development of a global low-cost network in 2020. This could enable companies to compete on a global scale. The free flow of information together with the development of the semantic web as discussed above this could lead to a higher price transparency and therefore better deals for the customer. At the same time many experts see the use of such a global network hindered by government and corporate interaction. Some governments might want to limit the amount of information exchanged over the Internet to prevent the abuses of it for illegal purposes. At the same time there might be a monitoring policy implemented to improve the security of the Web. This might lead to restrictions for companies that want to do business on a global scale over the Internet.

The survey also states that there still won't be a global language for the Internet in 2020. To overcome this problem, translation engines will be in place to allow for quick and accurate translation of websites from different cultures. Today English is the language of choice for most multi-national websites. But as not all Internet-users are happy to read websites in different languages and might not be fluent in that language, many possibilities of doing cross-border trades are passing by unnoticed. The implementation of translation engines might overcome this problem. It also helps if English should be replaced by a different language like Chinese, which is spoken by more than one billion people compared to 700 million people who speak English.

Whilst language barriers can be overcome, cultural barriers are much harder to come by. Different cultures have different ways of approaching tasks and of communicating. The use of translation engines does not solve this problem. The change in the diversity of cultures towards one global culture that is connected through the Internet will not become reality until 2020. Local website will therefore persist to cater for the different needs of different cultures. The catering for different cultures will be especially true with e-commerce platforms which need to address their user needs quite accurately in order to generate revenue. It will be however true that there will be a parallel culture on the Internet.

8.2.6.2 Development of e-Commerce

At the moment, e-Commerce is very much based on national e-shops. The barriers that prevent international e-shops are mainly the cultural, language and currency barriers. The language barrier could be overcome by the use

of translators and by using different platforms for different countries as e.g. Amazon is practicing already today. This does not however solve the cultural differences that are encountered over the globe. To account for those, national platforms need to be in place for solving this problem. This is a task that needs big companies that have the resources to do so. It is unlikely that many companies will have the resources to accomplish this task by 2020. Another key factor that hinders international e-shops is the payment problem. As different nations have different currencies there is a high uncertainty concerning prices and price comparison is therefore difficult. It is highly unlikely that e-currencies will have replaced real currencies by 2020. Especially older Internet users which have the highest purchasing power will be unlikely to switch to a different currency on the Web. First currencies have already been introduced but are not accepted on a widespread level and will not be accepted by a broad part of the world population in 2020.

At the same time, the number of Internet users and websites is growing exponentially [302]. This opens up many new potential customers but also competitors for online fashion shops in the future.

8.2.6.3 Development of the Fashion Industry

The fashion industry will be subject to great changes concerning the designers. Whilst there will be designers that continue to create fashion trends, they also need to focus more on selling their goods in order to stay on the market. This is already done today by licensing their brand names to big department stores and accessory producers, e.g. for producing soap and home accessories [295]. This trend will continue until 2020 with the fashion industry trying to move away from merely producing clothes to being a brand name. This opens up the market for large Chinese companies that might produce own-label quality fashion goods at a reasonable price. The know-how to do so is generated in China at the moment by large companies that invest heavily in this country to benefit from the low labor costs, thereby generating knowledge there.

The advance in production technology will also open up a new field for the fashion industry threatening the role of the designers as it is seen today. The advances in mass customization are the key factors for doing so [319]. Mass customization involves producing items, in our case clothes, that are tailored to the customer but by using production lines rather than workshop manufacturing, therefore allowing companies to offer customized products at a slightly higher price than off-the-rack goods. By implementing this technology in the fashion market, it would be possible to manufacture fashion goods made to measure. With the spread of mass customization the prices for these goods could come down to normal market prices. At the same time, there could be new me-label sites that allow customers to design their own fashion and then producing it on mass customization machine parks in low-cost countries at reasonable prices.

This would be the next step from websites such as like.com, where one can find fashion products by drag and drop. The me label shop in 2020 would allow customers to generate their own design by drag and drop. This could start at selecting the color one wants up to creating a completely new product that can then be produced on mass customization assembly lines. These products could also be saved, shared and sold to others on the Internet if wanted. Most people however would not use this technology as it might be seen as to hard to use and it might take too long to produce the item required.

8.2.7 Other Players

As today, the future fashion market will be highly competitive. Besides other online shops using a similar concept to the shop presented in this report, there are competitors using other approaches to survive on the fashion market. The first to be mentioned are the conventional retailers. It is very unlikely that they will be completely suppressed by the online market. The retailers will react to the services made possible by online shopping, and introduce similar add-ons to their shops. For example with the usage of intelligent tags, showing additional information about the product, or even link to similar products by means of social recommendations fetched from the Internet.

In the future, distance selling companies will be big players as well. Because they have got experiences in choosing, presenting and selling fashion for years. Of course they will have paid much effort in their web-presences, because even nowadays a big part of the sales is done via Internet [288]. Furthermore they will use their existing connections to different designers and labels, so they can offer for example exclusive products nobody else can sell. Another benefit of these mail order concerns is that they possess giant logistic centers and delivering systems. With an increased online fashion market, the need for logistic services will increase as well and this empowers these companies again. Deutsche Bank research also sees the mail order business as an increasing sector [276].

But the competitors are not the only problems to handle. As Social Commerce depends highly on user input it is extremely important to receive a good quality of this content. But there are companies which try to benefit from hypes started in online communities. So they stealthily pay people to start hyping a certain product, what is called Astroturfing. As seen with "lonlygirl15" in YouTube the online community reacts annoyed to such attempts [318]. If there is an accumulation of that kind of marketing this might undermine the confidence in the unaffectedness of user generated reviews and recommendations. Another pitfall concerning user input is that maybe the user input is simply of bad quality. For example when there is a bonus system to animate users to write their experiences for a product they purchased, because there are not enough active users to benefit from the social input. But this animates people who do not really want to write a good quality feedback, also with the consequence

that many articles are written spiritless, and therefore not worthwhile to read. There are attempts to better the quality of recommendation for products with sparse references [284], so such bonus systems are not needed as urgent as today, but this does not guarantee a better quality of reviews.

But not only the bad quality of user generated content is a problem, there are many people who just do not want to write their experiences, for example because this touches their privacy. Moreover some people dislike writing down their problems with a certain product, because they sense it a personal defeat to have bought a wrong product. So a Social Commerce platform will face problems if there are too less active users.

8.3 Future Becoming Reality - an Outlook

The following three scenarios are developed and presented out of the preceding drivers. The first one starts with a slightly pessimistic view on social commerce saying that it will stay a niche phenomenon. The second makes an optimistic forecast with successful (global) me-labels, a booming online fashion scene and widespread technical improvements. The last outlook into the future is probably the most realistic one and a compromise between the other two with a tendency towards the optimistic case; me-labels are successful on a local basis, fashion trends are created online but global markets remain separate to a large extent. Based on this scenario our product will be developed later on.

8.3.1 Social Commerce as a Niche Market

8.3.1.1 Customer and Shop

As discussed in chapter 8.2.1, globalization brings together the people until 2020. The Internet is now - thus in 2020 - a valuable tool for doing so. A whole new subculture has developed on the Net. This gradually changes the culture worldwide. Whilst the different cultures have become somewhat closer together, one can still not speak of a truly global culture. Individual cultures stay strong and therefore there is less common ground for doing business than would be the case with a global culture. The digital subculture to a certain extent lessens this effect and there are also be many small and medium-sized firms doing business over the Internet in Business-to-Business markets (B2B-markets) to benefit from lower prices for raw materials or goods in other countries. Through to the worldwide logistics network that is even better developed than today, transportation only accounts for a very small fraction of the price of a good regardless of where it was bought. At the same time, the B2C-market remain very much local as different cultures have different needs regarding their shopping behavior which need to be satisfied with e-shops in order to satisfy the customer and therefore putting their shop on safe grounds regarding revenue.

Only few shops, mainly the large retailers and specialized shops serving niche markets are able to act worldwide. The former through a local logistics network and therefore local warehouses which allow for quick delivery of the goods to the customer, the latter through their unique goods and services offered. Especially the large retailers have made use of information management systems as mentioned in Chapter 8.2.2. For smaller shops the change to such a system is just too expensive and the effort required is too high.

At the same time, the recent demographic development in Germany leads to a different user structure on the Web. As older people normally have a higher spending rate, it is this silver economy that is responsible for most turnover in the economy. This includes the turnover in the fashion industry, especially on the designer fashion market where clothes are mostly too expensive for the younger, i.e. 20 to 30 years old, generation to buy. The generation 50+ however is unlikely to go to online boutiques. Being accustomed to go to retail shops where you can touch and try on your clothing hinders this part of the population to visit online fashion boutiques on a regular base. As their spending power is high, they do not mind to spend more money on the same product in retail shops than on the Internet. The perceived better service and the possibility to try on what they want to buy justifies the higher costs of the clothes in retail shops in their eyes.

As the smaller shops want to integrate their customers as much as possible without having to use an expensive information management system, social components can be found in every e-shop. These social components are used especially by the younger generation as they grew up with social commerce. The older generation however is very reluctant to jump in on this development as they don't have the time or interest to participate in such discussions.

These developments lead to the older Internet users using the Web as it is used today for shopping and finding information. This means that social commerce stays a niche phenomenon with price comparison still being the most used means of comparing products by looking at their prices.

8.3.1.2 Global Markets

Due to the slow moving nature of the EU, a European Patent Law for software did not become reality until 2020, especially after the debate in 2004 where a proposition to change the European Patent Law to allow for Software Patents was rejected by a great majority of the delegates in the European Parliament. This means that the German Patent Law, which is in accordance with the European Patent Law stays in existence with the problem of not being able to patent a software development unless it has a technical function. In the United States this problem is nonexistent, leading to a higher productivity of the software market over there. The nonexistence of safety from patents in the EU therefore hinders the development of a truly globalized culture as

software firms are reluctant to export their latest software to the EU in order to stop copy-cat software products. This development does however not hinder the growth of social commerce as there are many free web-tools and platforms that enable people to exchange their views and opinions on certain products. Therefore the developments mentioned above are much more severe in their impact on the development of social commerce than the Patent situation.

At the same time multi-national online retailers stay few in numbers due to the large logistical effort required to serve customers in different countries at low delivery prices. As discussed above this requires local warehouses to allow for 24-h delivery and low postal costs which normally are paid by the customer. A large multi-national retailer therefore has the benefit of being able to offer low-cost transportation to the customer together with the ability to buy large quantities of products, therefore taking advantage of economies of scale.

Another recent development that continued to grow and is now very significant is the Chinese invasion of the market. The Chinese economy is booming through their exports. As the Chinese bought in their expertise by allowing companies from other countries to build factories in their country therefore profiting from lower wages, they are now able to produce good designer clothing at much lower cost. This drives the existing fashion labels into a price war with their Chinese counterparts as the quality of the products offered will be much the same. This price war might lead to existing fashion labels either going out of the market or finding niches where they can survive.

So in 2020, the global fashion market is largely dominated by cheap quality products that are mainly manufactured in low-wage countries under their own label. The designer labels continue to exist in their niche market trough diversification and close interaction with their customers to offer products that the customer really wants.

8.3.1.3 Technology

The technical developments that have been discussed before will become reality until 2020. Unfortunately many people do not know how to operate such hardware or do not want to spend so much money on it. This leads to a low spread of such technology and therefore a low incentive for companies to invest in software that supports this technology. The investments in adapting online fashion boutiques to such technologies, especially 3-D screens and virtual mirrors are too high to be feasible. Specialized companies that offer such services for online shops are rare as there is not much profit to be gained on the market. Therefore e-Shops try to implement software such as avatars to secure their position in the market by offering a better service than their competitors.

The problem with the avatars is the widespread acceptance from the users. Especially the generation 50+ is reluctant to adapt to such a new technology as the appearance of the avatars is still clearly digital, therefore not appealing

to users that are accustomed to go to fashion retail stores, try on the clothes and get a feel for the quality and the color of the item. So the virtual avatars stay in their role-play environment without any real use in online shopping or communication.

Another development that has a large impact on the fashion industry is mass customization as discussed in chapter 8.2.6. Through the use of mass customization lines low-wage countries are able to offer made-to-fit products for the price that you would normally pay for off-the-rack items. Whilst in 2007 mass customization only included customizing existing shoes or watches, now you can get every fashion item made to order - in exactly your size - by simply inputting your data into a web-form or even by drag and drop. This makes the visit of retail shops obsolete as the products ordered over such mass customization outlets would be guaranteed to fit. The higher delivery time of about one week are somewhat lessened by this gain in comfort.

Going one step further, it is even be possible for customers to fully create their own product by using web tools and drag-and-drop. By implementing mass customization routines, the price for such completely individual products is only be slightly higher than for normal fashion items. As recent trends move towards more individuality, the chances are high that many people use this feature. Especially young people are using these features as a resolve for their strive for individuality that has increased strongly since 2007. But the silver economy is somewhat slower on picking up on these trends. Their technical expertise and their curiousness is just not big enough that many of these potential customers are using these possibilities.

In conclusion one can say that the technical structures for a truly interactive fashion shop are laid. However it is down to the customer if he uses the tools available or not. The younger users make use of such tools whilst the older generation of 50+ does not have the technical experience, the time or the need for designing their own fashion item. They do however make use of made-to-order items if the online order process is simple enough.

8.3.2 Social Commerce Dominates the Market

8.3.2.1 Customer and Shop

On the social web e-communication takes center stage ahead of e-commerce [307]; social or general issues are discussed online and support and create lifestyle trends. As people are open for suggestions from outside fashions change fast and world-wide trends are created. As an important consumer group the generation 50+ influences social trends to the point of higher quality of live, more wellness and a growing health industry. The silver economy has a huge buying power and thus is interesting especially in luxury goods. They are active users, communicate and shop online, give recommendations and search for information. Another interesting group of consumer or better users are the

digital natives, they are one step ahead of the generation 50+ as they act as designer and seller as well. They join in a creative way and change and improve the online environment. For an online shop it is especially important to address these two groups out of all consumers on the Internet; the first as they have the purchasing power the second as they are the source for changes, improvements and future trends. On the social web the interaction between shop and customer, lead to more efficiency as the shop-offers meet the customer's needs even with fast changing fashions and trends.

Another point to mention is that despite internationalization global villages still exist; as parts of social activities shifted online, real live friends meet on the Internet to play, chat, work or shop together. They form an important individual community for each user. E-shops collect all possible information about their customers and keep specific facts like friendships between users in mind to give valuable recommendations.

The online shops have to interact, thus feedback is very important. They offer special platforms where users get the chance to complain or exchange disturbing elements. For creative users there are tools to design and create clothes and styles for themselves. The e-shops can offer and sell these new fashions and share gains with the creators. However users do not really need a shop to help them with design tools. A large share of them develops and markets the products on their own. A chance for an e-shop to profit from them as well, lies within the fact that all these me-labels act after the same strategic goals that are for example to make the labels known, market the style or set new trends. An e-shop could coordinate this swarm of labels, create a collective awareness and organize global marketing [301]. There is a positive effect for both sides, the e-shop e.g. can receive a small fee from each label and the me-labels -as most of them tend to act regionally- get a chance to perform on a global level and receive more publicity.

The e-shop itself can reach a higher popularity by organizing events, performances, special editions etc. A possible event can be a great online fashion show or the arrangement of a meeting with an avatar celebrity; they can also organize individual rankings for products, or uncommon recommendation categories. But although all these trends, new labels and design will address a young till middle aged consumer group, the e-shop has to think about the large generation 50+. As mentioned above their values and focus differ, they are able to spend more money, take quality and social facts into their considerations and buy rather more classical fashions. For them an e-shop should offer well known professional designs and labels, too.

The interaction between professional designers and the e-shop has to take place on a different level than with the me-labels. The classical brands in first place do not need support for international marketing, or tools to create new styles; but what the might need are new ideas. Thus an e-shop could connect me-labels and professionals, the professionals profit as they pick up new trends

and the me-labels get a higher reputation through co-operations. The e-shop offers both product categories and earns provision.

8.3.2.2 Global Markets

On an international level transactions are simplified and intellectual property is respected in almost all countries; safeguards are given by the WIPO. Thus an e-shop can offer its products worldwide without a great threat of seeing the labels and concept copied. The eGovernment helps in concerns of legal issues, informs about changes e.g. in international trading and checks contracts if necessary. New regulations replaced the legal vacuums on the Internet and facilitate interactions between online identities. Thanks to these improvements the market for e-shops is not limited to national borders and extends even outside the EU.

As a global low-cost network developed, the number of Internet user increased especially in countries like China and India. Access to these markets can be hindered by cultural, language and currency barriers. For the language translation engines can support transactions; but by thinking about the customer group an international e-shop addresses the barriers in all diminish. International fashions and trends in most cases are bought by international oriented people, they are not deeply connected to their cultural background, open for new styles and often search for foreign looking fashions. New payment systems ensure a safe money transfer and the currency problem is reduced to three or four big currencies that are used in international transactions. Global chic developed as a new fashion category for globetrotter and business people. Local me-label take part in this new area as they are pushed and published by e-shops as described above and people keep searching for remarkable individual styles.

8.3.2.3 Technology

Technological improvements and inventions support the 'The Daily Life goes online' statement. Avatars can be used as one's personal online identity, representative for real life belongings on the Internet. They bundle all contact data's for one single person in themselves and allow easy and fast contacts. The design or from of an avatar can be the mirror image of the real person behind. As the avatar has the same look and size as the person he represents, he can for example try on clothes and shoes. Furthermore the avatar can participated in chats or meet friends on the Internet to shop together. Three-dimensional e-shops, speech recognition and the ability of the computer to understand gestures simulate a real life shopping experience. The semantic web helps to filter relevant information, which is one of the most important things concerning the extreme amount of data. The computer understands the meaning of the information required and can compare and find e.g. similar clothes and shoes to give a chance to compare. The fact that people could not try on or touch

the new clothes supported the real life shopping in the past. But in addition to the avatar, home technology like a virtual mirror even offers the chance to see the reflection of a new style on oneself without trying it on.

Improvements on the mobile devices allow a mobile Internet access round the clock, friends meet as avatars to go shopping, online trying of fashion are common, new styles and labels are created through user designs, 'The Daily Life Goes Online' is almost completed.

8.3.3 A Likely Scenario - The Basis for Fashion Boutiques in 2020

8.3.3.1 Customer and Shop

E-shops face a global culture on the Internet; the users that join have all different kinds of backgrounds and needs. What they have in common is e-communication. As user post, exchange or talk about their interests, lives etc. the social web is still growing. Through communication, trends spread fast and a global online fashion exists.

The advantage of the social commerce lies within the exchange of information and preferences and the development of trends. Although many B2B companies profit from globalization via low prices or other arbitrage effects, the main advantage for an online boutique is that (global) fashion trends are made online. If normal retail stores want to be up to date they have to check the Web. Logistics can still be a disadvantage for buying fashion online, but thanks to good networks and co-operations between e-shops and global logistic companies, transportation is fast and save. As national cultures are still relevant, an e-shop has to offer different layouts for different countries, the offers can be categorized like for example: global fashion (cities), Japanese for Europe (new Asia style), ladies style for China (greetings from France), and so on. But besides the cultural preferences there are other things that have to be taken into consideration, when a global online boutique is set up.

Talking about Germany and customers e.g. the generation 50+ is the group with the highest buying power and has to be addressed as well as a younger generation. Both of the mentioned groups enjoys shopping on the Internet as it is very comfortable, a wide range of offers exists, price comparison is easy and due to communication with others entertainment is offered, too. Extensive researches are possible as well as quick decisions and buys. The younger group of customers, in contrast to the silver economy, grew up with the Internet. They act as users and seller, too. Some of them design labels on their own, mostly for own use or a local market like Munich or Bavaria (the individual styles are en vogue for example among single households or friends (community)). As me-label designer are one-person organizations they are in a relatively weak position concerning market power and participation. Generally only limited resources for e.g. marketing exist. If me-label designer want to expand over a regional

basis, they can search and ask for support from one of the global operating e-shops. These shops can bundle a certain group of labels and promote them on a larger scale. Besides that creation tools for clothes or exchange platforms for ideas can be offered by the e-shops to me-designers. If the customers or better designers want to set up an own style they get the possibility to do so. After a label is created the e-shops can sell the creations in the shop under one of the offered categories (e.g. private brand); revenues can be shared.

Coming back to the generation 50+ an e-shop has to establish extra offers for them as these customers are mostly not looking for the latest style or trend. Wellness, comfort, and luxury are one aspect they are interested in, the others are e.g. environment, social aspects and lifestyle. Thus they focus on products with a certain reputation like professional designs and labels. Fashion categories for them should also be linked with a specific (global) lifestyle and recommendation system. More attention and guidance has to be paid on them by the e-shop as technologies still change and the e-shops do not want to lose contact to the silver economy.

Generally it is important for an e-shop to be well known; for this purpose individual marketing and promotion can be used as customer data is collected. Great online events like fashion shows also help to create a positive image. Ranking lists in research engines have to be optimized and social work or products highlighted.

8.3.3.2 Global markets

On a global basis e-shops have to ensure the safety of the intellectual property of the things they offer. International regulations are set up, but they are not binding and prosecution is only possible on a private level. For an online boutique this is quite difficult, as it is easy to copy a new fashion and style. Thus the global fashion scene is dominated by famous labels, they are known, combined with a certain image and copies and fakes can be identified much easier. Me-labels are more spread the more it comes towards a national or regional market. Regarding the EU an important and stable market for social commerce developed. The EU-harmonization process is well advanced and the patent system just like the copy right ensure intellectual protection. Especially for me-labels this is a field for market expansions. In case of legal questions e.g. for contracts, changes in law or intellectual property a sound standing information database of an eGovernment can give support.

The use of the Internet in India and China increased; they participate actively, market new labels and designs and promote their own fashions. As working power is still cheap personal creations can be offered for low budget; prices for trend-fashions and me-labels level off low, too. On the global fashion market labels and brands have the greatest attraction for example Chinese as they can show off. Unknown individual styles are very often too exotic for a certain

cultural background and get a chance only (if at all) in big international cities.

As legal topics concerning e.g. liability are easier handled abroad than in Europe; future trends for social commerce come from outside. The interaction between online identities is still not fully regulated and fixed. Depending on the origin of the identity different regulations have to be known; here the eGovernment for example can give safety on a legal level by bringing out variations.

8.3.3.3 Technology

The e-shops can offer their products in virtual shops, introduce speech recognition for frequent customers, an understanding of gestures e.g. if something is desired or not and an individual selection of styles. In these e-shops personal real-looking avatars meet and shop together. Thanks to the semantic web research is easy and efficient. Internet access is fast and mobile, meaning that online shopping is also possible via for example mobile phones. Communication and recommendation are important and due to large data basis individual trend, quality or style advice can be given. Even marginal groups are supported and new try-outs proposed. Different recommendation systems of friends, locals, professionals or celebrities are available and can belong to the service categories of an e-shop. The development of mass-customization furthermore allows e-shops to offer individual styles at an affordable price.

Problems that occur are, as in the past the adoption of innovations (although reduced with the help of communication) and the cost aspect. Thus it is still expensive to use home-technologies like the virtual mirror and people can try on clothes only with their avatars. What also disturbs the real live shopping experience is that the materials of the fashions and styles cannot be touched. That can be especially important for the generation 50+ as they are looking for higher quality.

8.4 SaSeO - The Online Fashion Experience of 2020

At this point we had an exhaustive factor analysis and an accurate outlook to the prevalent situation for Online shops in 2020. To give an example on how to benefit from this knowledge, we have developed a product idea considering as many of the previously discussed facts as possible to build up a successful online fashion boutique in 2020:

First we describe the idea behind SaSeO, then we take a deeper look into the complete functionality and the possibilities the customer has. At the end we discuss how it is possible to generate revenue with SaSeO in order to meet competition.

8.4.1 SaSeO – What is it?

8.4.1.1 Introduction to SaSeO

After introducing the name of our product, SaSeO, we want to make clear what SaSeO is and what not. SaSeO can be seen as a service for existing Online fashion shops, helping to meet the customers wishes perfectly. So SaSeO has no own range of Products, therefore no need for warehouses and the logistic behind a common Online shop. This makes it easier to build up the business because the start-up costs are reduced dramatically. So, how does it work? A customer, willing to buy a specific product, does not search through hundreds of different Online stores anymore, he starts at SaSeO. Here he uses the extreme powerful and sophisticated search function, based on the semantic web, social recommendations and a giant information management system with detailed shopping profiles allowing searching a huge amount of different Online shops at once. After the customer found the desired product, SaSeO manages the buying process with the Online shop selling this product.

But these platforms face a common problem: As they are all nearly similar to each other and therefore easily interchangeable, no customer really identifies himself with one of these services. SaSeO comes along with a solution for this problem and tries to stand out from the competition. One point is that SaSeO offers a powerful state of the art editor for mass customizable products. So customers have to be able to operate only one editor for customizing a product and do not have to familiarize with all the different proprietary editors of the Online shops spread all over the Internet.

But, and that's the crucial point, the search functionality and the editor are only a part of the whole concept. As the Online communities are still growing and to help people realizing their demand for social interaction, SaSeO offers a value-added giant social network, which is described in chapter 8.4.3 to satisfy exactly this need. The social network used for SaSeO goes far behind just helping people getting into contact with each other. There are events that people do not only join accidentally because they are just logged in at the moment. For these events people are setting the alarm to be in time to join them. Furthermore SaSeO benefits not just from thrilling events, but also from many offered possibilities for customers to educate themselves and to be animated to do things they never would have done before SaSeO. Furthermore the user is not only seen as consumer, he is also highly involved in all of these activities. This social context makes a real difference to other platforms, and helps the customer to start identifying with SaSeO, because they receive personal benefits

out of the value-added services.

8.4.1.2 Products Linked in SaSeO and the Target Group

An important decision for every recommendation platform or shop is what range of products is sold and on which target group it is aimed. Because SaSeO is a social commerce platform, it is of vital importance to have a user base that is as large as possible. To archive that we cannot exclude a relevant target group from SaSeO or even specialize on a certain product or style. Especially to get access to the generation 50+, the group with the highest buying power in 2020, SaSeO has to offer fashion from all kinds of labels, because these customers are used to buy a certain label they trust in. In addition SaSeO was designed very carefully with respect to a clear and easy to use shop-user-interface to make advances to the silver economy.

The next target group is the younger generation grown up with the Internet. These types of customers prefer to buy individualized products and want to be highly involved in the entire process. Due to this fact SaSeO does not only link too many products from different labels, the other specialty is the huge amount of customizable and modularized products. These products are meeting the wishes of the digital natives and are produced on huge mass customization machine parks, so they are not only highly individualized, but they can also be sold at an affordable price.

With this product-linking strategy SaSeO can target the main customer-groups and therefore has a high potential for building up a huge user database. As already mentioned this is of vital importance to make SaSeO a success, because especially the value-added social services depend on a high participation from users.

8.4.2 Basic Shopping Features

In this chapter the product presentation and editing part of SaSeO is presented. With a huge information management system together with a customer specific ranking based on a mix up of semantic web, shopping profiles and social recommendations SaSeO is able to provide an intelligent, easy to use design and offers at every point of the shopping process personalized information to the customer. Furthermore, there is the possibility of social interaction to help the user by his decision making process at any time.

8.4.2.1 Product Selection Process

Because of the extreme amount of products linked in SaSeO, it is of vital importance to present the user his desired products without forcing him to search through millions of different products. To archive that goal, different state of the art technologies are used. In this sub-chapter we describe only

the mechanism to generate a user specific product ranking. The concrete user Interface is described later on.

SaSeO operates a giant information management system, which makes it possible to create shopping profiles of all customers. These profiles contain information about the customer's track through the shop, what specific design preferences he possess, if he looks mostly for name branded clothes or is he a fan of mass-customization, what the typical budget is that he spends for a certain product, etc. Also regional factors of the customer's background play an important role. With this profile, SaSeO has a first indicator how to sort the products for a customer. But the shopping profile is not only bound to a single customer. The system is able to combine the decision made by customers with a similar profile in a shopping tour before. For example when several customers with a certain profile started to search for sports shoes, and they all ended up at a special product, this product will be placed with high priority when a following customer with such a profile begins to search for sports shoes. So in some way SaSeO foresees the decision the customer most likely will make.

The next factors taken into account are the reviews and recommendations of other users. With this information the vogue of a certain product can be determined and a ranking produced. This method is important, because it makes it possible to separate out bad quality products even when they met the customers wishes regarding for example the design.

But the two mentioned factors are already available to a certain extent today. The last and very important criteria is, that SaSeO tries to find coherent design elements of products the user intensively examined. To archive that, SaSeO extensively uses the semantic web and the fact that many products are modularized. Together with sophisticated methods of image analysis it is possible to isolate regions of the different products which are very similar. Once there is a design element identified, the customer gets products with this element in different combinations presented until an additional design element preference is detected. To shorten up this process the customer is able to mark some neuralgic elements of his desired end product.

For example if the Customer is searching for shoes, the system presents him many different types of shoes. Once the customer took a sports shoe, SaSeO realizes that the customer wants to buy this kind of shoe. So the system presents sports shoes which attracted people with a similar profile, until the costumer has taken a detailed look to some shoes. Then SaSeO begins to interpret the customer's choice and identify design elements of the previously selected products, for example a special air-sole. After this short period the customer gets a list of shoes all equipped with this sole, and therefore the customer ends up very quickly at the product he had in mind when he started the shopping tour.

Due to these shopping profiles even customers with a very specialized taste, who are nowadays looking for a special shop, are attracted by SaSeO. Because of

this product selection process, the customer gets exactly the products presented that he likes, and so SaSeO reacts similar to such special shops that exist today. This also meets the strategy to attract as many users as possible.

8.4.2.2 Observers and Instant Feedback

At the moment SaSeO profits from social interaction only in an indirect way by means of the profiles and recommendations. To involve other people in the shopping process we introduce the concept of the observer enabling instant feedback at any time during the shopping process. To achieve this the customer can make his shopping tour public, so everyone who is interested in it can join the tour. Three different types of observers exist: friends, experts and foreigners. Friends can be ones real life friends, or persons someone knows from online communities. The customer can call a fashion expert, a person getting paid for helping customers, when he reaches a point where he needs professional help, e.g. if he can't decide which product fits his type better. This expert can be compared to a good salesman in a conventional retailer store. The foreigners are just people maybe searching for some new ideas, and therefore watch other people shopping and analyze their decisions, but do not have a direct connection to the observed customer. All the observers have the possibility to advice the customer and even to hand over other products he can try out, for example a fitting jewelry. Of course, SaSeO offers different modes, allowing only friends to join ones shopping tour, or make it complete inaccessible to keep the privacy. But anyway, if the customer needs help or want to have the opinion of an outstanding person, this is possible at any time during the shopping process!

8.4.2.3 Collaborative Shopping

The observer mentioned above can only give tips and feedback, but the user has the possibility to react on it or not. The collaborative shopping mode goes far behind the observer's possibilities. The collaborative shopping is designed to simulate shopping tours with ones friends. All participants have the same right to define the way in which they walk through the shop, just as it is in real life. Of course there can occur conflicts because someone would like to choose another way than his partner. But as in real life where they would face the same problem, they have to discuss the issue and find a compromise. This makes online shopping much more intensive and gives the customer the feeling of a real shopping trip with his friends - even though they are sitting thousands of kilometers away from each other. SaSeO is able to make suggestions to solve such a problem, for example come back to exactly this point later to take the other way, but the thrilling and worthwhile part of this mode is doing the option-gathering process together.

8.4.2.4 3-D User Interface

After describing the features of the searching functionality, the results have to been brought to the user through an easy to use, pleasing shop-user-interface. First of all, SaSeO is taking full advances out of the developments in 3-D web. The surface is three-dimensional and allows an extreme intuitive way of sorting and browsing through the array of products. In combination with gesture understanding human-computer interfaces SaSeO can be used by everybody without knowledge in computers. But the real advantages of 3-D techniques for SaSeO are taken from the photo-realistic presentation of the products and the customer himself. The customer adds to his Avatar a model of his body with his real life body measurement. This Avatar makes sure that the clothes the customer orders are suitable, and if supported by the product, it is even produced with the exactly needed body-measurements, which today is only possible in custom tailoring shops. In addition, not only the customer is available as scale model, but also every product is accessible in this worthwhile manner. So the customer gets a realistic imagination of what the product is like: *What you see is what you get.* He is able to see the product from every arbitrary viewing angle, therefore the customer for example can avoid unpleasant surprises, that he dislikes some details of the product not shown on the picture during the shopping process. So the argument "I don't shop online because I don't want to see the products only from their most charming side" becomes obsolete.

8.4.2.5 How SaSeO is Used

The window of SaSeO is separated into two parts: The Main-Area and the Social-Bar on the bottom. In the main area the products are presented and here the customer sees his avatar when he is trying out some clothes. In the Social-Bar the Avatars of all persons joining the customer's shopping tour are displayed. From this bar, the customer is able to pick suggestions from the observers, for example a perfect fitting top for the selected jeans. Of course the customer is not forced to use the keyboard when he is chatting with the observers, and the other way round, as he hears the spoken comments of the others, and does not need to read them. Thus communication between the customer and the observers is really interactive and easy to use. Of course the customer has the total control of this process at all times, so he can mute out disliked observers, or stop the transmission of his spoken words immediately. The content presented in the Main-Area is basically defined through three modes SaSeO possess: Search-Mode, Clothing-Mode and the Creating-Mode.

Searching Products in SaSeO
The Search-Mode is the mode the customer spends the most time with. After choosing an entry point, for example he wants to search for shoes, he gets the products presented with respect to the in chapter 8.4.2.1 mentioned selection

rules. The products are presented as if they would hang on an imaginary clothes rail disappearing in the depth of the room (See picture 8.1). Now the customer can move the products with gestures or speech commands forward or backward and new products appear or old ones fade back in the screen.

Beside the standard search the Roam-Mode is available to the customer. This mode is very similar to the Search-Mode with one important difference: The filter mechanisms are different. This mode is used when the customer has no clear idea which product he wants to purchase, or if he is just looking around with no direction. The decision which products are shown does no longer depend on the customer profile, but on how new and how popular a certain product is. So in this mode the customer is able to explore products he never had seen without this mode. This will sensitize him and raises new ideas to what he can buy next.

To keep it easy and clear, details are not shown at this moment. Through his shopping-profile the customer can be sure, that the presented products are fitting his budget constraints, or he defines a maximum boundary. Details are only shown if the customer is interested in a product and selects it.

Figure 8.1: Mock-Up: SaSeO in the Search-Mode
Source: Own Illustration

Trying Selected Clothes on
After selecting several clothes in the Search-Mode, the customer can make his avatar trying the garment on in the Clothing-Mode. The customer is now able

to zoom in or out, change the view angle or choose different lighting situations to simulate for example how the clothes would look like in a disco (See figure 8.2). While he is doing this, the observers have the possibility to vote with thumbs up or down how the product is fitting. Here the customer can see all additional product information. Beside the pricing and most important facts, he can also take a look at the reviews and ratings from other user who bought this product before. To sum up, here he gets all the relevant information about a product and a realistic impression of how it fits to his type.

Figure 8.2: Mock-Up: SaSeO's clothing mode used on a 3-D display.
Source: Own Illustration

Creating One's Own Clothes

If the customer is not fully pleased by a special product, he can enter the Creation-Mode and edit the selected product. In this mode the customer has much more possibilities then just changing the color or the imprint. As many of the products are modularized the customer is able to put all feasible modules of products, selected in the Search-Mode, together in all possible combinations, thus he is able to create completely new products. The modules a product consists of are presented in an easy understanding way around the workspace (See figure 8.3). Due to the availability of gesture understanding computers it is not necessary to click wildly with the mouse or even type commands. The customer can pick with his hands exactly the modules he wants to have in his new product. It will therefore for example be possible to take the sole from

one shoe, combine it with the body of another and put the tongue of a third model in it. All these products build by customers can then be saved and sold in their shops. But it is not only possible to combine products; with a toolbox the customer can even edit the shape and material of a product, depending on the degree of customization that is supported by the product. This leads to the important part of SaSeO: The *MeDesigners*. These are creative customers having fun in creating or modifying products and make them buyable in the shop. So SaSeO links to a huge amount of very individualized products for every kind of taste. Of course, during the entire creating process the MeDesigner can receive the instant feedback of the observers, or construct his ideas stealthily to surprise the community.

Figure 8.3: Combining three jackets to one within the SaSeO Creating-Mode. Source: Own Illustration

All together SaSeO is a feature-rich easy-to-use platform, benefiting from the state of the art web technologies and presentation techniques. So nearly everyone is able to use SaSeO in a satisfying way. This effect is also empowered through the fact that in 2020 nearly everyone has come in touch with computers during ones working life, so nobody, especially the silver economy, is excluded from SaSeO. To sum up, SaSeO is feasible for everybody possessing a PC with an Internet connection!

8.4.3 Value-Added Social Services

This chapter describes the features of SaSeO which differ it basically from a classical online boutique. Even in 2020 most online shops will be delivery channels for products. It means that they will be a replacement for telephoning to place an order or physically visiting a store [290]. In other words online stores have a role of a place that is visited by people to search for certain products and is left after having found and bought the desired products. Thus customers are not bound to a certain e-shop and feel free to switch to any other online store. But in 2020 there are higher requirements for online market places as according to future scenarios customers seek for finding and joining communities and therefore combining shopping with interaction with other customers. In order to make the grade and live up to expectations of the future customers, SaSeO offers many social events and interaction between customers and between customers and designers. This way the boutique of a kind is not only a run through a market place but rather a place where shopping and community experience are combined. This approach leads to more satisfaction of the customers and binds them to SaSeO as they enter a new dimension of online fashion shopping.

In the following various features and possibilities of SaSeO are described which are expected to provide the mentioned shopping experience to the customer.

8.4.3.1 Catwalk Parties

As mentioned in the previous chapter SaSeO gives the customer the possibilities to search efficiently for clothes, try them out by using an individual photorealistic avatar and even create his own fashion by combining and configuring modular cloth pieces together. But most customers would like to share clothes created by them and to look at fashion created by others. Fashion presentation on catwalks is nowadays part and parcel of the fashion world and it is impossible to imagine fashion industry without them. Catwalks fashion presentations represent merely the highlight events in the fashion industry like challenge cups in the sport industry, nomination galas in the cinema and music industry. It is a dream of everybody to join these events as they are the places where the elite of this industry is attendant and the most exciting things are presented. As for normal customers such events are inaccessible, SaSeO introduces the concept of virtual interactive catwalk-events described in the following.

Enabled by such techniques like photorealistic 3D-Avatars and highly sophisticated virtual technology available in 2020, SaSeO will give customers the possibility to become a part of a virtual catwalk fashion presentation. There is a mode which shows a virtual stage or catwalk on which 3D-Avatars represented by customers are walking and showing their fashion like in a real catwalk presentation. Moving of avatars can be controlled directly by the user or several preassigned movement schemes can be used. Environment like decoration and illumination etc. can be designed and chosen individually by the organizer. Of

course there is also a huge selection of ready-made environments which can be used and configured easily. Such presentations can be created by each customer and as such events have a high requirement for social activity and interaction they can be joined by everyone or be restricted only to certain customer groups like for example only friends of the presenter. Joined people are also represented by their avatars as throughout the whole boutique and are able to present all possible clothes by presenting them on stage or just stay in the observer mode and follow the event. During the whole presentation participating customers are able to communicate with each other through their avatar representations as described in the previous section. This way they can easily discuss the presented fashion, give feedback or talk about new ideas. Announcement of such events can be done within the scope of the main shop. On the main site there is a dashboard where the customers are able to announce their events. Dependent on the rating of an organizer's own shop his events are displayed accordingly in the event list.

Using the mentioned functionality of catwalks it is possible for customers to get insight into the professional world of fashion. Staying in the single mode users can look at themselves wearing clothes and moving their avatar around and evaluate if certain clothes fit to the own person. By granting access to others users are able to organize their own fashion presentations and present themselves and maybe clothes created by them to others. Like professional designers they are able to create the whole event single-handed and feel like professional designers. But due to the fact that SaSeO is accessible for everyone, professional designers are also expected to use this concept.

8.4.3.2 Interactive Workshops

SaSeO provides many tools for designing and creating new fashion as the most clothes are modularized and can be configured according to the wishes of the hobby designers. But many customers are afraid of creating their own fashion due to limited knowledge about designing clothes and uncertainty about what is likely to be trendy although they might have good ideas. Additionally designing clothes demands not only good appreciation of fashion but also the background knowledge of combining different textiles together. These points seem to be the most important barriers for hobby designers.

To make the mentioned grade and to live up the expectations of the customers SaSeO provides a mode for virtual interactive workshops. With this mode the user is able to attend on several seminars that are held by fashion experts or fashion designers. Joining such a seminar is quite easy as the user just has to join the lecturer's view as an observer and this way is able to follow each step of the tutor. Of course the lecturer can grant action permissions to one or couple of observers and let them take over the control. Interaction plays an important role in this mode as the participants are expected to attend actively

on the workshops. The user himself and the others are represented in the so called social bar of SaSeO and this way are able to ask the lecturer questions and discuss issues concerning the lecture among themselves. Workshops can be held by everybody but the number of participants is recommended to be reduced to an appropriate number as a reasonable interaction is only possible with a limited number of people. Similar to the Catwalk Parties there is on the main platform site a whiteboard where all workshops are listed according to their ranking and category.

Imaginable would be a workshop dealing with designing of jackets for women. A design expert would announce his workshop on the whiteboard, schedule it for a certain time and users who are interested in this workshop could apply for it. During the workshop participants are visible with their avatar in the social bar for the lecturer as well as for the others. The lecturer could for example first provide some background information like how jackets are created in general and then show the creation process by combining different pieces of modular jacket pieces and explain which textiles can be combined together and problems the designers have to deal with. Through the whole process the users are able to ask the tutor questions and discuss some issues. If one user has a better idea concerning the creating of a jacket or just would like to try something out, the lecturer could let him take over the course for a while and take the role of an observer.

Design experts can even organize workshop series like getting to know and designing clothes for several cultures. Or maybe basic seminars for hobby designers and advanced seminars for starting professional designers. By visiting such courses and workshops hobby designers have the possibility to study further concerning the designing of fashion and maybe also get inspired by experts. For designers who are going to open their own professional fashion shops it is a good possibility to learn from people who are already successful.

8.4.3.3 Style Counseling and Celebrity Shopping

Nowadays women who are interested in fashion and are keen to stay up to date concerning the latest trends usually read fashion journals. By analyzing the content of such magazines it is noticeable that mainly topics like for example latest summer trends, fashion for summer parties, new fashion accessories and what fashion celebrities prefer are handled. To put it in a nutshell style counseling seems to be the topic that almost all women are interested in. But printed magazines are enforcedly static and are almost valueless after a short period of time.

SaSeO contains a special mode for going shopping with experts and celebrities. Usability of this mode is quite similar to that one with workshops. Plenty users can join a style counseling seminar and go on a virtual shopping tour with an expert. During the tour the users can see the trend expert looking for products

in the Search Mode of SaSeO and explaining which of them are trendy at the moment and which can be combined together. The tutor can collect several clothes that fit together and then switch to the Clothing Mode in order to demonstrate the outfit to the participants. At this step it is important to mention that the lecturer is able to use not only his avatar for demonstration but also some dummy avatars because not every outfit fits to one person. Alternatively each person that attends this seminar can see his avatar wearing the demonstrated clothes as everybody is mainly interested in looking at himself wearing the latest fashion trends. In this mode really high interaction between the participants is desired and therefore it is even possible to look at other attending avatars trying out the same things and to give feedback or to discuss certain issues and to give some recommendation. To make the whole process even more exciting for the customer the lecturer can respond to the individual needs of each participant by evaluating each avatar wearing certain clothes and giving instant feedback to the user. As each person is unique, the fashion expert can switch anytime back to the Search Mode and find a similar garment but that is in line with the individual person.

By providing this feature SaSeO might become really a place where people would like to spend their time. There is no need to read fashion magazines and imagine how one would look wearing the same clothes and accessories which are mapped in the journal anymore. In fact everybody is able to get informed about the latest trends in the fashion industry in an exciting way. As fashion trends change really quickly and the fashion accommodates on current events, users can easily be up to date with SaSeO. It is imaginable that such trend counseling courses like current summer trends, special fashion for grill-parties or for example fashion for the upcoming soccer world cup could be offered. But not only professional fashion experts could be engaged in this process. Successful MeDesigners could be the trendsetters as well and therefore cooperate with experts or even announce their own trend counseling events.

But SaSeO goes even further and offers a concept of Celebrity Shopping. As people who care about their outfit often try to bite of people who are really successful like Hollywood stars and reach people because their dressing style is associated with the grade of their success, usually about one half of the most fashion magazines are dealing with the question what stars and celebrities are currently dressing.

SaSeO has a special Celebrity Shopping mode which can be used to go on a virtual shopping tour within SaSeO with a celebrity. It is very limited for the users concerning the interaction functionality due to the fact that really a lot of people would like to participate and a meaningful interaction would be impossible. Furthermore VIPs would not like to be disturbed during their shopping tour as they are in fact the trendsetters. To put it in a nutshell users are able to join an announced shopping tour with a certain star but stay anonymous through the whole process and therefore invisible for the others.

But of course they are still able to try out all the things the celebrity is going through.

The main idea behind the presented events concept is to provide not only an online fashion boutique with extended functionality to the customers, as they exist already nowadays, but merely to make SaSeO a place where users combine the usual shopping process with improving ones skills in designing fashion and interacting with others in the wonderful world of fashion. This approach makes SaSeO a virtual space everybody would remember as unique as it provides shopping not as a process but rather as an experience what leads to the fact that the customer feels identified with this product. For SaSeO it means that the customers are not only passed specimen but merely clients that would use it always with a lot of pleasure.

8.4.4 The SaSeO Business Model

SaSeO is a service-oriented business model; the shop can be used as a platform where different wholesalers, me-labels and professional designers get the chance to offer their products. The main source of revenue is based on commission. Every time a designer product is sold the shop earns a small amount, the same takes place when a special product is recommended. This all takes place with wholesalers in the background who actually ship the products and take care e.g. of billing.

Concerning me-labels the situation is a bit different. SaSeO offers a platform for them to sell their products. In cases where the designer generated the label externally, a fee for the use of the platform can be paid or a certain percentage of the revenue shared. In cases where the MeDesigner uses the tools offered by the shop, an agreement is made in the beginning that if the product is a success (sold often, good price) the shop takes over marketing and further promotion and gets a certain percentage of the revenue. Thus new trends can be generated, the label gets publicity and SaSeO generates revenue.

The customer pays everything directly to the shop without knowing the people behind.

As lectures and workshops are an important feature of SaSeO, they are part of the cash generating process as well. There are two different types of workshops concerning the cash generation. On the one hand there are lectures organized by private persons and on the other hand workshops organized by SaSeO itself. If a private lecturer organizes a workshop SaSeO charges a certain amount for each event, as the platform and image of the shop are used to attract people. No further fees have to be paid to SaSeO by the users who join that workshop. SaSeO itself offers courses, too; the basic courses are free of charge and graduations for advanced courses where fees depend on the topic and the level of professionalism.

Celebrity shopping is the most exciting event SaSeO offers and also the most

expensive one for the customers. Stars might go on a virtual shopping tour for free with the rest of the world if it is for a good cause. The customers pay for this personal experience and the revenues are transformed to e.g. social organizations. Although social events lead to a gain in reputation, the more common method is VIP online shopping where customers are charged a participation fee and the celebrities are paid to join the event. The more customers join, the higher the revenue for the shop. Thus the event needs great announcements and therefore contributes to the shops reputation.

As it is all about social shopping nothing is charged for advice, recommendation, technical support or other common services.

8.5 Conclusion

Social components will play a decisive role in the online fashion boutique of the future. As mankind is very sociable, contacts that would normally be made offline need to be implemented online to allow for customer satisfaction. By catering for this need and the needs of the generation 50+, can online fashion boutiques position themselves strongly on a rather fast moving market. Especially new technologies to interact online, e.g. by using avatars, and new business models, like providing a platform for me-labels to present and distribute their self-designed clothing can enable e-shops that specialize on fashion to gain customers that would normally go into a retail shop. The exponential growth of the number of Internet users further helps in building a solid customer base.

SaSeO provides a solution to these developments. By providing an online shopping experience rather than just a platform where one can only buy fashion, it caters for the needs of social interaction and self- actualization, the highest of all needs according to Maslow. Various social online activities such as going virtual shopping with your friends, workshops on creating your own fashion and many more allow people to meet new people and interact with these through their avatar tar as if they would be standing right next to them. All in all SaSeO does not only offer something for every taste, but it does also cater for different age groups by providing the possibility to either completely design your own fashion, to buy predesigned fashion items that are made to measure by using your avatar or to buy standard off-the-rack goods. By being able to take your friends on these virtual shopping trips there is no need to visit a standard retail shop ever again. All these feature make SaSeO the ideal online retailer of the future.

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9 Chapter 9
i³Google – Information, Interaction, Inspiration

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The following report focuses mainly on the development of Google Inc. and its services in the next 15 years based on the analysis of today's drivers and trends. In view of Google's policy, philosophy and development strategy today, it is very unlikely that the company will ever enter the market of direct product sales or will sell hard goods. Considerably, the future of Google will be determined by digital services based on information and multimedia content management, social interaction and highly personalized recommendation services. Based on its own online operating system, fitted and integrated in various devices, Google will provide highly customized online services for information, work and entertainment for everyday life. Google Inspire service will serve user with ideas and assistance mixed with highly targeted advertising in any situation of everyday life and will make it more comfortable and efficient. Targeted advertisement will be accepted as important support for customers' decision and the difference between advertising and recommendations will obliterate.

This development will be made possible and supported by technological development of semantic algorithms, mobile and completely networked devices, as well as biometric recognition systems and new handling methods. Beside of offering mass-customized services, Google will also process the majority of all digital content on its own hardware and so have a very strong influence on the

technological development of future global networks.

One of the key feature of Google's business model is to offer users cost-free services and there are absolutely no indications for the change of this principle. All Google revenues are and will be based on Business-to-Business services like advertising, information and media distribution and payment services. Google will more and more exploit and get directly integrated into value chains of its business customers and partners.

In 15 years, majority of people will get used to digital and automated online devices and digital technology will completely become integrated in peoples' everyday life, irrespective of their age, profession or country they live in. This will significantly increase the number of users and with it Google's power and revenues.

9.1 Introduction

One of the most innovative and creative company of our days is the Google Incorporation. Founded in September 1998 by Larry Page and Sergey Brin, it is now a day the world's largest search engine, provided for free. Google always invented many new services and applications with a high consumer popularity.

As seen in its past, Google will go on growing, but in which direction?

Will Google - worth 80 billion dollars and today's most valuable media company and supported by its immense information power and knowledge of their customers [343] - enter the retail business or will it say a digital company? Most probably Google will stay the second one. The digital world has always been Google's core business, it will not change its most important core competence. So you can analyze many aspects of the Google Company of tomorrow.

What are the main drivers of Google's further development until 2020? How will digital services, provided by Google in 2020, look like? What will their added value be? All these topics will be discussed on the following pages.

This report concentrates on the e-commerce market, its drivers and players, their role today, how will they evolve and develop in the future, and also inquires which player will dominate or monopolize the market by 2020. Then the most probable scenario is developed with all the relevant details which is regarding Google Services. Google-80 billion dollars company is an important player and is more likely to influence the market with its digital services offered for all fields of day-to-day life. This report is structured as follows:

Section 9.2 discusses Drivers for future development in e-commerce market. This section gives a complete overview about main drivers including, technology, market, players, and Google's development itself is seen as an important driven in this analysis. Section 9.3 depicts the most probable scenario with the proposed product - Inspire Me. This section covers all the details regarding the product development, the business model, background of development and is concluded with impact on society, and further future developments.

9.2 Drivers for Future Development

This section provides an overview over drivers affecting Google's future development. In order to deliver decent statements on the future, several aspects have to be considered. Changes of Google's environment will be featured concerning the following topics: 'Society and Culture', 'Hardware Technology', development within and of 'The Web' itself as well as the 'Economic Development' of relevant online market segments. Additionally there is a focus on 'Other Players in e-Commerce Market' as well as recent 'Google Development'.

9.2.1 Society and Culture

Any future impact on the Internet and its commerce will have a social or cultural component. That sounds quite normal and obvious, but has many important consequences.

9.2.1.1 Internet Usage and User Behavior

The Internet-population in 2020 will be a completely new generation of users; this generation will complete the change from the luxury good Internet to an ordinary every-day-tool. So the penetration of the possibility of accessing the Internet (mobile or fixed) will increase over all the generations. For youth and younger adults the penetration rate is forecast at almost 100%. This highly technology-affirm generation will use the Internet and its services like we use our eyes and ears; it will be the center of any communication and information concerning them [327]. The acceptance of the most services will also be quite high within this group.

But also the older population is going to use the Internet more often. As a tribute to the demographic change in the most countries of the First World, the most and fastest growing section of a country's population is the 'Generation 60+'. This large part will be very important for any player being active in any future e-commerce, because they will stay healthy for a the longest time ever in history, they possess substantial accumulated assets and they have enough spare time for using Internet applications. In combination with a higher level of immobility, the Internet can provide them a "window to the world" [339]. Probably this generation will have the highest willingness to pay for multiple online services, so they are one key driver for any development.

In general, the credibility and confidence in the Internet will probably increase, too. It will become more normal to buy, sell, exchange goods, services or in formation in a future global network [344].

9.2.1.2 Social Aspects

One of the central aspects a tomorrow Internet will be a social one [356]. The Internet today is dominated by e-commerce and its multiple forms. To transform it in a social space, the trend to virtual reality is the key factor. The most users of tomorrow will use avatars at a sophisticated level; they may become part of their personal identity [382].

Embedded in a natural environment, spaces like 'second life' are transformed to places of social exchange and economic transaction; any future Internet service or information provider has to handle this development. For any shopping activity people will ask their virtual or real peers for additional information, it will be a hard time for resellers, the customer will be grown up irrevocably.

9.2.1.3 Globalization

Driven by the social elements mentioned above, the globalized world may return into a "global village". Organized in communities or similar organizations, people all over the world have the possibility to communicate quiet independently. That issue has the power to diminish the influence and many aspects of our national states, the online-communities may grow to a political force [335].

The Internet is a very democratic tool in the present global world- nobody having the knowledge to use and the access to a terminal can be excluded from global information, not even the Third World. By this aspect, the Internet is also a disruptive threat for global economy; it may destabilize important but a little bit undemocratic nations like Russia or China.

So the control over the main future information source "Internet" has an important political implication; it is also relevant for world economy. So any global development by the major national players will influence the Internet [366].

9.2.2 Hardware Technology

This section focuses on the hardware technology as a significant driver for developments in the field of social commerce in 2020. e-commerce is possible due to Internet. Two main factors associated with Internet are: accessibility and efficient and effective utilization in the form of devices and services. The ways and trends to access Internet and emerging devices that may influence social commerce are discussed as follows:

9.2.2.1 Broadband and Mobile Internet Access

There are two distinct ways of accessing Internet namely fixed networks (e.g. WLAN, Ethernet, etc.) and mobile networks (e.g. handheld devices like mobile phones, PDAs, etc.).

The future developments in *Broadband or Fixed Networks* will be dominated by issues like security, very high speed and accessibility-anytime anywhere. Internet2 and IPv6 in future will enable remote interactivity addressing privacy and security issues. With new technologies such as Photonics Fiber, backbone network speed will surpass that of optical fibers and hence will allow faster broadband access [373].

Currently the link between the service providers and the Internet user (called as local loop) is low speed and hence creates bottleneck. There has been resurgence in microwave technology with emphasis on Local Loop. Local Multipoint Distribution Service, Multichannel Multipoint Distribution Service, and Wireless Local Loop services may eventually provide wireless, high bandwidth access to residential and small business users.

Mobile Net, another way of accessing Internet, has a major concern of speed. Today with UMTS High Speed downlink Packet Access, rates up to 14.4 Mbps are achievable which certainly will improve in 10-12 years. Availability of fast methods for online access through mobile devices will lead to the popularity of handheld devices. Today Motions' Blackberry and DoCoMo's I-Mode already suggest a prospering future for 'go Mobile' [364]. Mobile devices (PDAs) already are equipped with GPS, RFID and NFC. This technology coupled with high speed wireless access anywhere anytime will result in Internet (wireless) enabled home appliances, where home devices will be automated with smart operating systems.

Hence, the current trend suggests that accessibility is driven by mobility and in future mobile access or wireless access will be available just like telephone lines today.

9.2.2.2 Innovative Online Devices

Electronic devices are becoming smaller and more lightweight and often wireless and mobile. Almost all the electronic devices will be Internet enabled in future.

Improved human computer interfaces is pushing the use of cellular phone as an all-purpose computer. The concept of handheld devices will fade-away with time and hands-free computer interface-the ability, e.g., via *wearable computers*, eyeglass lenses with video monitors, light beams scanned to the retina, and voice recognition, to process information and transmit and receive messages, while keeping hands free for other tasks will become popular. In context of wearable computers, smart textiles (clothes with mini-chips and circuits) are also candidate for future research [379].

Biometric safety devices will be the answer to ever echoing question of security in social commerce. Biometrics, in essence 'what you are,' are destined to replace 'what you know' items such as PIN numbers, and to augment 'what you have' forms of identification such as cards. These will verify identity based on human characteristics, such as DNA, fingerprints, iris scans and hand geometry [384]. e-commerce will extensively use Biometric devices for identification and hence will prevent unauthorized access and frauds. These techniques will be used on the log-in pages, payment systems, accessing remote personal data and information. In future, biometric technology will further develop 3-D infrared facial recognition access control, real-time facial recognition passive surveillance, and visitor management authentication systems [372]. There is still many issues regarding re-usability, replacement in case of theft and others that need to be resolved and research is currently dealing with them. In addition, getting acceptability from masses in near future is uncertain [379].

In future *3-D* images and videos will dominate and hence holography, 3-D TV, 3-D scanners and 3-D visualizers will get popular. Also 3-D TV with touch and smell is a project under research. 3D televisions are already in the works,

but reproducing smell and touch have proven difficult and is anticipated to be in market by 2020. If introduced, this will make advertisement, entertainment and online-shopping a new experience. 3-D books as well will become reality one day.

Smart systems with innovative applications based on pattern and object recognition in media contents e.g. data, images, and videos will be used to perform daily tasks which are performed by humans. A very obvious consequence as already can be imagined is appliance vision. These advanced applications will be able to separate contents from 3-D images and videos and will extract useful information from these contents.

Appliance Vision that new devices, applications and services specialized to particular classes of activity have the potential to provide interesting, and effective ways of interacting with the Web [364]. This feature, for example, will enable the following activities:

- on-line magazines and newspapers go direct to printer or e-book;

- shopping sites go to portable home tablet;

- football scores, stock prices and maps go to handheld or wearable computer;

- photos and Web-cam pictures go to the wall-mounted display in kitchen;

- MP3 files go to Internet-enabled audio player;

- Video goes to television or seat-back in the car.

All in all, computer networks will reflect social networks, and other technologies and devices will facilitate the interaction of these networks. Few of these devices and technologies (e.g. Appliance Vision) will be realizable in near future, while others (e.g. Biometric Safety Devices, Content recognition) will take some years to develop and get accepted by masses. Once realized, these will completely change the way we know e-commerce today.

9.2.3 The Web

The key role of information technology in the development of our society was already discussed above. Today, over 1 billion people use the Internet and their number is rapidly growing [334]. The Web becomes not only the every-day-tool as already mentioned but even the traditional "civil society" is becoming identical with information technology society as defined by the use of the Internet [380].

9.2.3.1 Information Handling

The modern technology allows us today to collect, store and make accessible a huge amount of information and knowledge, as it was never possible before. The development of new database technology, which makes the storage and organization of rapidly growing data volume possible, has a central impact in this context. Closely connected to this development, is the very important issue of efficient information search. The importance of the fast, precise access to the needed information can be observed on the example of Google Inc., which based on its efficient search engine became one of the biggest and most powerful companies in the world. The weight of getting exactly the information you need, at any time and any place, within few seconds will play a significant role in the future world and control of access to the information and knowledge will be a fiercely competitive market. One the one hand new, innovative technologies, like semantic web offers new start-ups chances to stand up to current market leaders and reach through their innovations the new role allocation in the market. But on the other hand the same next generation technology could even reinforce "winner takes it all" situation, typical for e-commerce. It could just enable companies like Google to strengthen and extend their leading position through technological advantage and to become more powerful. This scenario is at least just as possible as complete market revolution through small companies and would entail almost a monopolistic market position for the technology leader.

Earlier in this report a probable development of web and information organization of the future has been described. More and more information will be united, structured and classified in global databases. Almost all content will be provided with meta data information, which will push the development of semantic web and intelligent algorithms for sorting, combining and providing every kind of information. Possession and control of necessary infrastructure, storage space and data base technology will be of a great value. Furthermore, besides the development of the best intelligent methods and algorithms, the alternative, social methods of information handling could become a crucial point for becoming a market leader in the information and knowledge providing market. In this context, collaborative and social search could provide new opportunities and be the subject of keen interest in the future.

In conjunction with the rapidly growing amount of user generated content, especially the quality of information, becomes more and more an important aspect. Already today websites and services like Wikipedia, YouTube or blogging sites like Blogger where users share and publish content related to various topics, belong to the most popular websites on the World Wide Web [362, 329] and over 35% of Internet users in the USA were creating web content in the year 2006 [376]. Social recommendation and evaluation systems could become irreplaceable for separating the wheat from the chaff and finding reliable information. Creation of trustful expert networks related to special topics, which rate and comment content created by users, can become one of solutions for providing guaranteed

verified information.

The development of personalized and customized services based on individual user profiles and also the rapid growth of social communities reveal the important issue of data security. Attended with huge amount of valuable information, also the threat of information theft and development of information dealing market would be an issue in the future. Opportune reaction of governments or even UN in order to give customers certainty of the law could become of great significance because users worry about their personal data might become a serious obstacle in the development of social based services.

9.2.3.2 Social Communities

In the last few years a great number of different social communities on the Internet, based on Web2.0 technology sprang up like mushrooms and became very popular all over the world. The fact that today MySpace is the most popular website in the United States speaks for itself and it is just the biggest one from a great number of global social communities [362]. Big companies long recognized their power and are trying to push their own services into the market. Google's Orkut has already over 58 Million users [352] and Yahoo!, after it tried and failed to buy Facebook, the No. 2 social networking site in US, for $1 billion [358], is recently trying to get MySpace from Rupert Murdoch's News Corporation [328]. The great value of these sites results from the fact, that millions of users provide detailed personal information about themselves in their profiles, join groups, exchange experience and get in contact with a number of people they would probably never meet in the real world. This trend allows people growing degree of communication and interaction but it also enables companies to profit from the huge audience for the targeted advertising and services, where detailed information about every user can be recalled from the database in a fraction of a second. In future it will become unavoidable for almost every user to be part of any kind of social community.

Virtual Worlds, like "Second Life" or "World of Warcraft", have an important impact not only on social development and behavior, but are also gaining an enhanced economical weight. Revenue of over $1.6 Million per day only on Second Life underlines this development [368]. Virtual world presence and advertising are becoming very important for big, global companies today and will be of no less importance for every entrepreneur and retailer in the future. Social price comparison and recommendation systems will crucially change the retail trade and have a great impact on the quality of all goods and the consolidation of the market. On the other hand freely provided detailed user information in such dimensions opens new possibilities and chances for any kind of personalized services, highly targeted advertising and innovative marketing methods.

9.2.3.3 Personalized Multimedia Content

New high-performance technologies constantly push the usage of multimedia in different numbers of devices and applications constantly for years and this trend will proceed or even strengthen in the future. Multimedia applications will be not only integrated in our computers or mobile phones but become more and more important part of our everyday life. New visualization technologies will integrate virtual objects in our real world and new human-computer interaction techniques and mobile devices will allow fast, intuitive access to multimedia information content in almost any place at any time. But one of the most important aspects about the multimedia content of the future will be its dynamic structure. Every user will get personalized information, in his personal design and favorite appearance, with handling structure individual optimized to his person. First steps in this direction are undertaken by Google with the implementation of iGoogle, personalized Google start page.

The automated user adaptation based on detailed user profiles will increase people's efficiency in adoption of new knowledge and facilitate comprehension of giant information flood of the future, making the use of worldwide information network easy enough for the majority of population.

9.2.4 Economic Development

As a tribute to the fast development of the Internet culture, business models are needed to handle the growing consumer online market with its high volume. But there are some moderation factors, such as the uncertainties of intellectual property rights or the aspect of quality; therefore are no real economic solutions available at this time.

9.2.4.1 Information Search Market

The information being available for every Internet user in future is increasing rapidly. As a result of the special economies of information goods, you cannot exclude a publish information, a global network enables the access to it for all users.

In the world of today, it is quite hard to imagine, that you can find a fitting business model including a revenue model for a common good as information, this is a result of the mentioned specialties of the good information. One possibility is a integrated tool for every-day life, based on a monthly fee. For example, the customer will have the possibility to design a individual search engine by his or her own priorities of interests (poi-system) [378]. Beyond the problem of storage the immense mass of data physically, the finding of a certain information will be a central topic in the world of tomorrow.

Another important topic is the quality of the provided information; the trend will shift from quantity to quality. So it is a key field of competition, to

design and implement a system to ensure data quality and confidence. One way to improve data quality is a encyclopedia process (like for encyclopedia Britannica), it is necessary to control customer-integrated data material (like at wikipedia.org) by experts [330].

A consequence of this trend is a mechanism to delete unimportant data material, the most information being created in the Internet was never designed for eternity. So it will be a important branch of future information business to handle the quality of stored data in combination with a method to identify data with a certain "date of expiry" and delete it, the threat of a global information overflow can probably not be handled in another way.

For these problems is no business model in existence yet, but there are some possibilities to solve it in a technical way.

9.2.4.2 Advertising Market

One important advertising market in the year 2020 will be the online media market. Today, this markets advertising volume is the fastest growing segment of the whole advertising market. You can see a shift from 4.7% market volume to a volume of 14% in the year 2020 [386, p. 18].

The importance of the advertising with its transfer of information to the customer will increase in general. This fact is a consequence of the value creation process as mass customization, which has the need for the integration of the customer.

Additional online advertising in combination with social elements will be a important topic for the creation of customer confidence. According to certain social information, a more individual way of advertisement will come into existence; first attempts in this direction are already realized, developed by Google. So the potential customer will receive (price) individual offers according to its interests. The extraction of the individual information is a possible core business of future online business.

But this business will not be a easy one because of the complexity of the needed information, the high level of competition for advertising and the emerging perception for data security, the Internet of the future will not be like a law-free area as the yesterdays Internet; the regulation of online advertisement is also a important aspect. The advertising market has a strong relation to the world economy, so the volume of advertising depends on its development. The most important issue for future on line business is the assurance of the customers advertency, this is quite low at the moment for online advertisement [359].

So at the end mitigation strategies and social recommendation as a substitute for traditional advertising are a central topic again.

9.2.4.3 Online Retailer Market

The most experts agree that the future of shopping lies in the Internet. This depends on the one hand on the evolving value creation concepts like mass customization or long tail business. These concepts, providing a high potential for future value creation, can only be economically successful by using the next generation of communication technology - the customer have to be integrated by some kind of a personal relationship between him and the retailer for a successful mass customization process, on this way he can buy in confidence his individual product (these products contain higher risks than normal goods); the key for a running long tail business is providing a close network to find any kind of searching goods. Although these concepts are quite old, they will be the basis for future value chains, because they are not implemented in a proper way today; the customer has to learn to collaborate with companies [330]. On the other hand, niches will become more imported than today; they can be filled in by a online value grid construct.

The most valuable chances for online retailers lie in the emerging markets of the newly industrializing countries and its unsatisfied clients. The general trend form the physical shop to an online retailer shop with its social elements will go on.

9.2.4.4 International Regulations

The central topic for a prosper world economy is the important intellectual property right (IPR) issue. With its increasing relevance, this fight will exist within the Internet. If the UN is not able to guarantee the security of IPRs, the attendance for innovation will decline all over the world.

There are several international initiatives to cope with two major problems: First the different standards of law, second a fitting method of jurisdiction over (IPR) violators [357].

Both aspects can only handled by an international committee, formed to implement a regulatory system accepted by all stakeholders, and there will be a growing interest for this topic. Many nations see the necessity to establish a control system for the free-assembled Internet with its high crime potential and palatial anonymity.

Additionally some kind of technical regulation and communication standard will be developed, a necessary process for a highly advanced Internet [369].

9.2.5 Other Players in e-Commerce Market

This section gives an overview of the big names that drive today's e-commerce market, their roles and how they will continue to develop.

9.2.5.1 Analysis

Today well-known names in e-commerce that have earned repute in social e-commerce include Google, Amazon, eBay, Yahoo, Microsoft, iTunes. Search has been the heart of e-commerce. Everything be it shopping, browsing, surfing, finding information, product, starts with search hence efficient search has been and will dominate e-commerce market for quite some time till it reaches its height which will be personalized information. All of the above mentioned names either have their own search engines or rely on each other for search services.

Generating revenues is equally important as is intelligent search. Google has come up with unique idea of generating money with online ads. With all the searches, appropriate ads are displayed in the form of text. Google had dominated the search market and has captured more than 50% of Internet users in recent years with its excellent and efficient search algorithms and strategies. Following Google are Yahoo and Microsoft. There is an on-going battle among the three to introduce new and user-friendly services to attract as much users as possible.

Today's e-commerce market is more or less driven by Google; the other companies react accordingly to retain their market shares.

To maintain its reputation as a forefront technology leader and innovator, Google has been aggressively acquiring software start-up companies that can be easily integrated in to its existing solutions, and can instantaneously gain visibility through Google's leverage. However, this strategy of growing through small acquisitions is also used by Yahoo, one of Google major competitors, although the underlying methodology of the acquisitions is different. Yahoo's acquisitions have been focused on acquiring search technology companies having specialized search functionalities. For example, Yahoo acquired Inktomi, Overture, and Stata Labs to perform web search, locating advertiser key words, and retrieval of Yahoo email client, respectively. Yahoo has a group of search technologies for different products and services, while Google has only one search technology [331].

Yahoo's single biggest issue is its tendency to buy properties then leave them sitting there without active development. Overture is a perfect example - they went years after acquisition without improving it, while Google's competitive products upgrade and improve constantly [381]. Microsoft though new is also following the Yahoo! and Google in search. Strategy and constant improvement with time is hence very important to acquire visibility and attract users in e-commerce.

9.2.5.2 The Role of Co-operations

The future relationship of the companies is quite complex. All of them have short-term incentive to continue their existing relationship. However, in the

future there will be a spectrum of levels of competition between the companies, from cooperation to fierce competition.

Initially, eBay, Amazon, Apple have been key-advertiser accounts of Google. As Google continues its expansion away from pure search, it's starting to see a reaction from other Internet companies. eBay (well-known for auction business) is striking a deep partnership with Yahoo or Microsoft instead of Google as latter is threatening eBay's core businesses and also eBay is seeking ways to reduce its dependency on Google. Amazon is also switching search partner from Google to Microsoft as Google Base Book Search, now enables publishers to circumvent Amazon and sell directly to Google searchers [365].

In light of this analysis, e-commerce market players take Google more as a threat now as opposed to being a partner as it used to be few years back. These businesses are now looking for partners other than Google to secure the grounds they foresee to lose to Google in future. As the development already suggest, if Google continues to grow at the same pace, perhaps these companies will again consider establishing partnerships with Google as latter will be capturing majority of Internet users.

Apart from partnerships with e-commerce businesses, all the players in e-commerce market have partnerships with other businesses such as with Internet service providers, telecom companies, retail shops etc.

9.2.6 Google Development

Even changes themselves often follow a certain constancy. Thus, a revision of Google development until the current day may provide insight into possible pathways towards the future. Also already stated declarations by officials impose certain commitments. Both these aspects will be analyzed in the following section.

9.2.6.1 Recent Google Development

"I'll leave that to you." - Eric Schmidt, Google CEO On the question whether his mentioning of Google's future as 'a global $100 billion company' referred to market capitalization or annual revenues [371].

From its foundation in 1998 Google has seen unparalleled growth over the past few years which had already crossed the symbolic border mentioned by Schmidt with a market capitalization of 110 billion US-$ when the statement was issued in March, 2006.

Assuming that Schmidt pointed to annual revenues, Google's way towards joining long established companies such as Siemens, HP or Volkswagen in the world's top 50 companies in this category will still be a long and demanding one. In 2006, Google's annual revenues amounted to $10.6 billion, 99% of which were achieved by advertisement services.

In contrast to Google CFO George Reyes and Yahoo CEO Terry Semel envisioning a slow-down in online advertising market, Schmidt sees 'tremendous headroom' to improve online advertising quality and thereby the revenues generated [338, 342]. Still, for the UK and the US, total online advertising market is supposed to double within five years until 2011 and 2012 respectively and Google is already holding a world-wide 25% market share in online advertising [340].

Based on these numbers, Google might hope for maximum revenues of approximately $42 billion per annum in 2012, based on the very optimistic case of doubling up their market share, Google's annual revenues would only add up to $42 billion. This corresponds to a constant annual growth rate of 31%, which is far less than recent 63% [347].

Therefore, diversification and entering new markets seems a necessary measure for Google in order to maintain their growth rate.

9.2.6.2 Google Vision, Philosophy and Appearance

"Don't be evil." - informal Google corporate motto[345]

Google's way from the Stanford student idea to the world's leading online advertiser has brought changes concerning the company's perception and appearance. Depending on which PR source to quote, Google aims 'to organize the world's information and make it universally accessible and useful' or at 'providing the best user experience possible' [346, 350]. Google keeps repeating that their users' trust is their 'most valuable asset' and suggests that they would restrain from increasing shareholder value if significantly contradicted to user experience.

Considering the perceived trustworthiness for the users, the security of personal data and privacy are major concerns of Google criticism. Therefore their handling may become a key factor for Google's future success. So far, Google's refusal to hand over excessive amount of search data to the US-American Justice Department in January, 2006 experienced considerable coverage[370]. After all, Google's main source of information and revenue - the users who today voluntarily feed its services - may be shaken if ever news about a series of unjustified data transfers will hit the public.

Many points in Google's commitment, called 'Ten Things', address their specific search service and encompass aspects as speed, page design and pop-ups. Special effort is paid to the explanation that individualized advertisement is not to be seen as a nuisance but rather as a chance or even as help. Still, a statement on the concentration on search key competence has already been altered, as for example 'chat' had proven to be a too promising field to further stay banned from the company's portfolio (as it originally was). Interestingly, Google already includes the use mobile applications in their 'Ten Things' as well as referring to their service as a sort of 'democratic' social recommendation

system, featuring Internet 'votes'. This might be a hint that Google will intensify research on mobile devices and social searches.[350]

Spending some thoughts on the expression 'to organize the world's information and make it universally accessible and useful', many ideas arise. First of all, whoever possesses the lion's share of whatever will be considered 'information' and controls access to it, can make it a limited good and dictate prices. Second, 'world's information' on a most general interpretation encompasses people's thoughts and choices, classified information from the military and cutting edge R&D. As knowledge is based on information, in the end there might come the time when 'information is power'. 'Organization' may make things more easily accessible, but on the other hand can also mean 'calculated distribution'. Just recently, Google opened its public policy blog in order to publicly discuss political questions the company is involved in[354]. It will be interesting to watch Google's self-depiction and what content will be covered or perhaps be kept secret.

9.2.6.3 Developing Google

Innovation at Google arises from their own development and ideas as well as the acquisition of technology companies. While Google has spent approximately $2.9 billion on research since 2002, this number roughly equals the value of its biggest acquisition, DoubleClick [347].

Google Services
Sources pay special interest to Google's way of developing, testing and introduction of new services. The well-known 80:20 principle has been adapted towards a 70:20:10 model, leaving Google developers 20 percent of their time to focus on non-core (search and ads) products such as GMail and GoogleMaps and 10 percent on yet-to-come ideas [332]. This change symbolizes the fact that Google might opt for diversification from their main market: Work on these 'alternate' services now sees a stronger relevance and is more precisely divided, ensuring as well the possibilities for completely new ideas and the finishing of promising concepts.

Next to well-known search options 'Images', 'Video', 'Maps' and 'News', Google already features a vast amount of search related services. Most of them can be categorized as searches restricted to certain topics (patents, blogs, catalogs, products, etc.). Interestingly one can access numerous searches that already provide information which originates from outside the Internet. Among them are well-known Google Earth - providing satellite photography, Book Search and Google Scholar for scientific publications. Other services provide extended customization, as for example iGoogle. Within the topic 'Communicate, show & share' Google presents applications which resemble office tools or can be used for communication. With Blogger (Blogging), Google Talk (VoIP, instant messaging), Google Groups (mailing lists), Orkut (social community)

and self-explanatory GMail, every prevailing form of online communication is represented within the portfolio. On the content creation side, Google offers word processing, spreadsheets, 3D-modeling, a calendar, as well as video and picture publishing [349].

Some Google Services already allow their users to earn money for their contribution to search refinement. Google Co-op lets any user create an own search engine with individualized search results or encourages them to tag websites according to given topics. Users are then paid depending on the traffic generated over their individual engine. Furthermore and not quite fitting the other categories, Google Checkout holds a special position as a payment solution.

The premature publishing of Google service beta versions in GoogleLabs allows the company to judge acceptance with the users in advance and to focus development efforts on relevant and popular ideas. This way of dealing with innovation fits Google's concept of creating value based on user data and statistics. It seems natural that this orientation will also dominate Google's development in the coming years.

Google Labs Service	Description
Google Voice Local Search	Search for local businesses using your voice, from any phone, for free.
Google Code Search	Search public source code
Google Reader	Use Google's web-based feed reader to keep track of your favorite web sites
Google Transit	Plan trips using public transportation
Google Music Trends	See what music is popular among Google Talk users
Google 趋势	(Google Trends in Chinese)
Accessible Search	Web search for the visually impaired
Google Extensions for Firefox	Add powerful new tools to your Mozilla Firefox browser
Picasa for Linux	Google's photo organizer now available for Linux users
Google Trends	See what the world is searching for
Google Related Links	Provide your website's visitors with links to useful information
Google Mars	View some of the most detailed maps of Mars created by NASA scientists
Google Page Creator	Create your own web pages, quickly and easily
Google Dashboard Widgets for Mac	Quickly access Google products from within Dashboard
Google Web Accelerator	Save time online by loading web pages faster
Google Ride Finder	Find a taxi, limousine or shuttle using real time position of vehicles
Googleサジェスト日本語版	(Google Suggest in Japanese)
Google Suggest	As you type your search, Google offers keyword suggestions in real time
Product Search for Mobile (US/UK)	Search for products from your mobile phone using Product Search
Google Sets	Automatically create sets of items from a few examples

Table 9.1: Google labs services
Source: adapted from Google [348]

The services featured by GoogleLabs are listed in figure 9.1. They emphasize completely new concepts like voice recognition or combine different competences as for example in 'Mobile Product Search'. Most of the upcoming features support a social component as they let the user share personal information and interests with their friends or a certain community [348].

Acquisitions

With its own huge potential to innovate, Google has yet consequently restrained from large acquisitions. Next to intensive research Google constantly swallows small innovative companies. The acquisitions are depicted in table 9.2. A remarkable thing about this is, that Google rarely acquires companies with identical core competences. Google rather evolves the acquired technologies and opens them to its broad customer range. Google seems more interested in the respective technology than in actual market share. The up-to-date biggest acquisition was 'Double-Click', a move that led to eager discussion and coverage as Google outbid Microsoft and was afterwards charged being anti-competitive. The deal amounted to 3.1 billion USD and enabled Google to engage in the field of display advertising (as opposed to Google's recent text based advertisement).

The recent acquisition of customer relation management specialist Sales force might also point to the same direction as does the one of Neven Vision. Both companies, though from very different fields, work towards user identification and profiling. This can be seen as another indicator for the predicted shift to ever more strongly individualized services and data collection. So far, Google's only strategic investment regarding a company of comparable size was the purchase of 5.0% AOL shares. As a reaction to Microsoft trying to entice AOL from using Google search services, Google took this action to assure its further usage in AOL products [355, 360]. More or less 'loose' co operations are for example sustained with SUN Microsystems (concerning the Open Office Suite) [332].

Company	Technology	Date Acquired
Deja	Usenet Search Services	Feb 01
Outride Inc	Personalized Internet Search	Sep 01
Pyra Labs	Blogging	Feb 03
Neotonic Software	E-Mail Customer Support	Apr 03
Applied Symantics	Online Advertising	Apr 03
Kaltix	Personalized Internet Search	Sep 03
Genius Labs	Blogging Entity	Oct 03
Sprinks	Paid Advertising	Oct 03
Ignite Logic	Web Templates	May 04
Picasa	Photo Management Software	Jul 04
Where 2 Technologies	Internet Mapping	Oct 04
Keyhole	Satellite Imagery	Okt 04
Zipdash	Mobile GPS Traffic Updates	Dec 04
2Web Technologies	Web Spreadsheet	Jan 05
Urchin Software	Web Analytics	Mar 05
Dodgeball	Mobile Social Networking	May 05
Reqwireless	Wireless Software	Jul 05
Current Communications Group	Broadband Internet	Jul 05
Akwan IT	Distributed Data Processing	Nov 05
Android Inc	Mobile Phone Software	Aug 05
Transformic, Inc.	Deep Web Search	Sep 05
Skia	Vector Graphics	Nov 05
dMarc Broadcasting	Radio Advertising	Jan 06
Measure Map	Blogging Analytics	Feb 06
Writely	Web-based Word Processing	Mar 06
@Last Software	3-D Design Tool Maker	Mar 06
Orion	Search Algorithm	Apr 06
Neven Vision	Biometric Identification	Aug 06
JotSpot	Wiki Host Site	Oct 06
YouTube	Internet Video	Nov 06
Endoxon	Internet and Mobile Mapping	Dec 06
Xunlei (partly)	File Sharing	Jan 07
Adscape	Video Game Advertising	Feb 07
Trendalyzer (Gapminder)	Visualization	Mar 07
Double Click	Display Advertising	Apr 07
Tonic Systems	Presentation	Apr 07
Marratech	Video Conferencing	Apr 07
Green Border Technologies	Secure Browsing and e-mail	May 07
Panoramio	Photo Sharing	May 07
Feedburner	Feed Distribution	Jun 07
GrandCentral Communications	Managing Voice Communications	Jul 07
Postini	Communication Security	Jul 07

Table 9.2: Google acquisitions
Source: adapted from Chen et al. [332]

Looking at the proficiencies of the acquired companies and recent development of Google services, some theses can be deduced:

1. The field of core competence (advertising, search, statistics) will expand outside the Web. This is supported by the acquisition of TV, radio and gaming advertising companies, as Google CEO Schmidt stated: "The Web isn't the only part of the world, the Web is only part of the world." [342]

2. This is not contrasted by the efforts to digitize offline information and to provide ubiquitous Internet access, as shown with the free Wi-Fi initiatives [353].

3. A lot more mobile and location based Google applications will very soon see the light of day.

4. Google is well equipped for further development in the social web and will push all-online data processing by providing an online office and media data suite.

5. Competition and conflicts with Microsoft will get more intense for example by Google's attack against the MS office suite.

9.2.6.4 Google's Influence on e-Commerce Business

As covered in the 'The Google Economy' Google holds a key position for e-commerce merchants. As Google search is perceived to be the 'entry to the Web', Google Page Rank position defines the amount of attention particular web-shops will receive. In addition, Google's AdSense and AdWords services provide e-commerce merchants the opportunity to let their classifieds be shown with respect to the respective website content. Due to Google's dominant position in online advertising market, big e-commerce companies as Amazon and eBay generate most of their traffic via Google and therefore spend big parts of their advertising budget with this company [337].

Recently, eBay was reported to withdraw all their US advertisement (worth $100 million a year) from Google. This was an action to symbolize eBay's discontent with Google pursuing the development of PayPal competitor CheckOut. Although Google CEO Schmidt during the DoubleClick discussion pointed out that switching online advertisement providers generally states no difficulties, eBay turned back to Google only one weeks after - even if on a smaller scale [367, 361]. As Google's largest customer, eBay accounts for 6% of Google's revenues, while nearly 12% of eBay traffic is believed to be generated via Google [374, 337]. This disparity may even be more distinct for other e-commerce businesses, thus making them more dependent from Google than the other way around.

As reported, the combination Google Catalogs, Product Search, CheckOut and Google Base (the system used to enter various information - such as products

- into Google searchable data pool) also provides a complete system comparable to eBay powerselling or Amazon marketplace. e-commerce merchants are able to conduct their whole business within Google environment.

9.3 Google – Personal Assistant

In this chapter possible Google's services and core competences in 15 years, based on the driver analysis above, are described. Thereby Google Inspire as a ubiquitous recommendation and inspiration system is illustrated as well as Google's online operating system, which serves as a basis for Google future services. Afterwards business model and companies development are presented.

9.3.1 Google Inspire

In 2020, Google's ever increasing penetration and new technologies will have led to the rise of an understanding, highly personalized recommendation system. This system will not stick to the borders of nowadays Internet but satisfy its users' request for comfort, socializing and facilitated information handling in all their daily life. Identifying fields of interest for its users - which they might not yet have bothered thinking about - 'Google Inspire' will be known as one of the most powerful services in Google's portfolio.

This subsection starts with a rough overview over Google Inspire functionality. After accompanying a typical day in the life of an average young person in 2020, closer looks at the implementation and the backbone technology for are presented. Also, examples for different areas of use and the opportunities for commercial activity are considered.

9.3.1.1 Concept

Google Inspire is a service designed to proactively identify personal interests and needs of its users and to match these with according recommendations in every aspect of life. Inspire will be facilitating and stimulating its users' forming of opinion. Suggestions for certain actions are given before the user him- or herself has consciously decided to engage in the specific topic.

Google Inspire will not only be able to judge a user's affinity for some product. It will even understand relationships between human beings and to predict their feelings (or at least their consent) and reactions on specific issues.

The service comprises:

1. *A user interface to both display content and to receive input*

   As providing the user with information is the declared purpose of Inspire, an output functionality is needed. In order to continually improve acceptance and quality, user feedback on the given recommendations is essential. Also, the user should be able to issue specific requests.

2. *Compatibility with available interactive information devices*

   Running on the vast majority of information media, Inspire will be able to consider data from every aspect of user behavior. Accordingly, it will give coherent and coordinated information on all devices. This will be accomplished by integration into Google Unified Media Operating System (GUMOS) 9.3.1.4.

3. *Passive information collection*

   For Inspire, not only interactivity has to be assured. Also the collection of data not explicitly provided to the service plays an important role. Such will for example be user GPS tracking and content of personal messages. Special interest will be paid to the users' social networks, as they will already provided most highly personalized information.

4. *Artificial intelligence to interpret user behavior and give a meaning to the acquired data*

   The tremendous amount of information acquired needs to be analyzed and then prioritized. Relevant data has to be connected and various parts of information will be merged into a coherent profile. This profile will be checked for specific patterns that allow matching with given recommendation options.

5. *A means of storing user related data*

   As Inspire derives individualized recommendations from past and recent user behavior, data on this behavior needs to be stored and made accessible. The data will be distinctively mapped to single users.

6. *A software interface to send and receive data to/from other applications*

   In such external databases the recommended items and further data on the user and his/her social network will be listed.

In order to provide decent results, further developments in some key technologies are required. Among them are the ubiquitous online-connectivity of the majority of devices from every day's life, sophisticated analysis tools (for example speech, object and face recognition in videos and pictures) and the semantic understanding of acquired information by machines.

9.3.1.2 John Miller's Day

In this chapter we are going to take a look at a typical day of John Miller, an average man of the year 2020 and how Google services of the future will influence it.

About 7.30 in the morning home media system start silently playing new song from a brand new album of John's favorite band. John opens his eyes and

at the same moment is vexed with him for drinking so much at the yesterday's party. He likes the music, which wakes him, but he never heard this song before.

At the breakfast table lays his electronic newspaper based on Google services. It is already switched on and shows the article about the yesterday match of John's favorite football team. John touches the picture beside the article and a short trailer with all goals of the match starts. In the inspiration column aside, he notices that still tickets for the next home game are available and a green frame indicates that there is no conflict with other appointments in his calendar. At the same time he gets information that two friends of him he hasn't seen for the longer time have already bought tickets for this game. He decides also to ask his brother to go with him. With few touches of the e-paper, he invites him and reserves two tickets for the match. Google Checkout arranges the automatic debiting of his credit card with the reservation fee.

Below, John finds a compilation of news and articles about the increasing fall of old media companies. This compilation is provided specially for him from all kind of sources by Google News Service and was subscribed by John yesterday for the preparation of his new research. The news about his personal investments in shares moved to other side. He doesn't really like this new layout, so he request Google for sending him new suggestion for the layout of his newspaper. It is immediately in his mailbox but he is going to take closer look on it in the office.

John proceeds to the page with his personal calendar and messages. There is also a video message from his girlfriend Jane where she expresses her anticipation for the dinner tonight. Inspire column recommends John to buy her earrings as a present, which would perfectly fit to the necklace he bought herself some days ago. John thinks it is a great idea and orders the earrings immediately with one touch. At the same page Johns sees at the recommendation for the new album of his favorite band including the song, which waked him up today. Without long consideration, John orders the album at the music online store, chosen by Google Price Comparison. Within few seconds the album is paid and starts playing on the entertainment system in John's apartment. Still tired but happy about this purchase, he leaves for a work.

The emotion recognition system of John's car recognizes his good mood and adapts the human-machine interface and communication level to it. On the head-up display John notices the suggestion in the inspire frame to visit a pharmacy on the way to his office and buy some aspirin. From 8 cocktails on his bill of last evening Google's Inspire conjectures that he could need it and John is going to adopt this proposal.

In the evening, after luscious dinner, John and Jane go to John's apartment. Biometric recognition system and identifies both entering the apartment and based on the profiles of both and their relationship to each other, nice light and music are turned on. Home media entertainment system is already on and on its 3D screen they see the proposal to look a new movie, the continuation of

the film, the both liked. Below there is a possibility to order popcorn by one click. Sidewise there are other suggestions how both can spend the rest of their evening. One the one side they can look at the pictures form the yesterdays party, which were just in time uploaded to Google Picture Service or they can already plan their holiday, that they have just scheduled in their calendars. From the satisfaction with their last trips, the recommendations of their friends and preferred leisure activities, Google Travel have composed some purposes for the holiday, including some pictures, videos and photos of friends, who have already been there. Furthermore, with Google Earth they can even get a realistic 3D impression of places and hotels they are going to visit.

9.3.1.3 Mock-Up

As covered in 9.3.1.4, final layout and structure of the user-interface will depend on the type of screen and form of input used as well as the user's stated preferences and optimization proposed by Inspire

Therefore, a general approach to its structure and the way of navigation with Inspire will be described. After registration, Inspire functionality can be distinguished in what will be called 'Active Inspire' and 'Inspired Strolling' services as well as 'Pro-Active Inspire' . On the one hand, the user will be able to actively request special recommendations. 'Strolling' will be a functionality uncoupled from any restrictions, so the user can let his or her mind wander with digital support. In contrast, the proactive part of Inspire continually presents its results alongside and within other applications based on the specific context. Additionally, content may be individually created with respects to the user.

Inspire Start Page
Through the Inspire portal, users will be able to access the functionalities 'Active Inspire' and 'Inspired Strolling'.

The Inspire main page will resemble nowadays Google CI layout, featuring only a dominant search bar. Colors, shapes or additional gadgets can be adjusted. This page forms the gate to individualized information access. The search item can be composed of words, which are inserted via typing, touch-pad gestures, voice recognition or similar. Due to the rise of semantics in the Internet, the service will be able to process single keywords as well as complete questions. Additionally, drag and drop functionality for all sorts of digital items will be implemented. Such can be media content (pictures, graphics, sound files and movies - e.g. as taken via mobile devices), organizer data (such as appointments, task and contacts), office documents or websites.

With according interfaces for NFC or RFID technology, all sorts of 'offline' items can be identified and serve as the search seed for Inspire. Furthermore, there will be a button for direct start without further parameters and a link to 'Inspire bookmarks'.

'Active Inspire Result Page'[1]

Figure 9.1: Mockup - Active Inspire Result Page
Source: Own Illustration

The content on the result page is displayed according to user preferences and
device possibilities as text, pictures, video or sound samples. Inspire presents
different keywords that relate to the search item (e.g. 'outer space') and are
chosen with respect to the users previous behavior and environment (see 9.3.3).
The keywords can be of different abstraction level (imagine 'Stellar pictures by
Hubble' vs. 'Rocket technology' vs. 'Armageddon movie') and are presented
many on one page or one after the other. This can happen by manual forwarding,
by scrolling - similarly to a news ticker - or by cross fading the different items.
On the sign of interest in a topic, Inspire will provide refined results on a
more differentiated layer (e.g. 'Principles of rocket technology' and 'Rocket
technology as political factor'). Such a sign could be everything from a targeted
mouse click to a more unconsciously spoken word of consent. If requested by
the user, Inspire will provide previews of the content related to each keyword
before refining the results.

This process of presenting more specialized topic suggestions and choosing

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[1]Inspire start page featuring context awareness (welcome message), search bar (cloud),
direct Inspire button, personal pages (lower right corner), drag and drop functionality for
the most different types of data (lower left corner and fingertip). Controlled via hand
movements on 3D screen of the home entertainment system.

will be repeated until it ends with the user deciding for an item of the lowest abstraction level. He or she can then choose to be redirected to the provider of the desired information (such as discussion groups, product pages or similar) or have it shown within Inspire framework. Controls for Inspire will be few, intuitive and simple. They will in whatever appearance be skipping items, scrolling back, going to the previous 'layer' and an 'instant view' function which leaves out interjacent layers and directly delivers the best fitting content result (such as a documentary on the race to the moon for the current example). On the lowest level, a menu for further actions will be integrated. It enables item related features such as direct purchase, setting up calls and automated calendar entries.

'Inspired Strolling' leaves out the first level of topic specification and starts with a list of possible topics of interest completely generated by Inspire.

As an additional feature, Inspire result pages of any abstraction level can be bookmarked, shared with friends or defined as start page for certain devices (e.g. 'recent technology news' on an e-paper). Once bookmarked the user can individually use them as gadgets to combine them and put them into the start screens of any personal interface (e.g. 'action movies' and 'major soccer events' on a movie streaming device). The more Inspire will know about a certain user, the more he/she will be recommended new gadgets. If allowed, Inspire will optimally set up the according pages on all devices of the user.

'Pro-Active Inspire Results'[2]
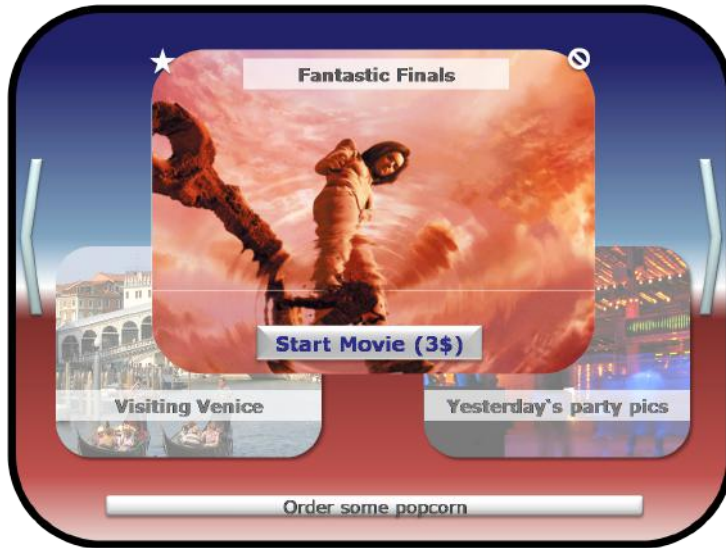
Figure 9.2: Mock-Up - Pro-Active Inspire Results
Source: Own Illustration

The other way to use Google Inspire is alongside other Google or 3rd party services. Based on both the data stored in Inspire's databases and the information currently processed by the user, Inspire will generate recommendations. To accomplish this, there are several measures. The one and most obvious would be frames implemented into websites and services as it is known from today's AdSense and its implementation in GMail - the content of the current email defines the displayed Ads. This principle will be applied to a wide range of media and applications. Additionally, users could define to have an omnipresent 'Inspire bar' at a selected position on their displaying media to hold their recommendations.

Users will have the choice to directly follow the recommendation, to bookmark it for later use or to schedule a reminder. This would happen via the functionalities 'remind after current task', 'reminder on next Inspire session'. It will then later on be accessible via the Inspire start page.

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[2]Inspire result page featuring an individually composed movie trailer, direct payment and streaming of the according movie, bookmarking and feedback on the quality of the recommendation (on the corners of the movie frame), context based recommendation (Inspire Bar on the bottom), automatically analyzed user created content (displaying only party pictures with oneself or one's peers in it) and a travel recommendation.

Inspire Creativity

A topic that will be in its infancy in 2020 will be the automated individual content creation as contrasted to. Based on the further advancement of Inspire technology (see 9.3.1.1), Google will be able to make up individualized content. The huge data bases, advanced pattern recognition and the prediction of user feedback will enable Google's artificial intelligence to develop proactive recommendation into creativity. Further value-added services will make use of Inspire's user comprehension to generate personal movies and series, to give design suggestions for furniture and clothes as well as to compose hyped music or program personal computer games. In 2020 this could start with individual 'medleys' such as personalized movie trailers or music remixes.

9.3.1.4 Google Unified Media Operating System

As already mentioned, in the future it will be nearly granted, that almost every electronic device will have an access to the World Wide Web. Already today its easy and cheap to integrate a chip for wireless network access in mobiles and PDA and the development of high speed Internet access at anyplace and at anytime is in progress. This technology affords an opportunity of outsourcing storage space, applications or even whole operating systems out of conventional devices and ran them on high-performance servers online. Google verifies the actuality of this concept with launching of online office tools and continuous expand of offered online storage space Gmail within last years. Next logical step in the future development would be the implementation of unified operating system that runs principally online and can be utilized on variety of different devices. Already today projects like YouOS [385] or Xindesk [383] are trying to make use of basic advantages of web based desktop environment that runs in a web browser with JavaScript support. These innovative concepts are just in their infancy and are still not comparable with standalone web operating system.

The Google Unified Operating System, abbreviated GUMOS, won't need powerful processors or big storage space in devices it will run on. It will just require high speed Internet connection and will automatically adapt to the purposes of respective device. This concept will allow cheap development, production and integration of GUMOS-Based computer systems in devices from different areas of use like Home Media Centers, workstations in the office, mobile devices, electronic newspapers or even kitchen appliances like the intelligent fridge. For Google GUMOS will serve as a main, common platform for the variety of services and applications it offers and especially enable deep integration of Google Inspire to various situations of our everyday life.

Resulting from the technological development, a rapid growing number of different functions is integrated into any electronic device. The handling of these devices becomes more and more difficult and confusing. Users have to

adapt to various interfaces of their devices and it's becoming difficult, especially for older people, not to lose overview in front of the mass of different solutions for every kind of device. In front of this and in connection with demographic development of our society, a simple uniform and particularly well acquainted user interface will become indispensable for efficient use of complex devices in the future. Exactly such mass customized interface would be easy to realize with GUMOS. Through this online operating system and the combination with biometric recognition technology, it will be possible to offer personal appearance, services and handling preferences individually to every user on every device, no matter if this particular device was already using by the person or he just hold it in his hands for the first time. Users will be no more confined to their specific mobile or notebook, but have the possibility to access their personal, familiar workplace with all their personal settings, data and applications on any device in any part of the planet. This will provide the freedom and mobility required in the future world. Annoying operations like synchronization between different devices, which is often the source of many troubles today, will simply become superfluous and the connection and contention of different devices and media will be simplified.

Furthermore, related to the development of multifunctional devices, in which distinctions between purposes and areas of use will become more and more blurred, as well as in the field of embedded systems, the concept of GUMOS will offer a perfect foundation for progress, wide spreading and integration of these concepts. The flexibility of an online operating system will offer new, effective solutions for the combination of communication, entertainment and work applications on one single platform. Beside of it, GUMOS will provide easy integration of social networks in various applications. Already today there are platforms like Facebook Developers [341], which allows users to build applications for social networks and provide methods for accessing the user data. With GUMOS a common, standardized platform for data access, contribution and management will be created. Moreover it will enable users' interaction on different devices that would be of big importance for many services, especially for Inspire.

Other very important factor that can decisively contribute to the success of GUMOS is security. Since more and more important, sensitive data are stored digitally, their loose or theft has serious consequences for the owner. This important point of security, which at the moment seem to be a threat for Google's development can be turned into profit. With corresponding measures, efforts and developments on the part of Google, GUMOS can provide data security, which is almost unreachable on conventional operating system. Whenever GUMOS is used, user can be sure of using the newest and securest version. Additionally, if one of the world's largest IT departments will working on users behalf to protect his data, applications and devices, threats like viruses or corrupted disks will be no more cause for concern.

All in all mobility, reliability, price, security, performance and simple user interface would be decided advantages and good reasons for the global distribution and success of Google's online operating system and with it of other Google Services with Google Inspire in the forefront.

9.3.1.5 Areas of Use

Inspire will find its use in number of applications, with optimized user interface tailored to each application. Areas of user for Inspire include but are not limited to media, gaming consoles, travel plans, buying presents, home automation systems, comparison shopping, object/place recognition for maps, discussed as follows:

- Media

  Media (including TV, Music, eNewspapers etc) will be one of the targeted fields of social commerce in 2020. Inspire will find its use in TV (shows, sports, and other programs) with "Inspired Strolling". It will also enable users to use other options of Inspire. Users will have their preferred shows recommended by Inspire. It will also enable to have personalized ads during program intermission. MP3 players (Internet enabled) will also have once such Inspire bar displayed on the devices. Inspire will keep track of the choices of the users and will recommend the music according to the activity they usually perform at a specific time of day, e.g. traveling, going to work etc.

- Gaming Consoles

  Gaming consoles will have Inspire capabilities too. Here Inspire functionality will include not only recommending new games but also enabling social interaction, recommending games to friends or communities. It will also take suggestions to improve and deliver them to the partners (creating the gaming devices).

- Recommendations for presents

  With the help of Google Calendar, Inspire will generate suggestions for the whole month once the users feed in their activities. It may include suggestions for an appropriate place to have dinner with friends, or with family, to have party etc. Inspire will help users in buying presents for birthdays, anniversaries and other occasions. It will keep track of shopping via Google Check and will also include additional information (based on users' willingness) of what is bought for whom. It will help Inspire generate personalized *recommendations for presents*.

- Travel Plans

Related to that will also be *Travel Plans.* Based on Google Calendar or in general knowing the holidays in one's area, Inspire will recommend travel plans according to one's choice and budget. It will also take into account people with similar interests traveling to which places and giving recommendations based on their experience or frequency of visits.

- Home Automation Systems

  One important application for Inspire will be *Home Automation Systems.* Inspire will recommend recipes, items for different sections of home, e.g. kitchen, dinning rooms, bath rooms etc. Inspire will recommend a page or screen saver for a specific device in home e.g. refrigerators, kitchen screen, and coupled with RFID and NFC, Inspire for completely automated home will keep track of the items, prompting what's missing and what needs to be bought, for example, intelligent refrigerators will help make out shopping list and Inspire making use of it will recommend where to get the best price on the food.

- Comparison Shopping on the Move

  Inspire will help in shopping well. With the NFC enabled hand held device, Inspire will get the bar code of a product and will recommend buying it from this store or from some other based on price and variety of items, hence enabling *comparison shopping on the move.*

- Handheld Devices in Cars

  In GPS-equipped cars with Internet connectivity, display screens will also have Inspire bar, which will facilitate recommendation regarding nearest stores to buy food items or medicines. Depending on the car model, it will also be able to give recommendations regarding new parts and enhancements that can be suitable for this model and any new car models. In order for safety, Inspire will have special audio capability, so as not to create hindrance while driving. Inspire will be able to recognize objects/places when provided with an image or short movie, hence facilitating traveling and routing. This functionality will be used by *handheld devices in cars.*

9.3.1.6 Value Added Services

As already mentioned in previous sections, Inspire will target highly customized recommendations. It will also provide value added services which will enable users to perform tasks related to recommendations e.g. purchase of products, distribution of media content (e.g. movies, songs etc), tools for creativity, sending recommendations to communities or other uses and will continue to add more with time.

Purchase has always been a main concern for masses. Google will provide a single platform to purchase the recommendations with 'one-click purchase process'. It would be a seamless process i.e. user will request for recommendations via "Active Inspire" regarding specific query or specific product. The user will then get in return all the search results that satisfy the query. If user is interested in buying the product, he/she will simply issue the 'Purchase' command. The rest of the steps would be performed by Inspire automatically. In future touch screens and voice driven actions will be performed for purchases. Hence Biometrics identity verification will be used to match the user personal identity (e.g. voice or finger prints) with that of the stored patterns. This will ensure security. Then Google payment service (Google Checkout) and the relevant data stored in the user profile will be updated according to purchased item. Also the relevant information e.g. what is bought for whom will also be saved to enable future recommendations.

User would be able to do that not only from the computer but from any device which would have connectivity to Internet e.g. handheld devices, gaming consoles, home appliances (provided that they would have biometrics capabilities, which would be possible by 2020).

Users will hence not be directed to multiple sites, and will not even need to enter the pin key for transactions. Google Checkout will only need to verify identity via Biometrics and if the users have multiple Checkout accounts, then they will be asked to select one for transactions, otherwise they will not need to enter any information, all data will be safely residing on main server. Every time a product is purchased via Inspire, it will benefit Google in the same way as is done by Google ads.

Media Content Distribution will be another value added service. If users like a specific media e.g. a song, video, game, they will add it to the 'Favorites' folder, Inspire will perform the transactions and will also direct it to the desired device e.g. mp3 player or home tablet.

9.3.2 Business Model

The business model of Google, as described in the Google basic report, is actually a advertisement-based business model; no user has to pay for the services directly. And even in the future, Google is not willing to receive money from a Google Inspire user. So advertising and the cooperation with other companies and resellers will be the main revenue source for Google, yet the business model will change a few. This is discussed in the following section.

9.3.2.1 Value Grid (Chain)

The most fitting value creation mechanism for an advanced online-concept like Google Inspire is the value grid concept. As mentioned in the basic report,

the value creation process can be seen as a multidimensional progression of activities in a framework of single, but connected value creation systems.

This Google value grid will consists of

- vertical (as Google explore opportunities upstream or downstream from the adjacent tiers in his traditional value chain as some kind of amelioration to other sectors),

- horizontal (as Google can identify opportunities from spanning similar tiers in multiple value chains; some kind of backward integration),

- and even diagonal (as Google will look more interactively across value chains and tiers for prospects to enhance performance and mitigate risk) pathways of value transfer [377].

Especially the diagonal pathway will become a high importance for any value creation process agglutinated with Google Inspire.
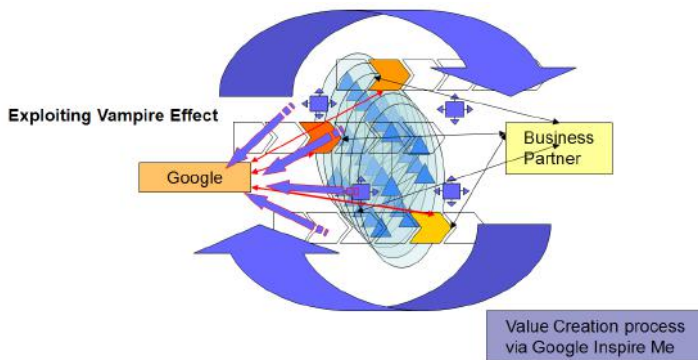
Figure 9.3: Google's Value Grid
Source: Own Illustration

As Google will not enter the reseller market in a direct way, it has to profit from value transfer (like advertisement, sponsoring or selling awards) from resellers using Inspire, you can see this as a form of vertical integration.

By Google Inspire, a very personal customer-access will be possible (paying attention even to its mood and emotions). Considering this fact, advertisement will be much more efficient than today, so the prices will increase rapidly; it would be a completely new sector of advertising with personalized advertisement.

Additionally, Google will get a very high market power through Inspire: Imagine, you are a competitor to Amazon, Haägendaaz or even to a small local store. You are cheep, but you are not listed in Google Inspire. So you would not have the chance to sell your products in an economic way; you would lose

against your competitor, who is collaborating with Google. For Google, this power-surplus will be an enabler for substantial growth until 2020. Of course the degree of power depends on the degree of the monopoly structure of the information branch and the uniqueness of Google Inspire. But maybe it will be very difficult for the competitors of Google to imitate Inspire; Google has a quite good stand in the digital information research market and a strong brand.

Another effect is a digital scale effect. By using an advanced value grid structure to optimize the revenue structure, Google can use different value streams in order to synchronize value creation [375]. In this way, the Google platform (supported by a successful Inspire-Concept) will become the central integration point for any digital business.

There are also many possibilities for transferring this concept into the B2B-market, such as a Inspire my business version of Inspire, enabled through the all-embracing Google knowledge of the future.

9.3.2.2 Value Added for Users

By its extensive dimension, the Google Inspire Concept will provide a huge amount of user value. Separated from the sheer fun, there are also some economic factors with a high willingness to pay which have to be considered:

- At first, Google Inspire can substitute any media consume in a personal fitting way. Through Inspire you can get any information and media content. Presumably there will be a substantial shift from traditional media to a personalized form, especially if this form is for free. To provide some figures, the global media market is dedicated to grow in average with 6.6% p.a.; in 2020 its volume is expected about 3.4 trillion $. And there a good conditions for Google to get a big slice of the cake, maybe the silver side [386, p. 18].

- Secondly, the willingness to pay for services will increase with the growing complexity of society. As the main digital service provider, Google Inspire will get high revenue through its multiple services for everyone. Please consider the fact, that sophisticated services will be implemented in an economic way by using the digital economies of scope and the some network effects [378].

- Thirdly, the mentioned network effects could provide the user with advantages like cheaper and better offers from firms; Google Inspire could occupy the whole price comparison market. Through the Google Information Network, this comparison would be very easy, and the business partners of Google would be happy to acquire the large community of Google-users as consumers.

Beyond economic aspects, Google Inspire could become a lifestyle symbol. And this factor is very important for the subjective user opinion (see Apple's IPod)

and valuing the product. And as Google Inspire is for free, there is always a obvious consumer surplus, Google has only to hide the hidden costs in a good way.

9.3.2.3 Value Added for Business Partners

Bearing the customer issues in mind, there is some important added value for Google's future business partners. The main reason for cooperating with Google today is its enormous popularity and the quality of its search engine. Regarding Google's future status as the world's greatest digital information dealer, this benefits will increase [363].

The majority of Google's business partners will have some kind of a strategic alliance with Google: They will provide their products and services for an attractive price, and Google will supply them with the right consumer. This will be enabled through the individual Google Inspire information; so every Euro spend in an individualized Google advertisement will have a much higher impact, one of the main advantages for Google partners.

But there is another opportunity for some special, powerful retailers (like Amazon or eBay): The synchronization of the value creation process between the retailer and Google. This common sourcing would allow a very effective flow of goods and information for both partners; they can use the collective information systems to exchange money, consumer information and economic or social potential; the economies of information would be utilized in a very effective way through this alliance.

Regarding the methods of the production of the future (mass customization and long tail business; both mentioned in the value chain basic report), both methods could be optimized and operated with much more efficiency. The business partner of Google will not need to integrate the consumer in the production process because he already possess the required personal information about the customers affectations, so he could offer the individualized product at once - an important competitive advantage in future business. To keep this advantage valuable, this must stay a privileged partnership.

9.3.2.4 Other Sources of Revenue

In addition, there are some other, more hidden sources of revenue for Google:

- Google could provide the government personalized information about critical transactions with a criminal background, so a collateral damage could be avoided. In the open, digital world of Google Inspire, online crime will be persecute in a quite easy way. So Google could fulfill the social duty to play the role of a gatekeeper in the virtual world of tomorrow; this is absolutely necessary to ensure the stability of the future digital economy.

- Google will be able to enable a effective protection of international intellectual property right. If Google processes the worlds information stream, a valuable kind of certificate can force any player to accept intellectual property right; any transgression will be detected and persecuted through Google information systems.

9.3.3 Flow of Information

As already described above, information handling will play an important role in the future and efficient intelligent provision, management and use of information will be on the one hand the fundament for the major of future Google services and on the other hand the basis for company's core revenue sources like personal advertising, customized marketing and targeted media distribution.

9.3.3.1 Data Collection

For successful, effective and prevalent Google services, extensive knowledge about every single user will be of an absolute necessity. The most important information about the user is certainly the information which user provides himself about his likes and dislikes, hobbies, activities and his everyday life. This information might be given by users for their profiles in social networks and communities or even exclusively to Google databases to improve personal, customized services. The other important source of knowledge is the further development of Google's Checkout. To know where, when and especially what people buy is very valuable information and with technological development of payment systems, major of traditional payment methods will be integrated in one provider which will enable fast, electronic payments with low transaction costs. Already today with its Checkout Service, Google develops a fundament for future success and an important position in the payment market. Also the growing influence of social aspects on our shopping behavior can be used for finding similarities between different persons or groups and draw conclusions to the future needs, wishes or even concrete purchases of particular persons. This detailed information and new methods for targeted use of social networks and groups in conjunction with tracking of shopping habits can become a very powerful tool for highly targeted advertising, precise recommendation and inspiration services.

Furthermore, with the development of semantic technology and sophisticated picture and movie analysis, new sources for acquisition of information will be created. Algorithms for intelligent understanding of picture content, person and place recognition in movies and comprehension of important relations within articles will provide masses of detailed, person related data and content, which can be effectively used for creation of mass-customized services. For example, specific conclusions on the dress style of the user will be already possible after

the analysis of some photos, so concrete suggestions with included personal advertising for new dress for the next party can be provided.

Through the encompassing connection and integration of online access functionality to any type of devices, as well as implementation of online operating system, many user activities from different fields of everyday life, will be tracked. With help of object recognition, RFID or NFC technology precise and detailed information not only about digital content like favorite entertainment but also about favorite real-life goods like food, books, furniture will be used to inspire people in various fields to spend their money for something they really need, but still are not aware of it.

Another technical development which will not only strongly change human-machine communication but will also probably have an influence on content and information provided by computer to the particular user, is the automatic recognition of emotions. Automatic adoption of user interface and inspiration intensity based on user's mood could become a significant feature of digital, embedded systems.

In the context of personal data collection from almost every situation of our life, questions about privacy, data security and comprehensive control arise. It will be one of the main challenges of the future development to combine great advantages, chances and possibilities of these new customized services with the important issue of data security and fear of becoming completely transparent citizen without private sphere. This issue will become very important and companies with business model based on personalized services will doubtless put a lot of efforts to find solutions and win user's trust. For example, it is possible, that everybody will have a personal security consultant in the future, just like investment consultants today.

9.3.3.2 Data Processing

Today Google Services run on a distributed network on thousands of servers and based on a concept of parallel processing, which allows simultaneous and very fast computations. New methods for effective automatic parallelization of data processing take an important place in Google's research today and will be indispensable for managing huge amount of data in future [333, 336]. Also new methods of data processing based on peer-to-peer technology, which potentially was impressively demonstrated by file-sharing networks, could open up new, efficient ways to manage the data flood of the future.

One of the main aspects of data management will be the real-time data processing. For example if one takes party pictures with the digital camera, these will be just-in-time uploaded to Google picture service. With sophisticated algorithms photographed people will be recognized and relevant pictures will be made accessible for them just in few seconds. So the further expansion of Google's Internet technology and hardware capacities will be absolutely essential

for fast data processing despite of new methods and possibilities peer-to-peer technology provides. This expansion could be done with small acquisitions and own growth or through bigger merger with one of big players in Internet technology market.

9.3.4 Background of Development

The development of proposed service - Inspire (the most probably scenario) as concluded from drivers in terms of time line is discussed in this section. Other probable scenarios will also be probed here.

9.3.4.1 Time Line

For realization of Inspire, technology and strategy will play a crucial role. Future can be depicted based on today's technological development and planning of Google. There will be three concrete steps that will be taken in next 10-12 years ensuring realization of Inspire. These are discussed as follows:

1. Standardized platform for Inspire, in terms of hardware will be the most important step. The platform will consist of backbone network and Google servers for fast processing of data. This step will include indexing web-pages, Google's own browser-GSurfer to display archived web pages, acquisition of dark fibers, distribution of portable data centers, distribution of Google's cube - a tiny server to connect to Google's vast arena of services, Google Space - a personal online hosting service resembling a personal hard disk, in order to prevent misuse for illegal sharing, and finally the launch of GUMOS. Acquiring dark fibers, re-directing users' traffic to run on Google's server will be a slow process due to massive structure of today's network itself and legal issues regarding acquisition of dark fibers. High speed wireless networks (in Gbps) will also take a while to be in market.

2. Identification and Verification has always been a concern for masses. In future Biometrics safety systems will be widely used. There have been concerns regarding acceptance and performance of these processes e.g. a password or magnetic stripe card can be easily replaced if either is compromised, the same can not be done with Biometric identifiers. Error rates-the incidence of false positives and false negatives is the bigger problem with biometrics [379]. This field will take quite some to get mature and be ready for use in fields like e-commerce and be integrated in all handheld and other interactive devices.

3. Semantics and media-content analysis and generation (automated) will be basis for e-commerce. This technology conceptually simple has a lot to improve. Artificial intelligence and intelligent pattern recognition

necessary for media-content analysis and generation will take its time to develop.

9.3.4.2 Further Probable Scenarios

Based on the driver discussed in section 3, economic development will be influenced by advertising, information search and online shopping. In light of development of these drivers, Google as a universal information provider is the most probable scenario.

Currently Google's way of development is driving the market and compelling the competitors to follow and develop new co-operations and partnerships with other players in e-commerce market in order to survive and compete. Yahoo is closely following Google. Recently Amazon entered in to partnership with MSN-Live (Microsoft). These trends suggest that if these partnerships continue to be successful and grow, then Google will no longer be the only major player in e-commerce, rather it will co-exist with competitors e.g. Microsoft-Amazon or Yahoo-Bay. These scenarios are however less probable.

If Microsoft-Amazon or Yahoo-Bay continue to be successful, then on-line retailer shops in individualized field will emerge. Biometric identity verification will still be needed for smooth transactions and information search will also be a key component of these online-shops, enabling users to find what they want efficiently and effectively. Since Google is far ahead of the rest in search technology, these niche shops will continue to rely on Google search engine and hence e-commerce will be driven mostly by co-operation and partnerships with fierce competition.

9.3.5 Impact

Inspire and GUMOS will be realized with the help of very advanced technology as discussed before. The way this technology will influence everyday life, and further technological developments is discussed in this section.

9.3.5.1 Impact on Technical Development

Computers will be everywhere. Everyone will be in constant contact with very miniature, wireless, highly mobile, powerful, and highly personalized computing with network access. Wearable computer embedded in clothing or implanted under skin will be a probable technical development.

Since everyday life will heavily depend on technology and its availability, backup systems hence will be required as protection and to cope with downtime of main processing units. More powerful search engines with improved semantics will enable Inspire's application in B2B business model. After Inspiring everyday life, Google will Inspire business, helping businesses in negotiating process, inspiring the way they make deals with other businesses.

9.3.5.2 Impact on the Market

Most of the businesses will make themselves available online in addition to having traditional retail shops. Online advertisement market will grow gradually (as the current trend suggests that too). This trend will be the consequence of Inspire's ease of use and making information easily available to users with improved and friendly HCI. Percentage of users buying online will also increase immensely as the users' confidence and trusts develop with time with secure ways of transactions using Biometrics safety techniques. There will be a need to find other ways of generating revenues and improving value creation process when market will reach saturation in advertisement.

9.3.5.3 Impact on Society and Culture

Paper culture will almost fade away as eNewspaper and online information on devices will replace the traditional ways of information. Virtual communities with similar interests will emerge, and people will know each other more via these communities as compared to real life contacts.

Generation 60+ though in general reluctant to adopt new technology will also use Inspire because of the advantages it offers and user friendly interface. But every age has a small percentage that cling to an overrated past of low technology, low energy, lifestyle, so some percentage of users will be reluctant to use Inspire.

9.4 Conclusion

As you have seen, we all have to keep ready for an interesting future of Google's services. Concepts like the developed Google Inspire Me are perfectly fitting with the mission statement of Google.

"The perfect search engine would understand exactly what you mean and give back exactly what you want." said the co-founder of Google, Larry Page [351]. This vision would become reality by Google Inspire Me, a concept of substantial customer added value. Based on foreseeing technology, the user would not have to search, he can start to find right now. All the concepts mentioned above are highly innovative, but although very realistic. The customer won't be forced to change in his accepted customs, so you can expect a high level of acceptance, always important with new value creation concepts.

At the end, it is all about information and the user's dissatisfaction with its limited accessibility. Or in the words of the Google mission statement: "This constant dissatisfaction with the way things are is ultimately the driving force behind the world's best search engine." [351] This is the core of Google's pathway to a successful future.[3]

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[3]Google is a registered trademark of Google Inc. The Center for Digital Technology and

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10

Chapter 10

The Social Future of Retail Stores

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This trend study analyzes the future of retail and examines the need for addition of social components to the present fabric. The last few years have seen remarkable advances in the fields of telecommunications and the Internet. Online shopping, which until now has only achieved a small fraction of its promised potential, may do so considering the technological infrastructure available. The advent of mobile Internet, better visualization techniques, improved and more secure payment mechanisms clearly signal towards a substantial increase in online shopping behavior. Social communities and recommendations are Web 2.0 concepts that may alter the decision making process of customers, and make online shopping even more attractive. The emergence of pseudo-experts in online communities will drive social network based purchase decisions.

These concepts will become increasingly important to the retail stores with a physical presence in 2020. In essence, this report claims that retail does have a sustainable future. One of the influential factors behind this claim is the aging population in Germany. Additionally, the nature of products that are likely to be purchased online and offline appear disjoint. Products which require a multitude of information are more likely to be bought online. On the other hand 'experience goods', which we need to touch and feel before purchase are likely to remain in the strongholds of brick and mortar retail. Face to face

contact with another human being is crucial to purchases in many sectors. This 'shopping experience' is only likely to be provided by a retail store.

However, retail has to adapt to the changing customer needs and societal patterns. To further enhance the above mentioned shopping experience and to make it more social, we introduce our novel retail concept 'YouShop'. This is a highly personalized technology intensive shop which incorporates a community within its framework. The key characteristics of the 'YouShop' are an integrated social community, 'YouRack', a personalized movable shelf, and 'YouShopCart', an intelligent new age shopping cart. The 'YouShopCart', equipped with a multi-touch screen with personalized content for the customer, transports the customer to relevant sections of the store. Using the multi-touch screen, the user can choose if he wants to shop in 'Browse' or 'Search' mode. He can also recommend products to members of his social network and gain monetary incentive. The store also exploits the concept of integrated identity in both payment and tracking of customers. Once the customer is identified, his in-store habits are collected to deliver a personalized experience. Payment in this shop would not explicitly require point of sale terminals.

The target group for the new shop concept is open minded and informed people, who seek relevant product information and also value a rich experience. The customer is highly peer group oriented and is a member of multiple social communities. 'YouShop' generates additional revenue by acting as a platform for the sale of second hand goods posted by its customers on its community. Additional fixed costs of the new technological costs have to be taken into account.

10.1 Introduction

Social Commerce is the new buzzword in Internet circles. With the arrival of Web 2.0 functionalities, the Internet now includes an indispensable 'social' component. As this report was being written, the student networking website StudiVZ.net became the most visited site in Germany [406]. Social bookmarking sites like deli.cio.us enjoy tremendous popularity with Internet users. While present usage of social networking is predominantly for entertainment and information sharing purposes, extensions to e-commerce are not farfetched and first platforms are already available online. In such a scenario, how would brick and mortar stores be affected? This work attempts to answer this question and explores possible improvements in real world stores in order to incorporate social features.

Although e-commerce constitutes a minority of all transactions conducted today, online shopping is undeniably a phenomenon on the rise. With ever improving visualization techniques and more secure payment in the pipeline, online shopping has a very bright future. Moreover, the concept of social shopping promises to make the online buying process more informed and enjoyable. At the same time, it is also clear that in certain aspects, real world shopping offers an unmatched experience. Whether it is experiencing the fragrance of fresh Spanish tomatoes or trying on a new double breasted suit, real world stores obviously offer an additional component missing in online shopping. For certain products, the user experience that retail stores offer will remain an advantage in the future.

In the light of new developments, real world retail stores need to adapt quickly to societal changes. The rest of the report is organized in the following manner. In Section 10.2.1, the drivers and factors that could influence retail are analyzed. These include technological as well as socio-economic and ecological aspects. Section 10.2.2 details the possible changes in future shopping behavior and how it could affect retailers with a real world presence. In this section, typical differences of online and offline stores are discussed and products are classified into 'search' and 'experience' goods. In particular, the effects of social shopping are discussed in Section 10.2.3. Next, we extrapolate relevant factors and drivers to portray a possible scenario in the year 2020 in Section 10.3. A novel retail store concept is introduced in Section 10.4, which also includes an indicative business plan.

10.2 Shopping in 2020

In order to paint a reasonable picture of the future, current developments and outlooks have to be analyzed. Therefore various factors will build a base from which a future shopping behavior of the customer in 2020 will be deduced. The development of this behavior is crucial especially for measures a retailer will

have to take in order to stay competitive.

10.2.1 Factors and Drivers

When creating a picture of the future it is necessary to focus on driving factors most likely to determine the future shopping. In the following, relevant drivers and factors are described on which a comprehensive scenario of 2020 will be based.

10.2.1.1 Technological Factors and Drivers

To envision the retail store of the future, it is important to analyze the relevant technological aspects and drivers. It is clear that technology will have a disruptive impact on retailing in the future. While the impact analysis is postponed until section 10.2.2, this section enlists the influential technologies in this field. It is important to point out that this discussion will be restricted to technologies that are likely to affect brick and mortar retail stores.

Area-wide Wireless Internet
The most reasonable of technology related assumptions is the presence of area-wide wireless Internet in 2020. A further assumption is that in terms of content available, Internet will be device independent, i.e. there will be a fusion of the Web and mobile Internet. The presentation of content will indeed be optimized for the mobile device. However from the network side, there will be an increasing parity in the performance of fixed and mobile Internet. Which of the competing technologies of today will make the cut is unimportant in this context, as long as it results in ubiquitous Internet access. In a nutshell, a large majority of customers would be able to access the Internet within the retail store. This offers the infrastructure for integrating a social component to shopping by offering ad-hoc networks for inter-customer interaction, without the retailer having to setup an entire in-shop network.

Location Based Computing
Another emerging technology that will be in place for wide commercial usage will be Location Based Computing. Integrated GPS units in mobile phones are already beginning to appear. It will be the applications of the technology that would have matured enough by the year 2020. It has the potential to be to retail what personalized advertising is to Email users is today. The launch of further satellites and the falling costs of implementing a GPS unit on a mobile device will mean that this technology will become mainstream.

Augmented Reality
Advances along this direction have the potential to be utilized intensively in a retail store. The use of dynamic displays where the information is displayed next to products have already been tested [425]. This however was based on

a projection based system. However, the foreseeable improvements in display technologies will allow ultra thin displays to be integrated into walls or any other surface. Additionally, in cases of customizable products, augmented reality will allow the user to see and experience the product before it is customized. This could be through the use of 3D models viewable using special glasses. Visualizing a product in a different setting using a head mounted display will also be possible through augmented reality.

Integrated Identity
An emergence of a single identity for use in online and mobile platforms is expected in the future. This can be extrapolated to the offline case, driven centrally by the need for an integrated Payment technology, where the user's identity is stored, for example, on her mobile phone or embedded underneath the skin. The presence of such a single identity will enable the user to choose which stores and how much data she shares her details and which not.

Human-Computer Interfaces
Stores of the future will have access to extremely sophisticated interfaces for creating an interactive environment. These will not only be employed to disseminate product information, but will also be designed keeping decision science in mind. From a user perspective, scanning of product information through a personal mobile device and checking into his social network will be easy. The fact that each product (possibly RFID) will have a unique identification, potentially connected to the Internet, will allow its addition to users wish or recommendation lists etc. Screens with multimodal interfaces, for example voice, gestures and of course touch, will be common.

Customer Profiling Technologies
A broad range of technologies can be classified into this category. Profiling is allegedly done today by online retailers, and will become significant in the offline context. These technologies, undoubtedly controversial, will be more sophisticated by the year 2020. Stores could be hosts to a variety of passive and active sensors, all connected to an IP based network, collecting information about the consumer. The recognition of the user through either image processing or ever through his NFC enabled phone will allow the business to collect a variety of information. The time spent in a section of the store, the mood of the customer, gaze directions will all be trackable entities. The interactions with all the HCI's present in the shop can be saved, considering the availability of cheap storage. It would also be easy to track which user has scanned which product with his mobile device.

10.2.1.2 Socio-economic Factors

Societal and economical developments constitute an important class of drivers, which will arguably impact retailing in 2020. The questions in this context are

not limited to how our society will look like, but also how tax laws, purchasing power and payment systems will change. It is important to point out that this section only presents an indicative survey of possible socio-economical factors and prospective trends which may affect retailing in the future.

Globalization

Dissent, diverging opinions and debates about globalization make it one of the most controversial subjects. Definitions of globalization differ so profoundly that you wonder if people are actually discussing the same issue. Nevertheless it is an inexorable development which will continue in the future regardless of anti-globalization protests. However, the interconnectedness and the interdependence of the countries have its constraints, as people will not accept an excessive exploitation of resources and increasing poverty. As globalization is such a multifarious issue, only the most obvious developments will be explained shortly in the following part of the report.

Growing globalization and integration will lead to more alliances and partnerships in the world of 2020 [416]. Other remarkable movements which accompany the process of globalization are decentralization, outsourcing and the mass customization of talent. However, this would lead to a demand for a stronger ethical framework as well [414].

Developing countries will get less isolated and people will be more connected to each other than ever before. Regional economical cooperation would emerge, but societies and cultures will anyhow not merge together. The idea of a cosmopolitan citizenship will even so be a distant prospect. "In the twin path of globalization and decentralization, what we have been witnessing is not the globalization of countries but the globalization of economic activities" [414]. Therefore regarding global developments, the world will move towards a unified market. A global, economical coalescence and an increasing international division of labor, due to a decrease of population of working age in some countries will leave their mark on commerce as well [419]. Germany for example will suffer from a lack of highly qualified employees and will have to take actions to stay competitive against considerable markets such as China, India or Turkey [405]. The global market will lead to a global sharing of talents at a much higher level. Companies would choose employees who fits best to their needs just as the case is with sport teams today.

Decentralization is a movement that can already be observed now and mirrors the success of small and flexible companies. This is the reason why Johnson & Johnson has 200 CEOs and therefore acts like 200 companies, because the future success will be in the hands of innovative, adaptive, small and agile firms [414].

Another headword is outsourcing. If a car can be produced more cheaply in Asia, than it should and will be. "Outsourcing can be across the street or in the other side of the world. [...] It raises incomes on both sides because resources are advantageously redeployed. Trade is a positive-sum game, as Adam Smith

was the first to understand" [414]. Retailing with more international products and outsourcing of production and services will be of crucial value.

Nevertheless, a stronger ethical framework will have to be established in order to guide and control the interconnectedness and global commerce. An international law for the protection of Intellectual Property (IP), an amelioration of the Kyoto treaty or a mature strategy of the World Bank to cope with poverty in developing countries can be possibilities to realize the idea of public responsibility and mitigate inequalities both within and between countries. The potential of globalization to empower local communities can enhance state power in order to manage global economical integration and sustainable developments at all levels. "We need to bring 'choice' back to global equation weighting economic efficiency against social costs" [424].

Tax Laws and Regulations
Political regulations will progressively become more responsive to the economy. Tax reliefs for retailers are quite likely and ecological guidelines will influence businesses in the future. Ecological zoning regulations could prevent or hamper a market entry. A possible privatization of currencies will offer new opportunities to retailers.

Regarding tax laws in 2020, it is conceivable that retail stores get special reliefs or possibilities to set off durables or fuel for home service against tax liabilities as the state has a special interest in preserving the jobs retail stores are providing. Regulations restricting the opening hours might cease to apply in the future, hence retailers would be able to decide their opening hours independently. The trend does not automatically translate into a twenty-four-seven shopping opportunity, but rather longer opening hours during peak-days like Thursday, Friday or Saturday are likely. Obviously regulations adjust to current circumstances implicating the people they are applying to and people have more freedom in adhering to them, as they are getting better informed due to innovative information technologies [416]. The VAT will continue to increase and may lead to a slight decrease of the purchasing power. The introduced environmental certificates will arguably influence the future production line and therefore the suppliers of retailers. Prices could increase because of the introduction of new production technologies and additional research costs in this area. Zoning regulations in Germany for smaller shops under a sales area of 700m^2 are not as strict as in the UK or France. For larger shopping centers (more than 2500m^2) there are more constraints. Therefore the sales area for retailers increased tenfold during the past 50 years and will continue increasing. 2002 German sales areas amounted 293m^2 per 1000 inhabitants, whereas France only reaches 160m^2 [409].

Privatization made former state owned businesses such as postal service, telecommunication and railroad companies more effective and competitive worldwide. A monopoly has the defect to prevent innovation and development, as people are subject to buy their products even if it is unsatisfactory. The currency

monopoly is one of the last of existing monopolies and has the same shortcomings as every other monopoly. Everybody suffers from inflation observing how his money loses value because of the inefficiencies of currency monopolies. "Technology is the great enabler for new currencies and currency systems" [414].

All in all, retailers have to be aware of their target groups, adhere to changes to stay competitive and exploit new opportunities that go along with possible developments such as the privatization of currencies.

Societal and Demographic Changes

The society is in flux as people and the environment are subject to changes. It is clear that the adjacencies where the retail shops are embedded state a crucial factor in determining how retailing will look like in the future. The customer base changes and retailers have to orientate towards them. The most important assumptions in this context are the demographic changes, which will alter the age-profile of population in Germany and pose economic and social challenges. Beyond it, the future customers are better informed and probably highly educated.

As the graphic 10.1 shows, the number of the people above 50 years excesses the number of people below 50 in 2020.
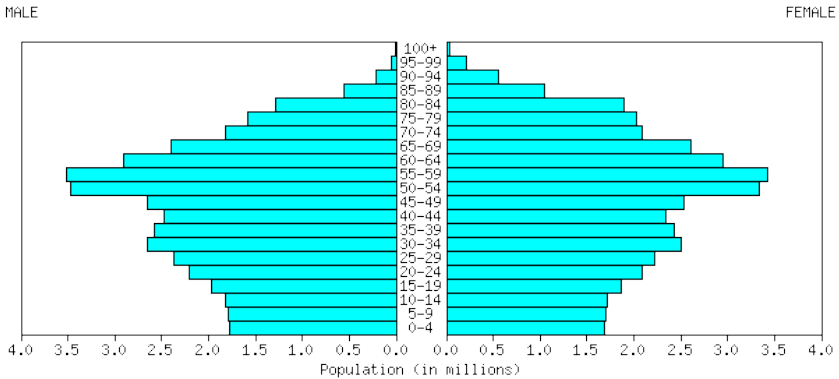

Figure 10.1: Demographics for Germany in the year 2020
Source: Oesterreichisches Institut fuer Familienforschung[417]

While life expectancy is projected to increase steadily, the fertility rate stays mainly constant or is slightly declining. Germany posts a fertility rate of 1.34 in the year 2005, which is decreasing to an expected rate of 1.32 children per woman in 2020 [417]. As a result, the target population for the education system and therefore school enrollment is expected to decline as well. Another relevant component affecting enrollment rates in public education is the development in labor markets. "The necessary upgrading of skills in response to changes in the labor demand should lead to a higher demand for upper secondary and

tertiary education" [398]. 75% of the new created jobs in the future will be at a managerial, technological level targeting higher educated people [412]. Education should be the number one economic priority for all countries. Thus the gap between middle class and underclass is widening due to a sinking demand for low qualified workers. Well-educated students will have a greater chance to profit from the technological progress. Since globalization will go on, the need for flexible labor markets and mobility soars. Therefore it is difficult to define concrete prospects for the population growth in Germany. According to an UN forecast, Germany's population will slightly decrease by less than 0.5% per year [405].

The connectedness of the people and the information supply increase thanks to a sophisticated information infrastructure. Hence it will become easier to find like-minded people with the help of new technologies which supports the interaction of individuals and leads to the flourishing of special-interest communities. The number of communities of practice will further arise and social networking will become omnipresent. Knowledge and knowledge productions get more sophisticated, which probably lead to an emerge of expert cultures. However, due to the higher interactiveness the security in communities has to be warranted as well [419]. One of the most important predictions points out that future shops has to attract women, as they are already reaching four fifth of today's purchase decisions [400].

By reason of the aging population and the mature information infrastructure, the future average customer is female and in fact older than today, but more actively engaged and better informed [419].

GDP and Purchasing Power
The following discussion enlists prospective, economical developments concerning the GDP and purchasing power. The annual GDP growth for Germany until the year 2020 will be 1.5%, whereas countries like China or India are likely to have an annual growth rate of 5% [405]. Another more supposable prediction assumes that the focus will change from Gross Domestic Product into a Gross Domain Product. "The economic borderlines of our world will not be drawn between countries, but around Economic Domains" [414]. For a global corporation it is not important how France or Germany are performing. As a economic domain is more transparent than a country, it is much easier to find out how an economic domain is performing than a country. This development accompanies the merge of one single world market. "[...] the only way to understand and measure the global economy will be by examining selective gross domain products - a new GDP, but for domains" [414]. To conquer the world with an idea, it will be indispensable to exploit the opportunities within one's economic domain regardless how a particular country is doing.

Today's consumer sentiment in Germany shows a slight upward trend and retailers assess the current business situation increasingly positively [420]. Purchasing power is subject to economic variations and sometimes fluctuates

profoundly within a year. Besides, it can also be influenced by an increase or decrease of the VAT. Concerning the saving ratio, a forecast is quite difficult due to unspecific prospects regarding the future income level. Relatively speaking, the saving ratio rises with a higher available income or an increasing key interest rate.

Payment Systems

Present day electronic payment systems suffer from a lack of standardization and a somewhat uncertain future. With the emergence of the e-commerce, payment systems have matured to a certain extent. However, the technological possibilities have not yet been entirely exploited. The existing confusing diffusion in this area shows the need for a further standardization and deployment of new technologies. An established customer base for a few e-payment schemes such as PayPal will drive the development of capable e-payment systems, its further acceptance and standardization in 2020.

According to Jarkko Sairanen, chief strategist of Nokia, the number of mobile connections will hit the 4 billion mark in 2010 [426]. In industrialized countries, the trend will be to acquire a second or even a third mobile device, whereas in developing countries, mobile phones will reach new customers [426]. This development will make mobile phones an attractive platform for payment systems. But how should a mobile payment instrument, which meets desired security standards look like? "Mobile payments are payments for goods, services, and bills/invoices with a mobile device [...] by taking advantage of wireless and other communication technologies" [396]. The fixed line telephony billing system was modified to a mobile telecom billing system as mobile services emerged. However, payment schemes based on billing systems are subject to many limitations. "High payment transaction fees, merchant and service provider complaints about unfair revenue sharing, and necessity to provision services to billing systems with limited roaming of mobile commerce transactions between mobile networks" hindered its acceptance and hence the establishment of mobile commerce [396]. With the rise of promising new technology based innovation, particularly contactless vending and ticketing and the above mentioned RFID and NFC, there seems to be a new wave of interest towards mobile payment services.

Mobile payment devices can be used in a variety of payment scenarios such as payment for digital content, tickets and physical goods as well. Regarding payment for physical goods, the usage of wireless technologies would make point of sale terminals dispensable. A typical usage of mobile payment services entails authentication, authorization and confirmation of the completed transaction via ubiquitous Internet, while an unique SIM card and the requirement of a PIN number ensures the security of the transaction [396].

Apart from technological drivers regarding m-payment, the social environment and the attitude of merchants and customers play a major role in the implementation of widely adopted m-payment systems. The customer base

determines the success of a payment scheme fundamentally. "For a payment system that represents a certain network, its adoption depends on the number of customers and merchants using it. This is the so-called positive network effect (network externality)" [408]. Hence, the utility of a network increase with the number of users. However, for the start up of a payment network this positive network effect could lead to problems as it has to exceed a "critical mass point" in order to succeed. Social factors such as convenience in use and privacy have also to be considered. The possibility to use only one m-payment system, which ensures the customer's privacy and that can be used for purchasing any goods, is also crucial for the spread of this system. The acceptance by merchants is linked to the convenience of a system as if its widely used, merchants will operate with it as well [392]. But merchants can become m-payment-system providers for their own store as well. To facilitate the diffusion of these payment systems, cooperation and stronger partnerships are needed [396].

To sum it up, e-payment systems will be standardized further and still be crucial for the e-commerce. M-payment systems' emergence is foreseeable, but there are some social and economical factors that have to be taken into consideration if a retailer wants to introduce one. From a technological point of view, there will be no obstacles hindering the usage of these systems. Technological advancements will take its lead in making payment systems more convenient, trustworthy and secure for the customers.

10.2.1.3 Ecological Factors and Drivers

Since the release of the report about CO2-emissions and global warming by the Intergovernmental Panel on Climate Change (IPCC), the ongoing climate change has become a comprehensive public issue. A majority of scientists agree that human actions are contributing decisively to climate change. The consequences will not only result in environmental-climatic changes but also in a regulatory-market economy [397]. Therefore many businesses will have to deal with regulations dealing with environmental preservation.

The environmental encompass an increase in the global average temperature, rise in the sea level and change in global rainfall patterns. Interestingly, measures and regulations that will be taken by governments will affect most sectors and businesses much earlier than the environmental developments themselves.

In order to achieve the EU´s declared aim to reduce energy consumption at least 20% by 2020, the fiscal policy (e.g. taxes, charges, subsidies) as well as regulatory laws (e.g. statutory, orders, bans) will affect many sectors. Governmental measures will tend to make fossil fuels more expensive and in some countries road tolls will be discussed even for cars. Additionally, more frequent extreme weather as a result of climatic change could affect traffic flows. All this will immensely affect transportation costs and thus many businesses including retail shops will feel the impact of climate change.

It is also the task of politicians to prepare citizens for the negative effects of climate change through suitable measures. This includes drawing the public´s attention to climatic issues and thereby creating a sensitive environmental awareness in the citizens. Whether the customer will develop a general willingness to pay more for ecologically friendly products remains to be seen, but an increased ecological awareness can be predicted. Thus, businesses will need to deal with topics like 'clean technologies' and 'green products'.

For many sectors, the opportunities presented by climate change outweigh the risks. This is especially true for businesses that can make important contributions in dealing with climate change and its negative consequences. For example, the renewable energy sector as well as environmental technologies will be among the winners .

However, there are some flexible elements which determine the scale of effect on businesses: To this end for example belongs the extent and speed of the climate change. What might be even more important is the magnitude of technological advances. Last but not least, the behavior modifications of market players will influence a company´s acquaintance with environmental topics. On the bottom line, the earlier businesses take measures to tackle climate change and to approach its negative and positive effects, the better are their chances to profit from associated opportunities [423].

10.2.2 Future Shopping Behavior and its Effects on Retailers

With the development of technology, customers demand higher standards. Bricks and mortar stores need to orient themselves towards these demands and have to defy competition with online shops. Today, only a small proportion of all transactions is being made online; but analysts estimate a potential growth of more than 500 percent in the field of e-commerce [387].

In this subsection we will first consider what future shopping behavior will look like in 2020 with a focus on customers' demands and preferences. By comparing the developments in online and offline shopping, the question whether online shopping might become a real endangerment for retailers will be answered. We will conclude that while in some branches e-commerce will prevail, bricks and mortar stores will maintain its commanding position in others.

10.2.2.1 Social Shopping

Based on the trend of social networking, social commerce gives the customer the opportunity to put up his own goods or information for sale. Furthermore, it allows him to interact with other customers via recommendations, reviews etc. Recommender systems support the user in his search for a certain product by recommending other products or information that might be of relevance. Presently, the assortment of the provided information depend upon the user's declared preferences, demographics or even habits of other users as can be

seen on Amazon[1]. The information the user gets through such systems are considered valuable and lead to a higher degree of confidence in the purchase decision [402]. Furthermore, social price comparisons not only provide the user with information regarding the best price for a certain product, but also allow the user to read about experiences of other purchasers. For example, a shop's delivery time and service quality can be rated by other customers.

10.2.2.2 Drivers and Factors Influencing Shopping

The drivers and factors introduced in subsection 10.2.1 have an important impact on the shopping behavior in 2020. With advances in technology, new opportunities arise and shopping can become a great and a time-saving experience.

First, having access to a fast and efficient wireless Internet connection via a mobile multifunctional device irrespective of the location provides people the opportunity to make online purchases wherever and whenever they want. Thereby, people get used to shop when they have the desire to and some stop adapting to retail stores' opening hours especially in the case of buying goods that are not needed immediately. In particular, impulsive consumers make use of this service [421].

The decision of buying a certain product online or offline can be considerably influenced by being connected to the Internet. All the information provided by the manufacturer on the Internet about a certain product and its features can be recalled before coming to a buying decision. Additionally, reviews and recommendations generated on interactive communities help the potential purchaser by obtaining personal opinions and impressions which are considered more valuable than pure information by some users. Furthermore, there is the possibility to compare different products and their prices or find substitutes via (price) comparison engines. In conclusion, we can say that the customer making an extensive decision [410] feels more confident in his buying decision when he is better informed about the product and its features. Through comparing different products, shops and prices, he feels that he is making a good deal.

With location based computing, a user can not only find shops in his vicinity but can also compare the choice of products in the other shops in the surrounding area. Another point that has to be mentioned in the context is ubiquitous computing. It is presumable that more and more buying decisions might become automated with the emplacement of computers. This means that routine purchases like water or toothpaste are likely to be made without the necessity of human intervention.

Furthermore, we can assume that there is an easy to handle and secure payment system for both shopping online and offline. It is likely that there are only a few online payment service providers in the market and people can

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[1]http://www.amazon.com

handle their payments only via one provider. Also, the main focus does not lie on coined money anymore but technologies like m-payment prevail for paying in retail stores. All this leads to a simplification of the buying process.

When we look at the economical and ecological effects, we can primarily anticipate that the market barriers have disappeared and the customer profits from the variety of products available to him through a global market place. Since regional and national markets have merged and logistics have improved, it is possible to receive an ordered product within an acceptable period of time. Secondly, owing to climate change, customers have an increased ecological awareness and prefer buying organic food and green products.

10.2.2.3 Characteristics of Online and Offline Stores

In the following paragraphs we extrapolate the characteristics of online and offline retailers from today to 2020.

Advantages of Online Shops Today
On one hand, online shops are able to offer goods and services to low prices because of the fact that they can save expenses by engaging cheaper facilities and less personnel. On the other hand, online stores attract customers by providing a wider range of services. Services which are based on social networking can only be found on the Internet presently. Thus online shops can provide an improved and personalized shopping experience in an easy way. Another big advantage for online shops is the wealth of information that the customer is able to access via the Internet. Many different online communities have evolved in recent years and users can share their experiences and opinions regarding products. Since all information about the details and price of a product are provided online, the potential customer does not have to base his decision on the information given by a possibly ill-informed seller. Additionally, he also has the opportunity to compare and choose his favored product. Since this information is made easily accessible by search engines, the customer is generally better informed about the advantages and disadvantages of the product he wants to buy. The perception that shopping online is time saving is considered an absolute advantage for e-commerce [418].

Advantages of Retail Stores Today
Bricks and mortar stores are still superior to online shops in some aspects. Their strengths lie especially in offering the customers an incomparable shopping experience. The personal advisory service that is often provided helps the customers to arrive at a decision and is highly appreciated. Furthermore, offline stores have the advantage of a real world presence that gives the customer the possibility to touch and experience products. While on the Internet, people only find shops by knowing their virtual address, via advertising or search engines, retail shops have more options to attract customers. The potential customer of

a bricks and mortar store is not only the one who has planned beforehand to buy at said shop, but also the occasional customer who comes around rather by chance and decides spontaneously to do his shopping here. In contrast to online stores retailers provide the opportunity to buy goods for take away. The immediate change of possession is an extremely important factor not only for spontaneous purchases. A home delivery service is also provided by some shops. A further fact is that e-commerce stores have different direct competitors than retailers. For the online customer the next store is only one click away, but customers who have decided to buy offline have only a limited choice of stores in their surrounding area. Thus the retailer has less direct competition.

Last but not least, in the question of trust retailers have the advantage over online shops at present. News about fraud and abuse of data cast a poor light on e-commerce, which is why the Internet is still considered insecure by a lot of people and hence they dislike the idea of spending their money online.

Development until 2020

But the difference in the questions of trust will be adjusted until the year 2020. On the one side since people do not adopt immediately to technological changes [403] they need time to grow accustomed to the opportunities the Internet provides. "Continued consumer exposure to online shopping may reduce concern for online shopping and change the current", today's "picture" [411, p. 92]. On the other side technology will further improve and make e-commerce secure. Payment systems will become more secure as time goes by and e-commerce will be exposed to the danger of fraud to no greater extent than real world buying processes. This fact in addition to the possibility of using one easy to handle payment system for all purchases on the Internet will contribute to more people considering the Internet trustworthy and habituating to the use of the Internet as marketplace.

Furthermore online stores will be able to provide a better shopping experience thus that new technologies will give online shoppers a more realistic image of the product and the shop. There will be new opportunities in the field of visualization. The customer will no longer only have a two-dimensional picture of a certain product on the screen but will be able to get a realistic impression of the products, its surface and its material. For example by using head-mounted 3D displays in combination with tracking sensors the customer has the opportunity to enter a virtual shop, walk around and get a shopping experience similar to shopping in bricks and mortar stores.

But retail stores will also improve. In order to preserve the advantages the shopping experience has to be enhanced. This can be realized by simplifying the purchase process through new easier payment methods or the establishment of a stronger personal relation between customer and seller. A lot of people appreciate the face-to-face contact and by that rather prefer buying in retail stores than communicating with a computer based system. In addition retailers are able to eliminate the disadvantages regarding social networking and provide

similar services as online shops. First they have to establish or integrate a community. Since people give away a lot of personal data on the Internet it would be easy to base the services on an online community. But also the development from a shop's debit card system to a community is possible. On the one side the extras like rebates the customer gains by being a member of a shop's customer community and on the other side the advantages of additional personalized information from which he benefits directly while shopping at the store would prompt the customer to share data and experiences with the community. Hence almost all services that characterize social commerce can be implemented in retailers. Furthermore retail stores have the possibility to integrate some online services. A detailed list of the products a store offers combined with additional information on said products or the option to order are examples for possible online services which can easily be implemented but are creating an additional value.

All in all thereby that both online and offline retailers will improve in order to offer services the competitor provides, the disparity in services and standards will decrease.

10.2.2.4 Potential of Retailers in 2020

First the question arises if every retail shop has the possibility to implement services based on social networking respectively if there is the possibility to get access to the data of a community. Acquiring existing communities is expensive and by that only an option for financial strong and big retailers. Since people are only able and willing to participate in few communities thanks to limited free time some small shops will face a problem. Specialized retailers whose customers have a common interest are more likely to establish a community on their own but a non-specialized and unpopular shop will have a rough ride.

If we assume that people further like social networking and expect stores to offer services of social commerce, shops which do not offer these services will have to struggle for existence. Thereby especially small retailers with a big assortment may vanish from the market.

Another item that has to be considered is what kind of goods a retailer offers. The relative advantages and disadvantages of online and offline shopping "will play out differently for different types of products" [411, p. 85]. For one thing there are "search goods", defined according to Chiang and Dholakia [391] as goods for which full information on their attributes can be recalled before purchase like books or tickets, for another thing there are "experience goods" for which the customer needs to direct experience the product prior to the buying decision, e.g. perfumes. It will be hard for retail stores selling search goods to become superior to online shops since was best they provided the same amount of information as the online retailer but online shops for normal offer the product at a cheaper price. The only possibility for bricks and mortar stores is

to offer a unique shopping experience which the user considers as more valuable than paying less money. But it is likely that in some branches stores will shift completely to an online performance. However according to John Naisbitt since people and technology do not change as fast as expected, e-commerce will not prevail in the year 2020 [414]. For us the shopping experience provided on the Internet will not be anywhere near the real shopping experience that one makes in bricks and mortar stores. Important impressions like smell and taste can probably not be transmitted via the Internet and thereby customers who appreciate to touch and handle goods, e.g. kinesthetic people, will further buy products, especially experience goods, at retail shops. Furthermore people who have a current desire for a certain product for example a cool beverage or some potato chips will not order it but go straight to the next shop and buy it there. It is also unlikely that ordering products for a fair price is always possible since the delivery costs are in comparison high if an order includes only few and cheap products.

To sum it up, retail stores will be superior in some services and thereby will not become a relict for nostalgic people who like to shop at bricks and mortar stores. Goal-orientated consumers like to shop online but people shop offline "when they want to touch and feel items, and enjoy the experience of being out, including sights, smells, people-watching" [427]. So, Nancy F. Koehn from Harvard Business School and other experts see a natural limitation for e-Commerce [422].

A probable development is a fusion of online and offline shops. Since "even a "high-touch" product like clothing benefits from an online presence and a "low-touch" product like software can benefit of an offline service" [411, p. 92] offering additional online services can increase the revenue of retail stores.

10.2.3 Retailing with Social Aspects

Retailers have to improve in order to keep the ability to compete. In order to regain online shoppers as customers who are used to social e-commerce bricks and mortar stores will have to implement services based on social networking. On the one hand it will be important to provide services that are customized on the other hand stores have to try to bond customers through offering a framework in which they can apply and contribute their opinions and ideas. In the following subsection we will suggest some concrete services that adjust the idea of social networking to retail stores.

10.2.3.1 Shopping with Recommendations and Reviews

Recommender systems have a strong impact on the customer's decision making process. Thanks to the first developments in the field of semantic web recommendation systems are now not only able to recommend products of the same kind but also products that are in some way related to the topic the costumers

is interested in. Possible services of a future retailer to implement the aspects of recommendation and review systems are:

- Personalized Recommendation and Review System

  The recommendation systems that are common in year 2020 have improved by merging the aspects of collaborative filtering and product ratings with the social network the customer is involved in. In this context it is important to not only to communicate the information but also to stress it by pointing out the characters who contributed them. The stronger the relation between the person who provides the recommendation and the potential consumer the more valuable the information will be for the customer [401, p. 5]. The same applies to review systems. Furthermore recommendations are given in respect to the customer's interests which he communicated to the system directly or indirectly via his profile. Thus the customer only receives information that is in some way interesting for him. This additional specific information could be visualized for example on a display integrated in the shopping cart or on the customer's mobile. A further possible service is to enable the customer to review products offered in the bricks and mortar stores. Since some properties are not always visible prior to purchase e.g. the taste of an apple, these reviews would help the other customers in their decision making and at the same time support the retailers to improve their product range.

- Direct Recommendations

  Another service a retail shop could provide its customers is the possibility to recommend products directly to another person. On some markets e.g. the book market, customers only have a limited overview of the products that are offered and with the possibility of direct recommending the customer gets a better choice. So if a friend or acquaintance finds a product incidentally which he knows could be of interest for you, he is able to directly point it out to you via the recommendation system provided by the retail store.

10.2.3.2 Personalized Shopping Experience

Since online shopping provides a personalized shopping experience bricks and mortar stores have to adjust to their customers' needs in order to defy competition:

- Personalized Range of Products

  One possibility for retailers is offering a personalized product range in order to adjust to this situation. For one thing this can be realized in a virtual way by generating a list of products the customer is interested in. This information can be utilized either by showing the list visible for

the customer or by tracking the customer's way and contemporaneously displaying signposts. For another thing there is the option to provide a real personalized choice of products.

- Personalized Advertising:

  By knowing the preferences of a customer and tracking his way through the store advertising can be personalized. Via displays the customer's attention is drawn to certain products which are of interest to him. Thereby ads are no longer considered disturbing but provide the customer useful information.

10.2.3.3 Involvements and Benefits

For winning the customer's favor the retailer has to tie the customer to the shop. This can be reached by putting the customer in a position where he can earn some money or get perks. The following services will serve this purpose:

- Customer as Seller

  Retailers can provide customers the possibility to sell their own products in the shop. These products should not be branded goods but home made products which complement the existing product range. This could be for instance home-grown tomatoes a hobby farmer may offer in a grocery store or self-designed dresses a young designer offers in a clothes' store. Doing so the customer has the opportunity to present his products in a professional environment to a bigger target group. The retailers gain an advantage insofar as they not only get a profit-sharing but also a wider and at the same time more interesting product range. Due to the fact that this service is local based also new customers are attracted by the producer's personal contacts.

- Bounty for Recommendation

  As explained above direct recommending leads to a higher involvement of the customers. Another stimulus would be a bounty which customers get for each recommendation leading to a purchase. Thereby customers get incited to recommend products to friends and by that participate in the shop's community. Meanwhile direct recommendations improve and revenue increases.

10.3 Future Scenario

In this section, we endeavor to develop a realistic scenario based on drivers and factors discussed above. A slightly unconventional approach is adopted to achieve this. A fictitious character is introduced, and through his life the

general conditions in 2020 can be visualized. While the character is only an example, the general observations around him can be treated as a scenario. In essence, a projection of the drivers and factors of today is made into the future and effects on lives of people can be instantly seen. Before we proceed to the description of the illustrative scenario, we briefly take a look at 'Noises' that can essentially change the most probable future.

10.3.1 Noise Analysis

Before we enter a definite scenario we will have a look on noises which could occur. The following developments are possible but as we have shown up to now not so likely to happen.

10.3.1.1 Retrogression in Social Networking

With social networking expanding into more and more aspects of life there is the danger of people getting over-saturated. Instead of sharing personal information with an online community whose members they hardly know, people are more focused on protecting their privacy. The consequence of this is a reversion to real world contacts whereby social networking and at the same time social commerce decrease.

10.3.1.2 Privacy Concerns

"Trust becomes more critical than ever in the era of Internet" [413] but facing reports on fraud and misuse of data people become more and more concerned about security on the Internet. Online shops approach this problem by implementing systems of security services to protect data against thievery. But every effort turns out to be nothing but one more move in the never-ending struggle between coders and decoders. It is only a matter of time until a hacker cracks the security system. Furthermore privacy seal mechanisms do not bring about the feeling of security they are supposed to. The authentications and certifications provided by third parties have a lack of usefulness in encouraging online participation [407] since the users doubt the independence of such firms as the web sites to which they sell the certificates are their source of revenue. On the one side online shops are dependent on the data the potential customers feed in, on the other side the more they ask for personal information the more the chance for customers' participation drops [407].

All these items could lead to people no longer willing to provide personal data on the Internet. This causes decreasing revenue of social commerce stores since customers want to keep their anonymity and thereby prefer ordinary shops.

10.3.1.3 Complete Online Shopping Behavior

Another possible development is the complete shift of people's buying behavior towards online shopping. Buying offline is considered time-consuming and tiresome since e-commerce stores provide an extraordinary shopping experience through disruptive visualization technologies in addition to fast and easy purchases. Furthermore "people use the Internet for the purpose of social interaction" [394] according to Nat Goldhaber, chief executive of Cybergold, and thus retail stores lose their social function. He predicts that shopping malls will "begin to disappear over the next 10 years" [427].

10.3.2 Illustrative Scenario

It is 17:00 on just another Thursday evening in the year 2020. Mr. Kite, 35, is returning from work. It is his turn to drive the community car today. After dropping off Mr. Brown at the lifelong learning academy, he looks forward to meeting his aging father. His father represents an **aging population** of Germany that has become a market to focus on for many corporations. More than half of Germany's population is above 50. Life expectancy is at an all time high. The problem of an aging population has been dealt with in a variety of ways, one them being lifelong learning classes like Mr. X's. The older population is being constantly educated to maintain competencies. Thus, technology is adopted much faster than it used to within this framework of continual learning. For the benefit of Mr. Kite's own **lifelong learning**, his Alma mater offers regular courses. Of course, the other channel towards realizing a lower average age is the continuous inflow of workers from the new EU countries and the third world. While the conditions for the entry of workers from the third world are still somewhat strict, movement within the EU is unrestricted.

Mr. Kite's community car is an example of citizen initiative in Germany to combat **climate change**. The governments of Germany and the EU play a regulatory role in this area. In fact, the impact of actual climate change is not as substantial yet as the government regulations attempting to limit it. An increasingly **regulatory government** decides how businesses are run. Subsidies were initially given to non-renewable sources of energy. The more efficient of these are not subsidized anymore, but still derive a great deal of benefits from the government. Germany has emerged as a leader of non renewable technologies, although it is not particularly endowed with solar or wind energy. In Germany, there has been a 30% reduction in greenhouse emission and 30% of all power is produced through green sources. Emission certificates are now auctioned for millions of Euros and emission trading now covers all industries. Oil prices and demand have stabilized to a certain extent because of the availability of cleaner fuels. As a side effect, food has become more expensive since a lot of arable land is used for growing bio-fuel.

The 'Green Index' has become an essential component in most products. The

rating carries information about the quantity of greenhouse gases that were emitted in the entire product cycle until purchase (including transportation). Additionally, **products life cycles** are extremely short. The **technologically intensive society** requires a constant upgrade. Mr. Kite lives is in truly **'Beta' Society**, where products are continually being improved and innovation does not ever stop. The **German economy** has not matched the growth of China and India, which have been consistently growing at 5% every year. However, it has developed competencies which ensured that Germany remains at the technological forefront. With a great deal of manufacturing and services having moved east, Germany has been forced to concentrate on niche segments. In fact, China has overtaken Germany in terms of exports. However, Germany is a major exporter of creative technologies, patents and services. Many German companies which did not have a significant presence outside of Germany at the beginning of the century are now international. In the **globalized world**, there is a shift towards block trading (e.g. EU and the BRIC[2]) rather than inter-country trading.

As Mr. Kite drives into his father's driveway, he feels a little guilty about not meeting his father that often. The **Society** has adopted clearly different values in comparison with the past. Fewer families exist, and there is an increased fragmentation of society at this level. For instance, both Mr. Kites and his father live alone. At another level, humanity is interlinked like never before. There are tribes, social communities, and people with similar interests can meet without any restrictions of location etc. The social network framework always existed in the civilization, but the speed of communication has never been this fast. This has many implications not only on the social component, but also on the commercial side of life. The emergence of pseudo-experts affect Mr. Kite's life in a far reaching way. Kite is a member of many communities, but active in only 5. Only yesterday, 'Majka49' advised Mr. Kite against buying a certain brand of tires for the community car. This is only a small example of network effects in the society. Huge corporations can fall within a matter of months. Information is fast, but so are rumors which spread like wildfire. Of course, Majka49 commands Mr. Kite's trust for good reason. Mr. Kite's social network is big but the number or people he trusts for economic decisions are only a few. There are of course the 'cospees' to watch out for, corporate spies in all social networks, trying to subtly astroturf for their employers. There are about 12 to 15 pseudo experts that Mr. Kite completely trusts, although he has never seen them and probably will never meet them in person. Mr. Kite is a great believer of social recommendations, and believes in the thesis, that collective knowledge is usually right.

As Mr. Kite arrives at his father's house, his father mentions that he has to buy some things for the weekend from the supermarket around the corner. Brick and Mortal retail, by no means is dead like many pundits had predicted.

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[2]Brazil, Russia, India & China

Admittedly, **shopping patterns** have changed as retail has lost a substantial share to e-commerce especially in the 'search goods' category. In Germany, retail is now a concoction of the new and the old. The demographics mean that the older segment of the population that forms a majority have stayed loyal to its old practices of visiting shops. In this subcategory, those aged above 60 (40, during the Internet boom) indulge in negligible online shopping. Those above 50 also do most of their shopping offline. This does not mean that retail has been sitting on its laurels. It is increasingly attempting to align itself to both segments. It creates a tech intensive hip image for the young, while offering the good old shopping experience. Retail has also gained by governments' regulatory support to the section. Fearing a massive loss of jobs in the unskilled labor segment, the government has given sops to retail chains providing employment to millions. This includes an increase in opening hours (24hrs also in some shops) and tax benefits for retailers.

Additionally payment technology based on **integrated identity** is now mature and only a mobile phone is needed for authentication and payment. It amuses Mr. Kite when he observes his father picking up his bank cards just before they head for the store. Senior Kite expresses his concerns about the all-encompassing payment mechanism and his single identity. He is obviously from the old school and feels that losing your mobile phone translates into losing all your details. He advices his son not to part with too many personal details on social networks. His son tells him that integrated single payment is now more secure than any bank cards with robust and trustworthy mechanisms in case of theft or loss. He assures him there are strict privacy laws in place, which protect citizens against offenses like online stalking and fraud.

The Kites, without reaching any agreement on that topic, finally enter 'YouShop'.

10.4 YouShop - An Extraordinary Shopping Experience

Since we have seen how shopping in 2020 might look like and in what way retailers can react to current and future developments we will now introduce a new yet fictional retail shop. One that emphasizes retailer characteristics and advantages and at the same time projects the assets of online shops into a retail store. Welcome to YouShop.

10.4.1 The YouShop Concept - a Retailer Highly Personalized

As the name already indicates, the department store YouShop offers its customer personalization at highest rate. The customer is no longer an anonymous and unknown visitor of the shop, but rather does YouShop know each of its customers,

their needs and preferences. Shopping in YouShop is an active interaction between the retail shop and the guest. YouShop collects and analyzes each information deriving from interaction and the customer therefore gets highly individualized product offers and services.

So let us return to our previously introduced customer of 2020. Mr. Kite has got his own detailed profile in the YouShop's community. This profile he can administer explicitly on the YouShop's online website. He can state his preferences, his hobbies and activities as well as be an active member of the YouShop's community by taking part in a vivid community life, building up his network of like minded people and friends.

When Mr. Kite enters YouShop he is instantly recognized by the shop's system via his integrated identity on his cell phone. A 'YouShopCart' is already waiting for him to start his shopping tour. Electronically powered it is able to drive autonomously or steered by the user's movements and has an integrated multi-touch screen on top. So Mr. Kite steps on his 'YouShopCart' and is welcomed on the screen. It shows him a range of new products since his last visit, tailored to his profile. Mr. Kite's attention is drawn to a new DVD and he decides to request the assembly of his personal 'YouRack'. This is one of a couple of special racks in YouShop that can be automatically filled with specific products according to the customer's demands within a few minutes. While a 'YouRack' is being assembled for Mr. Kite with a DVD collection and related products he sets his cart in motion guided directly to the rack by the shop's internal navigation system. On his way through the shop he passes a personalized advertisement screen showing a new generation of cell phone just being released. He presses an icon on the screen of his cart in order to get more information about the cell phone and decides to request the location of its outlay. When he arrives there he is disappointed by its weird shape and decides that a real examination of such a product is much more worth than just some product information and pictures. A message on the cart's screen indicates that his 'YouRack' has been completely assembled and so he pushes along. By implicitly tracking the duration of his stay at the cell phone rack the shop's system recognizes Mr. Kite's low interest in the new generation of cell phone and therefore will avoid advertisements or information on that topic in the future.
Waiting at the rack is a shop's service advisory who welcomes Mr. Kite and tells him his personal experience with the DVD that had aroused Mr. Kite's interest. Rambling around his 'YouRack' Mr. Kite decides to recheck the advisory's statements at the online community and requests the reviews and ratings of the movie on his screen. A review of one of his friends finally convinces him and he decides to take the movie with him in order to watch it yet this afternoon. The storyline of it fascinates him even so much that he decides to also buy a book on a similar topic which he found on his 'YouRack'. So Mr. Kite puts the two products into his virtual shopping cart by a simple touch on the cart

screen and is about to head for the exit when a notification is displayed on the screen saying that his father has just entered the shop. Wondering what he might be up to in here Mr. Kite intercepts his father in the music division. His father told him that he had received a recommendation from a friend for a new classical album so after listening online to one piece he decided to drop by the shop and get it immediately. Even though there is another electronic market close by he decided to buy the album in here because his friend would get a bonus from YouShop for his recommendation leading to an actual purchase. So finally Mr. Kite and his father head for the shop's exit where they confirm the purchase of the products in their virtual shopping carts. The money is directly charged from Mr. Kite's bank account and as he steps from his 'YouShopCart' the hatch to the shop's warehouse opens up and reveals his newly achieved purchases wrapped into an eco-friendly carrier bag. At the exit door there is an employee standing, whom Mr. Kite knows from various online discussions. He and his father are invited to an online barbecue session at YouShop's community portal, but as the two of them are heading to their car both agree on not having to exaggerate an excessive online life.

10.4.2 Market Analysis

The market for retail stores is one of the most important ones in Germany yet one of the most declining ones as well. Developments, players and characteristics will be displayed and analyzed in the following section.

10.4.2.1 Characteristics

Some facts of today's market in general should provide an insight into the future department store. Germans spend 30% of their equivalent disposable income in average in retail shops, whereas 1992 it stated still 40% [409]. For the future one can assume that the market share for retail shops in general will decline if they do not adapt to the changing economical and technological environment.

The consolidation and concentration on the German retail market is continuing mirroring an oligopolistic market structure. The top 10 in this domain such as for example Metro (19.7%), Rewe (13.7%) and Edeka (12.6%) are holding 84% of the generated revenues. The German market is saturated with an extreme low rate of return. Compared with other countries the rate is among one of the less profitable ones stating only 0.8% [409]. Regarding the future these main market players will probably hold their market positions, though they will have to compete against online shops as well. Regulations are projected to become more cooperative and flexible, however zoning regulations and environmental restrictions could, which could hinder a market entry have to be taken into account.

To sum it up, the market for today's retailers in Germany does not look so bright and therefore demanding for a new concept. As past examples show like

the rise of Aldi, which was a complete new vending system at that time, success goes along with simple but innovative ideas. The new retail shop concept could fill gaps by adapting to its customers which the retail shops now leave open.

10.4.2.2 Target Group

Internationally compared German customers have a higher elasticity of demand and 45% of the consumers are peer-group orientated and brand seeking [409]. The cultural diversity of the customer base will grow with increasing globalization. The target groups for the new shop concept are well educated, engaged, open minded and better informed people, who seek for relevant information and new technologies. This new shopping idea shall appeal especially to women as well. Every shop will be small and flexible but with an established customer base. The recommendation and moving shelves system satisfy the need for a guide within the information overload. Especially peer group orientated customers who are not sure about a product are one of the target groups for this shop. Adding up the additional services the YouShop will offer a complete new shopping experience targeting a very diverse customer base.

10.4.2.3 Competitors

Potential competition in this market would be the usual department store, discount stores and the e-commerce shops. As mentioned above the success of department stores is dropping. To ban this downside trend a new shop concept could provide the solution. YouShop offers a concept which is able to satisfy much more customer needs than today and helps to extend or establish a customer base. Discount shops offer cheap prices with low additional services and therefore focus on a different kind of customer. The only big competitor could be the e-commerce shops, but as people on the one hand will seek for hands on experiences concerning goods such as clothes, food or perfumes and on the other hand YouShop also offers a possibility to order online and to pick it up later, it will stay competitive against online shops.

10.4.3 Services Offered by YouShop

Compared to conventional retailers the services of YouShop appear complex and costly at first glance. The concept is not yet designed to compete with big retail players like Media Market serving the mass markets. In fact the department store YouShop attends to a niche market in form of a high tech boutique. To give an overview we have already scratched the key services YouShop offers in the conceptional scenario. In the following the key services as well as value added services will be further detailed.

10.4.3.1 Three Key Services Constituting the Retailer YouShop

In order to create an extra-ordinary shopping experience as YouShop's mantra states two social key features have been incorporated into the retail store concept: Networking and personalization. This is essentially achieved by the implementation of three basic services:

- an online platform for a community around YouShop

- the 'YouShopCart': a device for interaction between the customer and YouShop

- personalized 'YouRack': an automatic product assembly according to customers' demands

The Online Platform
is based on a community platform with web 2.0 features such as administering profiles, social networking and providing discussion forums. It exceeds the conventional company weblog to solely inform the online community about company related products, trends and developments by far. Furthermore it offers its customers the opportunity to display themselves, to give statements and ratings about products and it incorporates an active community life. Therefore it is attended by shop officials in order to organize events and initiate discussions. The platform is accessible from any PC as well as from YouShop's shopping carts. Profiles and reviews can therefore be created or edited directly in the retail shop.

The 'YouShopCart'
is a device within the shop that fulfills two purposes: Locomotion and interaction. Therefore the customer can step on it in order to navigate through the shop. The cart rests on two parallel tires and a supporting electronic controller keeps its balance. By shifting of weight the user steers its course. Attempts for creating such a device have already resulted in the Segway Robotic Mobility Platform [415].

Attached to its handlebar is a tablet PC with a multi-touch screen which displays a graphical user interface. It provides the customer with opportunities to interact with the shop's system. The cart's sensors using RFID technology can determine its position in the shop anytime, so location based services are accessible on the screen according to its current position. Thereby product information and advertisements are placed on the screen in appropriate spots. Additionally these sensors are used to track the shopping customer. Therefore not only valuable information about the customer's preferences are derived in order to refine his profile but also information about popularity and adoption of particular products are collected. The cart computer also provides wireless Internet access especially with a direct link to YouShop's online community, where reviews, ratings and recommendations can be viewed.
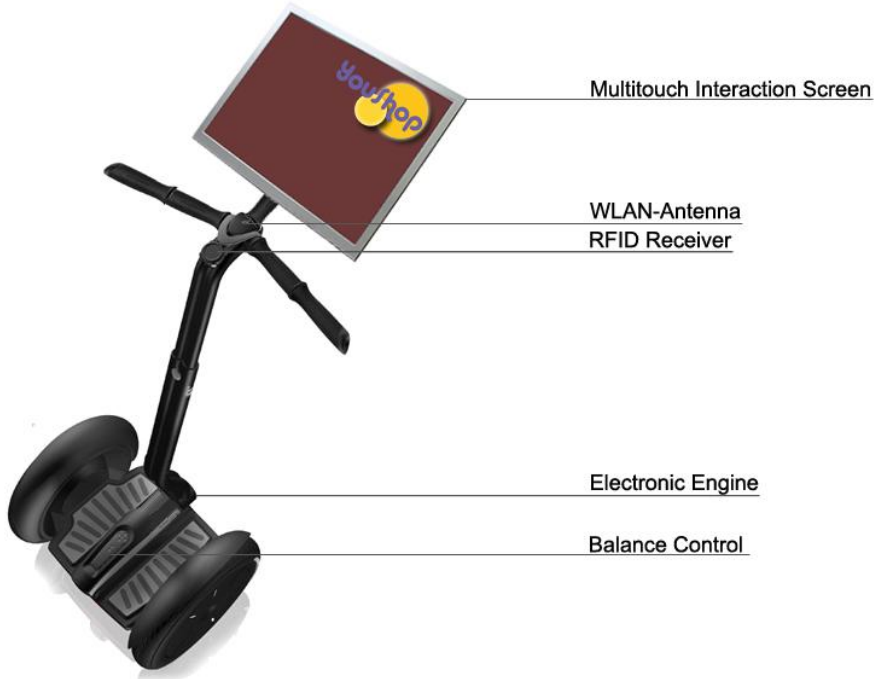
Figure 10.2: Prototype of the 'YouShopCart'
Source: Own Illustration

At anytime the customer has the choice of how he wants to explore YouShop. There are basically two modes which he can choose from. In the first mode there's an input field which can be used to look for specific products in the shop. So customers knowing what they want can quickly find their product and receive all relevant information according to it, including its location in the shop. The second mode is called "browsing YouShop" and lets the customer explore the shop giving recommendations and showing product advertisements from time to time. Built in is a preference guide showing spots of the shop on the display where interesting items for the customer can be found. This preference guide is fed by an analysis of previous purchases, products of likewise minded customers as well as by implicit tracking in the shop through the cart's sensors or eye tracking devices built in the racks.

Another social feature implemented in the cart's computer is the friends finder. According to the customer's profile it notifies if any of his friends are currently shopping at YouShop. A gimmick is posed by the instant messaging service for realizing in-shop networking.

Concluding the cart's computer offers many ways of interaction between

YouShop and its customers as well as among customers itself in order to provide an extra-ordinary shopping experience. The personalized multi-touch offers specific product recommendations tailored to the customer's profile. With one touch on the cart's computer the customer is able to assemble a 'YouRack' .

The 'YouRack'

system is an automatic framework for moving products inside a store. Therefore every product is provided with an RFID chip in order to be automatically identified. Once the shop system has gathered a range of products according to a customer's demands or preferences the product IDs are sent to the warehouse. There the product items are automatically released and transported using an assembly line to the allocated rack in the store (A comparatively similar approach is currently taken by IKEA who is planning to implement a dynamic rack system for their warehouses in 2009 [388]). A hatch in the back of the 'YouRack' enables the items to reach the shelves. Therefore the number of 'YouRacks' in a shop are limited since there has to be an assembly line containing wall at the back of each rack. In order to let all kinds of items fit into the shelves the space between each shelf is flexible and is not only able to adopt to the size of an item but also to the physical size of a customer. As the angle of perspective is sometimes decisive for drawing attention to a specific item YouShop even uses a sophisticated revenue system regarding manufacturers which will be discussed later on. The racks are filled with individualized product collections which enable cross-selling and initiate impulsive purchases. So just like online shops dynamically adopt their offerings and product collections, the 'YouRacks' enable the retailer to build a real life product environment around the customer tailored to his needs.

The combination of an online community, 'YouShopCart' and 'YouRack' is the key to YouShop's concept. It provides a variety of opportunities to bring individual product recommendations to the customer in a real world environment in order to create a unique shopping experience.

10.4.3.2 Value Added Services

Value added services help to satisfy the needs for every customer making shopping itself more convenient and exciting. Customers should get an incentive to go out and buy something especially in the YouShop.

Communities

With an integrated identity and the shopping cart it is possible to create an own online profile within a network or group such as YouOnline, where you can chat, communicate and invite your friends. By entering the store your profile will be initialized on the 'YouShopCart' screen and whenever friends of you are in the shop as well you will receive directly a message. Hence you can meet people from your different online communities in reality and exchange

experiences with a product or just meet and chat. If you want to find somebody who is familiar with Chinese dishes or whatever you want to buy, it is possible to enter this option into your shopping cart and therefore find someone who is more experienced. Or for customers who just want to get to know new people with the same interests he or she can track these persons in the shop and get in contact with them. To preserve privacy the other party receives automatically a message on his cart as well and only if he confirms and allows the first one to find him, his location will be forwarded.

Second Hand Platform

A second hand online platform offering the customers to sell their own products generates an earning possibility. The procurement of addresses and the platform for the transactions are offered by YouShop for only private and not professional sellers. Supplementary the amount of 2nd hand products a consumer can offer is limited in order to restrict the 2nd hand market to a reasonable size. Whenever a product is passed by a customer, for example a book or a perfume, second hand offerings from other shop customer is displayed which is hence cheaper. The customer has the choice if he wants to have the new product immediately or the 2nd hand item slightly delayed. This delay is due to the fact that the actual product is at the private vendor´s disposal, whereas YouShop solely acts as mediator between the selling and the buying customer. Cannibalization of YouShop´s own product range is diminished through the delay of receiving the 2nd hand product. Therefore many customers will tend to buy the new item directly at the shop. But furthermore this 2nd hand bourse solely takes place within the shop, so an interested person is forced to drop by YouShop and take a look if a product item is offered on 2nd hand base. The potential customer therefore enters YouShop and is likely to become a new member of the community. If a customer wants to sell a product on 2nd hand base he also has to register. After a successful transaction YouShop charges 2% of the price and the rest will be the customer´s own earning. Concerning food it might be possible to sell home-made products or vegetables from own garden growth as long as there is a guarantee for its freshness and shelf life. Like for all network platforms the success increases with the number of its members.

Recommendation Reward

Whenever a customer recommends of a product to his friends, which leads to an actual purchase and hence helps to raise revenues, he will be able to participate in the arising earnings. Rewards are given in form of a bonus, a system similar to flight awards, where it is possible to transform the rewards into money or premium products. This award scheme states beneficial for the shop as well as for the customer, as he has a share in the profits and therefore a special incentive. Another positive effect is the increased customer loyalty. Buyers will develop a stronger connection to the shop if they are an active part of it.

Order Pick Up Service

The order pick up service states one of the most important value added services. Let´s take the example of someone who wants to cook a special dinner at night and knows his needed products. YouShop offers for people who do not have enough time but knowing exactly what they need the possibility to order the products online and then pick it up after work. Concerning food if you are not entirely sure, you can also browse for a recipe on the online platform of YouShop and then choose the option "Order".

The payment can take place online or in the shop with a various kind of payment methods. Online payment will be possible after creating an online account or using e-payment systems such as PayPal. After the confirmation of the order and payment, the bill will be sent to your email address. In order to pick up your subscribed goods, you have to bring the bill to the shop and scan it at the pick up terminal.

This service increases buying possibilities for the customer and makes YouShop more competitive against online stores.

10.4.4 How YouShop Services Influence the Customer's Decision Making Process

Just like the classic retailer YouShop provides the opportunity for immediate take away of goods. Being a department store this is fundamental for many standard purchases. On the other hand customers experience a product hands on and therefore are influenced by an kinesthetic impression. All this is part of the shopping experience which will also be in 2020 a motivational factor for many customers.

YouShop's services such as the 'YouShopCart' with its various integrated interaction alternatives not only emphasize the experience factor but enhance furthermore cross-selling of products through impulsive purchases. The sophisticated recommendation system within the shop forwards the principle "YouShop knows what its customers want - even better than they do". An anxiously managed community provides YouShop with a social network where a lot of personal recommendations from friend to friend lead to product discovery, need recognition and purchase. This system of actively recommending products is significantly supported by YouShop's recommendation rewards. Customers attract customers and are rewarded for successful transactions. Therefore the amount of high quality and target-oriented recommendations increases and with it the prospect on more purchases at YouShop.

Thanks to the detailed profiles of customers YouShop has at its disposal combined with tracking technologies, highly personalized advertising within the shop leads to target-oriented addressing. In that case the difference between advertisement and the shop's product recommendations becomes blurred since its effect on the customer is equal.

So in order to create new nuances between those, YouShop introduces the flexible shelf space built in its 'YouRacks'. Thereby highly interesting, more popular or simply more expensive product items can be placed in more attracting heights than others. The shelf height can even be adopted to a customer's physical condition.

So basically what these services do is drawing the customer's attention to products matching his specific preferences. Therefore impulsive buying decisions are significantly enhanced.

10.4.5 Elements of Value Chain

In general the value chain describes the full range of activities required to bring a product or service from conception to the final consumer. Since the value chain of YouShop is quite similar to the conventional retailers' we will basically focus on its special characteristics, how YouShop's services enhance the rigid value chain and puts the customer into the position of mediator and supplier.

So as a retailer there is a basic structure and relation between supplier, retailer and customer as seen in figure 10.3:

Figure 10.3: Conventional retailer's value chain
Source: Own Illustration

Revenues are generated on the customer's site and the service of YouShop consists of mediating products from suppliers to the customers.

Eventually YouShop's services change this rigid chain. According to YouShop's recommendation system customer have the opportunity to recommend product items to members of YouShop's community network. Therefore they are rewarded with bonuses which motivate an active recommendation exchange. Hence the customer acts as mediator and connects the products of YouShop's suppliers with other customers leading eventually to purchases at YouShop (Figure 10.4).

Figure 10.4: Enhanced value chain by customers' recommendation service
Source: Own Illustration

A third modification takes place regarding the 2nd hand bourse, which is another of YouShop's value added services. It has been mentioned that YouShop provides its customers with the opportunity to offer a reference to their own products within the retail shop. Thus people looking for cheaper offerings are drawn into the shop. So what happens here is that the customer moves from the end of the value chain and becomes a supplier. In this case YouShop simply acts as mediator among customers and charges a mediation fee (Figure 10.5).

Figure 10.5: 2nd hand bourse: YouShop as mediator
Source: Own Illustration

The retailer YouShop provides its customer with the flexibility to be part of every relevant element of a conventional retailer's value chain. Therefore YouShop not only generates direct revenue through purchases but also indirect revenue through the attraction of potential new customers.

10.4.6 Payment

YouShop offers all kinds of possible payment methods starting with direct debit to m-payment and credit cards. The range of possible payment methods depends on the number of established methods in 2020. Therefore YouShop incorporates online payment systems as well. Regarding YouShop's order and pick up service for example, e-payment using an online account is another option for the customer. But it is also possible to use e-payment within YouShop itself.

There are cash points without cashiers where people can pay for their products which they have previously selected using the 'YouShopCart'. Therefore the customer simply drags a product item on his screen into his virtual shopping

cart. The actual money is charged after confirming the purchase at the store's exit. Anytime it is possible to remove items from the shopping cart. After a successful payment the warehouse hatches open up and release the purchased product items wrapped in an eco-friendly bag.

Using his mobile phone the customer is able to pay via m-payment. Thus he simply confirms the purchase by entering his PIN number. The amount will be debited directly from the customer's bank account. Identification and secure payment transaction is guaranteed by the customer's integrated identity transmitted via RFID.

Bonus rewards gained by successful recommendations to friends may be redeemed during payment transactions.

Concluding the retailer YouShop offers all kinds of established payment methods including online payment.

10.4.7 Revenue Sources and Costs

Basically the conventional revenues and expenses of a retailer will persist regarding YouShop. But thanks to the special services it offers there are some additional sources of revenues which we will have a look on in the following. Eventually the implementation costs of such a high tech boutique can not be disregarded, too.

10.4.7.1 Revenues

Revenues are generated like in every retail store by sales of goods. Karstadt Warenhaus AG was able to reach a revenue of 2.5 billions Euro in the first quarter of 2007 with an decrease of 1.7% compared to 2006 [404]. Compared to the general retail store market and especially to special trade stores, the future for department stores looks brighter [399]. Thanks to YouShop's high potential on cross-selling through its sophisticated recommendation system the conventional retailer's source of generating revenue is significantly enhanced. Additionally the second hand bourse is another revenue source as YouShop acts as mediator charging a fee for every actual purchase. The more customers are attracted by this new shopping experience the more participants the YouShop network will have and the higher will the revenues grow. It should be stated here that cannibalization of own purchases because of YouShop's 2nd hand bourse will be diminished by therefore attracting more potential customers into the shop.

On suppliers' and manufacturers' site YouShop's detailed profiles about its customers are highly interesting and valuable for advertising. Advertisement posters have been entirely substituted by screens and displays. Thus the displayed information can be switched immediately. Therefore a customer passing such a screen is faced with a highly personalized advertisement tailored to his personal profile. This avoids pretty much scattering losses for advertisers.

Additionally such advertising can be evaluated very accurately by means of the number of actual displays and the match factor with the passing customer's profile. Through the in-shop tracking devices the popularity of a single product can be determined, too, which is a valuable information for manufacturers. Advertisers can therefore be charged a high fee to position their product ads at YouShop.

Also on manufacturers' site YouShop introduces a priority-system regarding its 'YouRacks' to generate revenues. Thanks to the flexible shelf heights of a rack, products can be placed catching the customer's attention more or less. Products in easy reach generally catch the focus of attention much faster than those positioned on the edges of a rack. Since 'YouRack' adapts to the customer's physical height, YouShop can offer manufacturers a priority system for their products. Hence a priority index for products is introduced for various rack heights that is sold to manufacturers.

Concluding, the conventional retailers' revenue model applies to YouShop as well. Additional services and the flexibility YouShop's technology provides add to the sources of revenues.

10.4.7.2 Costs

Costs for YouShop merchants can be split into two parts. First of all, there are the ordinary costs arising like for every retailer. Fixed costs for employees, rental fee, durables, electricity and possible expansion or alteration of sales areas. This investment makes up the biggest amount of money [393]. Alteration of retail shops can cost easily some millions and shall be well thought out in order to prevent a waste of capital. The amount of the costs varies heavily, depending on the size of the sales area and the location. Due to the German Federal Statistical Office, the cost distribution for retail shop are separated as follows: Cost of sales (56.9% of the overall costs), labor costs (18.4%), rental fees, tenure costs (11.8%) and other expenses (12.9%). It is possible to request for funds for investments and supplementary allowances. For example to start up a retail shop one can apply for a microcredit with low interest rate or furtherance up to a maximum of 25% of the needed equity [390]. However, thanks to a fully automated warehouse and cashier system, personal can be saved and put into an improved advisory service.

The other part of the costs for YouShop are the relatively high investment and implementation costs for the 'YouRack' technology, the 'YouShopCart', pick up terminals and online platforms. However, these costs emerge only at the beginning and will amortize by time. During the time, maintenance costs for these technologies have to be considered as well. Moreover the recommendation reward service for customers decreases earnings as a part of the revenues goes to them. Another possibility to reduce costs would be special tax reliefs compared to online stores. Moreover RFID will lead to a decrease of the total

costs throughout the supply chain by saving money and time [389]. Moreover companies recently launched a theft prevention system for DVD based on RFID stating to be beneficial for retailers as well [395]. This development today displays yet the possibilities to decrease costs with the help of new technology in the future.

10.5 Conclusion

Time and again, it has been proved that people will discard practices dating millions of years, if a better alternative is found. The Internet is an acknowledged disruptive technology. With an increase in online shopping and possibilities of social commerce taking off, it is imperative for real world retailers to enhance their services. We consider it likely that the social and peer influence will continue to influence buying decisions, like it has for time immemorial. Yet, the speed and extent of this influence has dramatically increased with penetration of the Internet. This is and will be exploited by online shops for increasing sales through up and cross-selling. Besides, communities will have a greater stickiness to specific stores as compared to individuals.

Why, then should real world stores not exploit the same? The technology for implementing this new dimension exists or is extremely likely to exist by the year 2020. This new component, when combined with that superior 'touch and feel' personal shopping experience that retail offers, can prove to be a winning combination for stores of the future. One such possible store was explored in this work, which uses technological advancements to integrate a community and also novel techniques to win newer customers. It aims to provide the customer more information in the store, and allow him to feel better informed before making a purchase. At the same time, the store offers him a direct face to face experience, which could often sway the purchase decision, one way or the other.

In a nutshell, retail can not simply bet on an aging population and an age old mindset of shopping in stores to survive. It is true that stores have certain inherent advantages over online shopping. However the key message is that retail, like any other sector in the year 2020, will have to constantly innovate by observing societal and technological trends to flourish.

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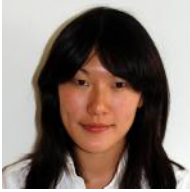Electrical Engineering
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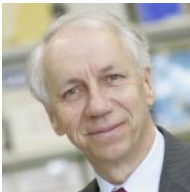**Hegering, Heinz-Gerd, Univ.-Prof. Dr.**
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