Bachelor Thesis

Business Models for Blended Shopping Scenarios

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1 Introduction

This thesis has been written within the scope of my final project at Aachen University of Applied Sciences (FH Aachen).

The first half of the thesis (chapters 2 and 3) comprises the current knowledge of the three commercial types, e.g. traditional commerce, electronic commerce and mobile commerce, including their respective dimensions. After the observation of each individual type of commerce, multi-channel commerce and the underlying strategies are outlined. Chapter 3 closes with a definition of Blended Shopping and the general concepts it pursues.

The following chapter (4) then refines the thesis' focus and the methodical approach that will be utilised to describe and evaluate business models for Blended Shopping scenarios.

The next two chapters (5 and 6) apply this methodology to exemplary Blended Shopping scenarios: the interactive store window and the Shop 2.0 mobile application. Each of the scenarios' concepts is described; business model alternatives are developed and evaluated according to the predefined methodical approach.

Chapter 7 takes an in-depth view at possible barriers of realisation for Blended Shopping. FH Aachen is portrayed as a situational partner with its respective solutions.

The final chapter (8) summarises the thesis' approach and results, outlines eventual barriers that emerged and demonstrates a possible future perspective for the subject of Blended Shopping scenarios.

2 Present situation

Electronic commerce has established itself as an efficient distribution and marketing channel for vendors. One reason for the success of Electronic Commerce is the steady increase in broadband internet penetration over the last years. In Europe, the number of internet users has grown by 217% since 2000 to an overall penetration of 48.5% in 2008 [Min2009].

Customer situation

From the consumers' point of view, E-Commerce is an inherent part of the shopping experience. In the simplest scenario, a product is bought directly through an online shop and all transactional phases take place online. But such synthetic scenarios rarely exist. A product might be bought online, but service and after sales take place in a physical retail store. It is also common that a consumer gathers information online in order to facilitate a buying decision before proceeding to a store to complete the purchase. These examples illustrate that a combination of traditional and electronic commerce is already a part of consumers shopping behaviour.

Vendor situation

From the vendor's point of view, both methods of commerce oftentimes occur as separate processes. Most traditional "bricks and mortar" companies offer their products or services through E-Commerce in addition to their retail stores. The range of products being offered online varies depending on the individual industry and, more importantly, goals of a company. Traditional commerce in retail stores and electronic commerce online are regarded as individual sales channels, each with its own organisational structure.

Interfaces between the transactional phases of both channels are missing or incomplete, although they could directly tap into the shopping behaviour of customers and generate added value for both sides.

This is where the idea of Blended Shopping comes into play. The goal is to create connections between the two methods of commerce that are beneficial for both vendors and customers.

2.1 Subject of the thesis

Most existing Blended Shopping solutions are experimental or technology-driven. In order to show advantages and disadvantages of the different scenarios, it is necessary to systematically determine possible role constellations within a solution. Evaluation should give an insight into situations that can arise depending on what player fulfils which role within a business model.

Goals of the thesis

To achieve this, the thesis will attempt to classify the players, roles and relationships that exist in Blended Shopping scenarios. On the one hand, the analysis of existing business models in today's shopping environment acts as research base. On the other hand, possible models of interaction between traditional commerce and electronic commerce are to be described and evaluated.

These models serve as examples to illustrate individual components of a scenario. Furthermore, the emerging scenario alternatives function as inspirational perspectives for prospective implementations of Blended Shopping.

Evaluation focus

The evaluation puts actors and individual characteristics of a scenario into focus. The scope of Blended Shopping solutions is oftentimes determined by the cooperating companies and partners. Taking this into account, the opportunities for specific industries - telecommunications, logistics, etc. - will be pointed out in the context of each scenario.

As a final perspective, the goal of this thesis is to create an industry-neutral analysis of Blended Shopping scenarios and their distinct constellations.

3 Current knowledge

3.1 Traditional commerce

3.1.1 Definition

Traditional commerce, or simply "commerce", can be defined as follows:

„Commerce, or trade of goods, is the exchange of goods between economical partners. “

([Tie1993], p. 4)

According to Seÿffert, commerce is the connecting element between production and consumption. It is irrelevant if commerce is autonomous or tied to production factors. The task is always to exchange goods or services; therefore, every transactional exchange of goods is considered a commercial process (cf. [Sey1972] p.1).

Every participant in a market optimises his production and service instruments in order to maximise profit [Mer2002]. The vendor is therefore prone to economical, social, demographical, political, legal and technological progress. The competition of vendors results in a diversification of assortments.

3.1.2 The function of commerce

While every type of commerce has its own individual functions, the one common function is the delivery of a product to consumers or other businesses. In more complex commercial scenarios this delivery can happen indirectly. But the basic underlying scheme is that one commercial player provides something for another player in exchange for a payment of some sort.

Bridging and product functions

To substantiate this scheme, two commercial functions can be distinguished: bridging functions and product functions (cf. [Sey1972], p.6).

Bridging functions are needed to bridge temporal, spatial or monetary gaps. Examples for such gaps are the different locations of vendors and customers (spatial), warehouses that bridge the time until a product is sold or credit institutes that bridge the payment between commercial partners.

The product function is bound to actual products. The quantitative function serves the changing demands of a market by adjusting stock, i.e. by buying more products from a wholesale in order to match an increasing demand.

A popular inventory strategy is "Just-in-time" (JIT) [HiFuBo2006]. In order to improve a vendor's return on investment, in-process inventory and stock is reduced to a minimum to lower carrying costs (i.e. logistics).

As vendors choose the products intended for sale from the wide range of a buying market, an assortment function is automatically fulfilled. In contrast to the restricted inventory of retail stores, "The Long Tail" [And2004] describes a strategy of - usually E-Commerce - businesses, such as Amazon.com, that sell a large number of unique niche items, each in relatively small quantities.
Tied to the assortment of a vendor are the functions of market research and advisory. As a connecting part between manufacturers and customers, vendors should know the demands of a market and advise their customers accordingly. Market knowledge can also serve manufacturers as they receive insight about how to scale and operate their production facilities. Therefore, fulfilling the function of market research serves both customers (as advice in sales conversations) and manufacturers (as information tool to steer production planning).

3.1.3 The current shopping process in retail stores

The process of shopping in retail stores usually follows a loose pattern. Wiechert et. al. [WiSc2009] summarise the process as follows:

1. Customer enters the shop
2. Targeted or spontaneous search for products
3. Once a product is located, the customer checks if it fulfils the need and makes a buying decision
4. Optionally, personnel is asked for assistance on product information or location
5. Products are taken to the checkout area (counter or conveyor belt)
6. Optionally, coupons or loyalty programs are handled
7. Customer pays for the products (cash or electronic payment)
8. Customer exits the shop

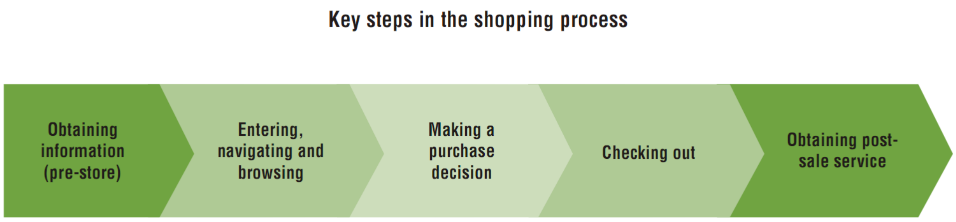

Figure 3–1: Key steps in the shopping process

Source: IBM [ChMa2002]

Importance of physical interaction

Product search and information (steps 2-4) occur repeatedly until either a specific product is found or all required goods are gathered. Important for determining if a product fulfils a need and triggers a buying decision is physical interaction with the product. In a survey among E-Commerce customers in the USA, 52% state that online shopping is not their primary choice for shopping [Mon2009]. One of the main reasons mentioned is the fact that consumers want to see and eventually touch a product before buying it.

Technology in retail

Except for barcode scanners and electronic cash terminals at checkout, the traditional commerce process does not feature technology to improve the shopping experience. Most - if not all - devices are aimed at personnel to improve internal inventory processes or support of payment, coupons and loyalty programs.

Aspects of in-store advice

While the ability to interact with a product is a clear benefit for customers, gathering information and finding the product can be lengthy. When a product is out of stock or not offered by a vendor at all, the customer has no appropriate information channel other than asking an employee for advice. In a worst case scenario, a consumer would spend an extensive amount of time in a shop searching for an unavailable product. This poses a cost factor for vendors as personnel requires time to answer trivial orientation questions; time that could otherwise be used for sales conversations or product advice. The possibility of personal product advice is an advantage of traditional commerce. Vendors can accompany consumers during the shopping process ([FuRi2009] p. 4). On the one hand, advisory conversations can facilitate additional sales of products (i.e. accessories) or services. On the other hand, an active negotiation can take place. This yields opportunities to recommend products of higher quality (and price) as well as special rebates apart from regular offerings.

Possibilities of after sales After a purchase has taken place vendors can offer subsequent product support to customers ([FuRi2009] p. 4). Frequent after sales support opens up the possibilities of follow-up sales for already purchased products (i.e. additional equipment) and additional product promotion. Furthermore, regular communication nurtures a long-term relationship between vendor and customer.

3.1.4 Types of commerce

From a vendor's point of view, there is a differentiation of "manufacturers' commerce" and "merchants' commerce" [Sey1972].

Manufacturers' commerce concludes that selling goods is an activity which co-exists with the production factors of a company. Businesses that maintain an internal sales infrastructure for their products perform manufacturers' commerce. Merchants' commerce is detached from the production process. The commercial activities revolve solely around selling goods.

Wholesales Wholesales are often found early in supply chains from manufacturers to customers. They are targeted at smaller vendors who then proceed to sell the goods to consumers or other vendors. Wholesales deal with large quantities of products. Therefore, they fulfil an important role in logistics by balancing stock between manufacturers and vendors.

Retail In the context of Blended Shopping, retail offers a more interesting perspective than wholesales, since the latter rarely interact with customers directly.

Retail describes businesses that sell products directly to customers and end-users (cf. [Sey1972], p. 239). Retailers obtain products and eventually add value by packaging, arranging or assorting them. Although retail fulfils a logistical role by keeping inventory, the margin is slim compared to wholesales.

On the one hand, the inventory available should always be sufficient to meet customers' demands. Out-of-stocks are a common cause for customer frustration and missed sales [Dav2007]. On the other hand, maintaining a large inventory is a cost factor, which is why approaches like JIT try to streamline logistical processes and reduce stocks to a minimum.

What sets apart retail from other types of commerce is not the act of delivering products to customers in a store, but the extensive advisory and consulting phase that takes place prior to a purchase. Sales people appear as brokers, with the goal of finding a product that matches specific needs of a customer. As an addition to this generic classification, Barth (cf. [Bar1993], pp.86–97) mentions specific types of retail; some of which will be described below.

Speciality shops Speciality shops are positioned within a specific industry by featuring an assortment that is both wide and deep, for example consumer electronics or furniture. Products require extensive advisory services as consumers expect expertise from the store personnel. In order to gain revenue with a homogenous inventory, products that are low-priced and have a high turnover are mixed with more expensive, low turnover items.

Malls Malls are retail complexes housing a variety of stores, oftentimes speciality shops. There are two approaches to malls: the “American mall” and department stores.

In the example of Mall of America (MOA, mallofamerica.com) the mall acts as a brand-neutral building where different manufacturers or brands have retail stores without coherence to each other. The mall contains retail stores of Apple, AT&T, LEGO and Nike, which all act as individual store. Mall of America only provides the necessary infrastructure for stores.

Department stores (e.g. galeria-kaufhof.de, karstadt.de) attempt to satisfy a wide range of product needs in all categories, with multiple Shop-in-Shops. The Shop-in-Shop concept is a result of the constant urge to replace unprofitable retail sections with more profit-yielding ones ([Bar1993] p. 272). These shops are not presented physically separated, but as different product categories within the store. In the men’s clothing department of Galeria Kaufhof, the space might be allocated to BOSS, Levis and Adidas by a Shop-in-Shop system.

While malls like MOA offer a diverse range of individual stores, department stores like Karstadt or Galeria Kaufhof offer different product brands and categories in the same shared space. This can occur like a more integrated shopping experience to customers.

Mail order Mail order selling takes a special position in the way that it is not bound to a physical store. Instead of products placed on shelves, customers are confronted with a catalogue to make purchase decisions. In traditional mail order (e.g. not E-Commerce), the order is filed via phone or postal mail. Since there is no need for costly retail stores it is possible to reach a high amount of customers at comparably low costs. Customers are not limited to opening hours of stores and shopping from home is comfortable. Yet if a product is needed "right now" the temporal delay might outweigh the benefits of mail order. As direct interaction with products is impossible, catalogues need to provide a detailed, high quality presentation of the assortment. Another disadvantage is the missing personal relationship to the customer. Compared to retail, it is increasingly difficult to build a trusted relation. Doubts about the quality of products or service policies (i.e. return and shipping policies) can form barriers for the buying decision.

Supermarkets According to Barth [Bar1993], supermarkets belong to the group of discount-oriented commerce. Carried products are mostly groceries or convenience goods. Some supermarkets have cultivated weekly offerings of products from other sectors, i.e. consumer electronics or clothing, also called "comparison goods" [Guy1998]. By reducing costs for operation and personnel, an aggressive pricing policy can be maintained. Customers fetch products via self-service and personal interaction is oftentimes limited to the check-out phase.

Purpose of shopping A different approach to classification is the distinction by "shopping trip purpose" [Guy1998]. Shopping for convenience goods takes place at regular intervals, with little effort by customers. The primary goal is to fulfil needs with a minimum requirement of time and money. Customers consider this type of shopping an obligation. Due to this circumstance, affected stores focus their efforts on reducing the length of shopping trips and facilitating a regular shopping routine.

Comparison shopping is considered a personal experience, rather than an obligation. The process of comparing products in terms of quality, price or style takes place in customers' leisure time. Comparison shopping is often carried out as family trip or in small groups. Comparison shopping can be supported by enabling extensive comparison between products, as well as advisory and presentational services.

3.1.5 Presentation policy and the layout of retail stores

The way how products and their surroundings are presented influences the spending behaviour of customers [AhKe2007]. It also affects the qualitative appearance of products. Presentation policy comprises the planning, realisation and controlling of target-oriented product presentation. In retail, presentation policy can be considered an important part of the marketing mix.

While product presentation is a scientific field in itself, a brief introduction within the scope of this thesis is beneficial for further understanding of the situation in retail stores. There are five general areas of presentation design:

- store layout
- presentation of products
- placement of products
- shopping atmosphere
- appearance of personnel

Store layout The store layout provides a foundation for the interior and functional zones of the store. The goal is to ensure a walk through the products without customers feeling disrupted. Store routes that do not appear logical to customers can negatively influence the shopping behaviour. Furthermore, the layout should support the operational flow for employees of the store. When planning a store layout, it is important that prospective design decisions match the individual positioning of the store. Misplaced elements - especially experimental technical solutions - can alienate customers and break the image of a store. Corporate design guidelines should act as orientation in order to maintain a consistent appearance.

Shelf placement Following store layout considerations, the placement of shelves has to be planned. This step consists of separating the store area into functional zones. A common approach is the division by product groups, for example women's clothing and men's clothing. Alternative concepts are a division by lifestyle, i.e. wellness, fashion, entertainment or a Shop-in-Shop concept. Shop-in-Shop extracts specific parts of the assortment from its surroundings to create a new shopping experience for customers. These sections may be guided by a general topic, i.e. „home cinema". From an economical point of view, the diversification of functional zones is ideal when the income per area unit is constant. In other words, shrinking the men's clothing section in favour of the women's clothing section should ideally not affect the overall turnover.

The store area can be subdivided into product areas, advisory areas, customer areas and "other areas" ([Bar1993] p. 273). While these areas cannot always be clearly distinguished, it is important to realize that different areas serve different functions since this also constitutes a change in customer behaviour.

Product areas Parts of the product areas consist of seasonal placements and temporary special offers. This dynamic part is important to provide a renewing shopping experience for customers and a flexible acquisition tool for vendors.

Advisory areas Advisory areas are set apart from the main customer routes, in order to not disturb their flow. The share of advisory areas is dependent on the stores' product assortment. Products that demand for a large amount of advice require sufficient advisory areas, while "self-service" stores can utilise more space for product display. In the case of open store layouts that provide a special shopping experience (i.e. IKEA or car dealerships), advisory areas are oftentimes integrated into the spacious product area.

Customer areas Customer areas are reserved to provide the necessary shopping flow through the store. Corridors, elevators and escalators belong to the group of customer areas. The "other areas" category concludes areas for personnel, counters and checkout.

When considering the presentation of products, the relevant question is how to present products. This comprises design elements of decoration, choice of shelves, customer routing, lighting or sound design. Presenting products in an impressive manner that motivates purchases is the first priority.

For the placement of products, the question is where the products and shelves are placed, which results in a quantitative division of store area. There are three placement systems within a shelf ([Bar1993] p. 276):

- Manufacturer block: All products of a manufacturer are placed in one location. The complete representation of a manufacturer's assortment is the main advantage of this approach.

- Product block: Products of the same category are grouped together, without considering brands and manufacturers. These blocks support price comparison, which makes them favourable for customers.
- Cross blocks: Product groups are aligned horizontally (i.e. skin care), while manufacturer groups are aligned vertically within the product groups. This appears logical to customers because a large product group is subdivided into smaller brand blocks.

3.1.6 Current market situation of retail

In order to put individual commercial types into perspective, comparable data is added to illustrate the scale of the different markets.

Traditional commerce in 2009

In 2009, the total turnover volume of the retail industry in Germany is said to remain stable at 399 billion Euros [Lic2009], with only a slight change (0% to -1%) compared to 2008. Between 2001 and 2009, the annual turnover remained stable, with minor fluctuation between -1.6% and +2.3% per year [Sta2009].

Being the most established form of commerce, retail seems relatively constant in volume with no immediate perspective of substantial growth.

It is assumed that instead of attempting growth within retail itself, other forms of commerce could tap the current situation in order to enrich shopping experiences and thereby add value to traditional commerce.

3.2 Electronic Commerce

Electronic commerce can be defined as:

"The support of trading activities through communication networks"

([Mer2002], p. 20)

This definition describes E-Commerce based on its intention and the applied principle. Due to the fact that this definition is an abstract, high-level explanation, specific applications have to be derived from it. Examples for E-Commerce applications are web shops, online auctions, electronic market places or pay-for-content solutions. Given the diversity of E-Commerce areas it is difficult to apply a definition that compromises all possible dimensions.

In order to achieve a thorough understanding of E-Commerce, four dimensions can be observed: actors, transactional phases, transactional volume and technology.

3.2.1 Actors

In order to see the possible types of transaction, it is beneficial to analyse the involved actors. Similar to a real-world market, the actors in E-Commerce usually occur in one of the two following roles (cf. [Mer2002], p. 22 ff.):

- Vendor or merchant, who offers a product or service
- Customer or consumer, who purchases something or makes use of a service

Depending on the E-Commerce application, these actors can be represented by individuals, companies or administrative organisations. This results in six different commercial constellations:

- Business-to-Business (B2B)
- Consumer-to-Consumer (C2C)
- Administration-to-Administration (A2A)
- Business-to-Consumer (B2C)
- Business-to-Administration (B2A)
- Consumer-to-Administration (C2A)

Relevant constellations of E-Commerce Taking into account the contemporary market situation, not all of these constellations are equally relevant. A2A and C2A scenarios can utilise communication networks (e.g. online tax filing), but such applications tend to be highly specialized and dependent on administrative structures. Since these services do not facilitate trading activities they are not considered E-Commerce and therefore will not be investigated further during this thesis. This also applies for Business-to-Administration (B2A) cases. Most B2A applications are used to support governmental acquisition activities. Purchases by the government have to be published as a request for proposals in order to assure transparency and neutrality of a commission. While this indirectly contains a trading activity, B2A processes are not considered in the scope of E-Commerce (cf. [Mer2002], p. 26 ff.).

C2C-Commerce Consumer-to-Consumer-Commerce fulfils a twofold purpose in E-Commerce. On the one hand, auction systems like eBay (ebay.com) are examples for successful C2C applications. Consumers fulfil the roles of both buyer and seller. On the other hand, C2C is an important part of the information phase in the transactional process. Customers exchange information about products amongst one another. These exchanges appear as isolated service (in a product review portal like ciao.com) or embedded within a B2C transaction, for example as user-generated product reviews on Amazon.com.

B2B-Commerce Business-to-Business-Commerce describes transactions between companies. Examples for B2B applications are extranet solutions for the exchange of orders, invoices or price lists. In contrast to the aforementioned scenarios, roles in B2B are not clearly distinguishable. Trading activities take place alongside complex value chains. Switching roles is common for the involved actors. The term B2B-Commerce presumes an isolated trade amongst two companies. Oftentimes, this is not the case. Supply contracts are arranged once for a partnership of a certain length. In addition to that, modern B2B-Commerce takes place between (automated) IT-systems; this circumstance further dilutes the distinction of roles.

B2C-Commerce In contrast to B2B, Business-to-Consumer-Commerce tends to follow predefined schemes (e.g. transactional phases). B2C assumes a direct transaction between a selling company and an individual buyer, disregarding if the person is shopping privately or as part of a company. The E-Commerce application resides entirely on the vendor's side; there is no specific software on the customer's side except for a web browser. Typical B2C solutions are catalogue-based systems that enable customers to browse through a large assortment of products.

3.2.2 Transactional phases

Individual transactions can be subdivided into phases. Every commercial transaction leads to a contract between two parties, either directly or indirectly (cf. [Mer2002], p. 30). This defines the rights that both parties gain from the contract. These could be rights to goods, services or payment. Merz [Mer2002] defines the transactional phases in electronic commerce as:

1. information
2. mediation
3. negotiation
4. contracting
5. fulfilment
6. after sales

Information phase In the first phase, customers observe the market for product offers to cover a need. Product characteristics such as price, prospective quality or more specific attributes are considered for evaluation. Over the last years, user-generated content (sometimes defined as Web 2.0 [O'R2005]) emerged as influential source during the decision making process. Customer reviews, testimonials or product ratings form the equivalent to word of mouth recommendation in traditional commerce. Feedback mechanisms on E-Commerce websites enable customers to establish a direct Consumer-to-Consumer information channel, i.e. via product reviews on Amazon. Discussion boards, blogs or dedicated product review portals (i.e. epinions.com, consumersearch.com) serve as alternative information sources. Here, user-generated information appears independently from the place of purchase. The success of Consumer-to-Consumer information sources is partially based on a lack of information on E-Commerce websites. According to an E-Commerce benchmark from 2007

([Mar2007] p. 37), 32% of the polled stated that "there isn't enough information about the products I want to buy" as a disadvantage of online shopping.

User-generated content Related to this is the assumption that third party information and experiences from "real" customers appear more reliable. In the aforementioned benchmark, 34% of consumers "strongly prefer sites with reviews" and 24% "somewhat prefer sites with reviews". This adds up to a total of 58% of polled customers who generally prefer E-Commerce sites with customer reviews. Only 14% specifically declare mistrust towards reviews ([Mar2007] p. 148). This presents a dilemma for E-Commerce vendors: On the one hand, customer reviews can add value to a product offering. On the other hand, negative reviews can pose a threat to the success of a specific product or manufacturer.

Mediation phase The mediation phase consists of the mediation between customer and vendor. Customers compare different product offerings in order to find the one that best fits their need. While the information phase observes a markets' offering as a whole, the mediation phase compares specific buying options. If multiple vendors offer a product, criteria like price, availability, reliability or appearance are considered by customers. Since the vendor is impersonated by an online shop, the actual mediation takes place between a customer and the website.

Negotiation phase During the negotiation phase, both parties negotiate price and content of an offer. In a traditional retail scenario, this phase comprises the exchange of wishes and offers in order to find a mutual agreement. In E-Commerce, price and content of a product are usually fixed. There is no direct channel of communication for vendors to handle individual requests. Having a dialogue in this phase would be beneficial, i.e. for the negotiation of rebates. Some E-Commerce scenarios feature customisable offers. One example is the configuration for Dell computers (dell.com). Customers can decide on configuration details of their computers and the price changes accordingly. Dells Make-to-Order model [Boo2001] can compete with traditional in-store sales in this particular dimension because the Dell website assists users in customising their product of choice. The Dell example can be classified as explicit personalisation ([Kol2007], p. 26) since the customer actively decides on parameters. In contrast to that, implicit personalisation is performed by E-Commerce applications that passively gather preferences and thus customise offers. The negotiation phase results in a mutual agreement on the offer or the transaction is discontinued. In case of an agreement, this phase leads to a contract.

Contracting phase In the contracting phase, vendor and customer agree on transactional details. Details of payment, delivery and customers' personal information have to be exchanged and approved. A real-world example of the contracting phase can be found in the check-out process on Amazon: After products and prices have been "negotiated" and added to the shopping cart, a click on "proceed to checkout" leads to contract details and subsequent fulfilment of the agreement.

Fulfilment phase In B2C scenarios, fulfilment is a short-term action. After customers have committed a purchase, payment and product delivery take place. In B2B commerce this phase can take months or years. A negotiated contract (e.g. for suppliers) comprises deliverables that persist over a long-term period.

After sales The after sales phase collects all measures that succeed a completed purchase. A common marketing tool for after sales is sending newsletters via E-Mail. Information about special discounts or new products can serve as tools to establish a long-term customer relationship. Product recommendations are a form of after sales that tap the information phase of a future purchase. If a customer's purchases are saved in a user profile, automated product recommendations can be created. Such recommendations can either be displayed as part of the product information ("customers who bought X also liked Y") or as part of a newsletter. This is an example of implicit personalisation for customers. Kollmann ([Kol2007], p. 27) describes this as "learning customer relationships". Compared to a first-time visit, this procedure recursively customises an online shop's offering for customers.

Strictly speaking, after sales is not part of a transaction. Measures are aimed at maintaining customer relations that would otherwise end with fulfilment of a contract.

3.2.3 Transactional volume

Another dimension to distinguish transactions is volume. This is particularly relevant to B2C-Commerce as it influences the present business models and technological requirements. An E-Commerce application that has to deal with macro payments well beyond 1000 Euro has different prerequisites than a website that handles cent amounts.

The limits between the different volumes are not fixed and dependent on individual applications. A general differentiation concludes the following:

- macropayments (> 1.000 Euro)
- medium payments (5-1.000 Euro)
- micropayments (0,1-5 Euro)
- nanopayments (0,001-0,1 Euro)
- zeropayments (no monetary payment)

([Mer2002], p. 31)

Macropayments Macropayments expect a trusted relationship between transactional partners. This relationship could have been established by previous traditional commerce situations.

Medium payments Medium payments can be covered through credit cards, cheques or services like PayPal (paypal.com).Third party credit companies act as middleman for payments. This shifts part of the responsibility away from E-Commerce vendors.

Micropayments Micropayments are too small to justify an international bank transfer. Available payment methods are similar to those for medium payments, assuming that transfer fees do not exceed the actual payment volume. Alternative approaches for micropayments include mobile payment, via SMS for example.

Nanopayments Nanopayments – in the form defined above – are inefficient ([Mer2002], p. 32). Transfer fees outweigh the transactional volume and most transfer services cannot handle sums below a certain amount.

In order to use nanopayments effectively individual amounts can be accumulated to a regular payment, i.e. weekly or monthly. An example for this approach is Google's advertising program Google Ad Sense (google.com/adsense). Multiple payments are combined and cashed out when a predefined threshold is reached. Since this requires a mid-term or long-term contract in order to gather enough transactions, this approach is more suitable for B2B-Commerce.

Zero-payments

E-commerce can also take place without monetary transaction. Such scenarios are described by the term "zeropayment" ([Mer2002], p. 33). Two companies that cross-reference each other's E-Commerce website via links or banners create an economical transaction without actual cash flow. The currency in this case is additional customer traffic or increased brand awareness.

3.2.4 Economy and technology

The technological dimension of E-Commerce is closer to the actual realisation of a concept. Technologies can be distinguished by their layer in the application architecture ([Mer2002], p. 33).

Enabling technologies

Enabling technologies provide standards for using and developing E-Commerce solutions. This concludes mechanisms such as communication protocols (i.e. TCP/IP, HTTP), convergence technologies (i.e. mobile communication standards like UMTS), cryptographic algorithms for secure transmission, programming languages (i.e. Java, PHP) or mark up languages (i.e. HTML, XML). These base technologies are not restricted to E-Commerce usage. From technologies that emerge over time, standards and best practices (i.e. XML as recommended data format) evolve and set a general direction for situational usage.

Middleware

The term "middleware" describes sets of combinable software components ([Mer2002], p. 33). These individual components can be used as building blocks for applications. Middleware is no complete and structured E-Commerce solution but a tool box for implementation. For example, a middleware could contain one module for handling payments, one for dealing with customer information and profiles and another one for searching through a product catalogue. Ideally, the individual components are based on a common set of enabling technologies to provide compatibility between parts.

Frameworks

A framework combines multiple middleware components. It provides software developers with an application skeleton by supplying processes, data structures and interfaces. Developers can then flesh out this skeleton with business logic of the E-Commerce application. The intention of frameworks is to anticipate repetitive tasks that focus solely on initialising a system. Instead of "reinventing the wheel" every time a new application is being developed, a framework provides frequently required elements beforehand. A range of functions is provided but the individual purpose of an application has to be added to the system. This allows application providers to focus on aspects that are relevant to the business itself, instead of solving technological issues. Content management systems that are not specialised for a specific task, for instance Drupal (http://drupal.org), can be considered frameworks. Intershops Enfinity (http://www.intershop.com) is an example of a framework aimed specifically at E-Commerce.

E-Commerce applications

E-Commerce applications are complete technological realisations of business objectives. An application may be based on multiple frameworks and middlewares in order to get the required combination of functionality. For example, an online bookstore comprises middleware elements like catalogues, payment handling and inventory management to form an application. Pre-built solutions like xt:Commerce (xt-commerce.com) or Magento (magentocommerce.com) can substitute middleware or frameworks for standard E-Commerce scenarios, depending on the required grade of customisation.

Economic perspectives

Business models and market models project an application from an economic perspective. Each of the four mentioned dimensions adds up to a model that describes the goals of an application and how these goals will be pursued.

A business model refers to a single business that acts within a market. A market model defines the coordination of individual economic actors ([Mer2002], p. 35). Both terms can mix when an actor operates a market. Auction systems like eBay (ebay.com) run a market and act as participating players at the same time. In order to develop these models, modelling roles and processes is crucial. When planning these dimensions, technical solutions translate considerations about actors, phases and transactional volume into an E-Commerce application. At the same time, technical solutions can inspire economic models, e.g. when asking how an online shop could serve as tool for existing businesses.

Conclusions

When all four dimensions of E-Commerce are observed collectively, some conclusions arise ([Mer2002], p. 36):

- B2C mainly revolves around medium payments, larger transactional volumes are found in B2B. While contracting for larger amounts in B2B is possible, most payment methods do not provide suitable procedures
- B2B puts into focus mediation, negotiation and fulfilment, while in B2C the information phase and payment is particularly supported by online applications

Depending on the underlying definition, E-Commerce can pose an abstract concept. Therefore it is helpful to consider the different commercial dimensions in order to gain a practical perspective.

3.2.5 Current market situation of E-Commerce

According to a GfK WebScope study from March 2009 [Kal2009], German consumers generated an E-Commerce turnover of 13.6 billion Euros in 2008, a 19% increase from the previous year. In 2008, the amount of E-Commerce customers rose by 12% to a total of 29.5 million people. The amount of purchases remained stable at about nine purchases per customer per year. This indicates that the major growth opportunity for E-Commerce consists of reaching new customers online, rather than motivating existing customers to spend more.

E-Commerce vs. retail

Compared to the turnover of the retail industry (around 399 billion Euros in 2008) the volume of E-Commerce seems minor, even though it is constantly growing while retail remained stable for the last years. Acquiring new customers poses a worthwhile opportunity for E-Commerce in order to grow further. Taking into account the stable situation of retail, it can prove beneficial for E-Commerce to leap beyond the web and participate in the market of traditional commerce.

3.3 Mobile Commerce

In the previous chapter, E-Commerce was defined as "the support of trading activities through communication networks" ([Mer2002], p. 20). Mobile commerce (M-Commerce) represents a special form of E-Commerce as only mobile communication networks are considered for commercial transactions. This correlation with E-Commerce is reflected in the definition by Laudon/Traver ([LaTr2009] chapter. 1 p. 21):

"Mobile commerce [...] refers to the use of wireless digital devices to enable transactions on the Web."

Devices and examples

More specifically, "wireless digital devices" refers to cell phones, usually with an extensive set of technical features, such as the Apple iPhone, Android G1 or BlackBerry phones. Examples for M-Commerce transactions are stock trades, mobile banking, travel reservations, as well as less complex services like SMS-based purchasing of ringtones. In theory most prevalent cell phones are capable of utilising M-Commerce applications. But the combination of voice, text, images, audio and video in mobile applications require for a certain level of bandwidth and display properties of the device ([LaTr2009] chapter. 3 p. 69). This puts into focus smartphone devices, with the aforementioned examples. Smartphones (or mobile computers such as notebooks or netbooks) provide sufficient hardware capabilities to run more complex applications.

State of technology

Limited mobile internet bandwidth could pose a possible technical bottleneck. Fortunately wireless internet access technologies of the third generation (3G) have become widely available ([LaTr2009] chapter. 3 p. 40). At the same time, publicly available wireless access points with limited range (Wi-Fi network, also known as "hot spot") offer a bandwidth capacity of about 11 Mbps, which is a substantial increase from the 1 Mbps that 3G networks provide in real-world usage.

The value chain

M-Commerce can be structured by observing the underlying processes and value chains. Barnes distinguishes two areas of the M-Commerce value chain: content and infrastructure & services (technology):

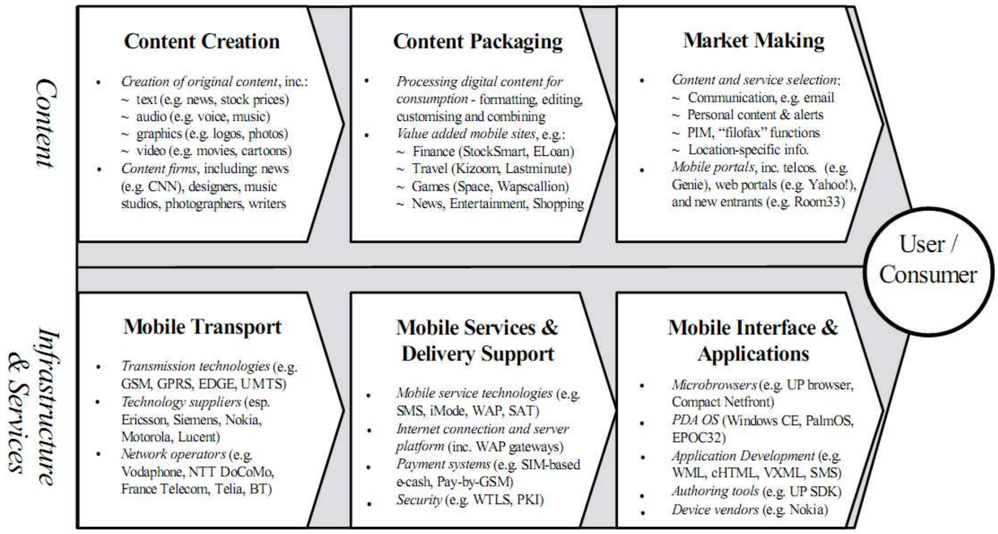

Figure 3–2: The M-Commerce value chain

Source: [Bar2002]

The technology process comprises the following elements:

1. mobile transport
2. mobile services and delivery
3. mobile interface and applications

Mobile transport

Mobile transport describes the basic infrastructure required for mobile communications. Transmission technologies (e.g. GSM, UMTS) and infrastructure equipment are the main elements here. Key players in this stage are mobile network operators (MNOs) and equipment vendors like Ericsson, Nokia or Siemens, who continuously develop solutions that facilitate mobile web services.

Mobile services

Mobile services and delivery describes technologies like SMS or middlewares to enable delivery of mobile web services. For instance infrastructure required for establishing online connections or payment and security systems. The goal of these services is to ensure the availability of M-Commerce platforms. This is based on network standards committed by the mobile transport segment.

Mobile applications

Mobile interfaces and applications make mobile services available to users. This includes development of user interfaces and applications. Integrating mobile interfaces requires a paradigm shift due to the special constraints of mobility.

Players

Important players in this segment are platform vendors, application developers and device manufacturers. Platform vendors provide the operating system (OS) for mobile devices. Prevalent platforms are Windows Mobile (Microsoft), BlackBerry OS (Blackberry), iPhone OS (Apple), Android (Open Handset Alliance) or S60 on Symbian OS (Symbian). A core application for M-Commerce is the web browser contained within an operating system. Fortunately, all of the mentioned operating systems include browsers with appropriate feature sets for processing standard web pages. This eliminates the requirement for device-specific mobile sites. While customised websites are to be preferred in terms of performance, modern mobile browsers facilitate usage of services that were not specifically developed for mobile devices.

Approaches in development

There are two general approaches in mobile application development: web based applications and native applications.

On the one hand, developers can rely on the fact that modern smartphones have browsers powerful enough to run complex web applications [Top2009], i.e. applications that run in a web browser and rely on technologies like AJAX (asynchronous JavaScript and XML). This yields the advantage that browsers on different platforms provide similar functionality. This allows for a shorter development time since extensive testing and adapting to individual devices is not required. The application is based on standard web technologies. From the user's point of view, using the application is the same as browsing a website on the mobile device.

On the other hand, development of platform-specific applications is an option. All of the five platform vendors mentioned above provide software development kits (SDKs) that allow third party developers to build native applications on operating system level. While it can significantly increase development costs for multiple platforms, some features can only be realised within native applications. Hardware-based functionalities such as location awareness (via GPS) are rarely accessible via web applications.

Furthermore, disruptions of the cellular network can immediately disable browser-based solutions. For device manufacturers, it is worth knowing that the brand and model of a mobile phone are the most significant factors in a purchase decision ([Bar2002], p. 98). Exclusive partnerships with manufacturers have strengthened the position of MNOs (e.g. AT&T for the iPhone, T-Mobile for the Android G1) as customers are forced to go with a certain MNO in order to obtain the preferred device.

Content The second area of the mobile commerce value chain is content. Similar to technology, the content process consists of three elements ([Bar2002], p. 93):

1. content creation
2. content packaging
3. market making (publishing)

Content creation The concept of creating and delivering content in M-Commerce is similar to E-Commerce. The actual content remains the same but the format is adapted to match the requirements of mobile devices. Therefore the players in content creation are the same as the initial content providers for E-Commerce. For example news portals, music studios or manufacturers who provide information about their products. These sources can then be adjusted for M-Commerce usage. When transforming digital content for mobile usage options of time-dependence, localisation, format and pricing have to be considered. As the user is acting in a mobile environment, these conditions can determine the value of M-Commerce services.

Content packaging In order to provide valuable and consumable content for users, further editing and customisation is required. Players in content packaging achieve this by aggregating and transforming available information. While content creation puts the original creation of content into focus, content packaging is about further processing and adding value through reconfiguration. Services in this sector utilise an approach similar to mashups (cf. [Alb2007]). Examples are services such as Amazon (amazon.de/gp/aw/), BBC News (bbc.co.uk/mobile/i/) or lastminute.com (mobile.lastminute.com).

Customers' environment The customers' environment represents special circumstances for M-Commerce. When using E-Commerce applications, customers find themselves in a foreseeable surrounding: indoors on a computer with large display, controllable lighting conditions, wired and (usually) interruption-free broadband, users can focus entirely on the task at hand, i.e. filing an order in an online shop. In mobile situations, users are confronted with interfering situations. The conditions in which M-Commerce is conducted are seldom optimal. Hansmann et al describe four paradigms of pervasive computing, which summarise the special demands of M-Commerce ([HaKo2003], p. 17):

- decentralisation
- diversification
- connectivity
- simplicity

3.3.2 Decentralisation

Mobile computing features distributed systems. Devices act as autonomous entities, usually in a client-server-relationship. One requirement that arises from decentralisation is the need to synchronise information across entities. Consistency of data among mobile devices and servers is critical. Mobile clients are embedded within an infrastructure of cellular networks and servers that provide back-end functionality. This results in a requirement for remote administration of applications as providers cannot update client software locally.

3.3.3 Diversification

The paradigm of diversification revolves around the functionality of computer systems. When aiming at mobile usage it is important to target the specific needs of users and to optimise for individual situations and environments. Users maintain alternative devices for different situations. These devices might be similar in terms of functionality, but there is a designated “favourite tool” for every task. Internet usage on a desktop computer compared with a smartphone can act as example here: the computer at home is capable of using the complete functionality rich internet applications and multimedia content. Away from the desk, a smartphone is used to consume specific, situational information. Both devices provide a way for mobile web usage, but the criteria that create value for users are different. Rather than paying attention to the specifications of a device, technology is applied depending on usage purpose. Content has to be filtered and reconfigured to match the individual usage scenario.

3.3.4 Connectivity

Due to the number of different devices there is a demand for connectivity in mobile computing. Platform-specific limitations make it difficult to seamlessly exchange information. Obstacles are restrictions of storage and bandwidth, as well as proprietary operating systems on the connecting devices. A possible approach to overcome these challenges is the agreement on technological standards. In communication networks, examples for such agreements are protocols like HTTP or Bluetooth. It is important to take into account eventual network unavailability. While a network connection can be taken for granted on desktop computers, mobile applications ideally provide partial functionality without network availability.

3.3.5 Simplicity

There is a conflict between the steady increase in systems' functionalities and the emerging need for easily usable applications. Compared to standard personal computers, mobile devices are specialised. They perform a limited set of tasks which they have been explicitly designed for in terms of usability. This meets the fourth and last paradigm: aiming for simplicity of usage.

User acceptance

In order to accept a new service, users must accept the accompanying interface. Complex technology should be utilised to provide a seamless integration of services. From the user's point of view, the complexity of an application should be hidden behind the curtain of a simple and usable interface.

3.4 Blended Shopping

E-Commerce has obtained an established position next to traditional commerce in the area of consumer goods. The following table illustrates the process of each channel with the individual advantages and disadvantages:

Transactional phase	Traditional commerce	Electronic commerce
Information	+ vendor can influence buying decision + physical contact to products + personal advice possible + shopping experience - elaborate information search - personnel costs for vendor - real estate costs for vendor	+ high degree of market transparency + easy accumulation of information + highly structured information + no personnel expenses for vendor + no showroom required + advice by user-generated content - no physical contact to products - no traditional advice by vendor - difficult to handle customer preferences
Mediation	+touching/testing of products possible + vendor advice possible - difficult to structure information	+ large information base + advice by user-generated content - touching/testing of products impossible - no traditional advice by vendor
Negotiation	+ face-to-face negotiation + individual solutions possible - time- and cost-intensive	+ standardised, efficient process - little room for individual solutions - no face-to-face negotiation
Contracting	+ convenient process for customers + process is common habit for main customer base	+ digitalised process + less media disruptions - not standardised - more effort for customers - unclear legal situation - lack of trust, privacy issues
Fulfilment	+ easy delivery of products for vendors + product takeaway possible - local stock inventory required - cash desk system required - customer has to transport goods	+ no cash desk system required + no transportation required + centralised stock inventory + well-established processes - no instant product availability - unclear legal situation - lack of trust, privacy issues
After Sales	+ face-to-face contact - redundant elicitation of customer data	+ usage of digital customer data + usage of digital customer reviews (user-generated content)

Table 3-1: Advantages and disadvantages per phase per channel

Source: [FuRi2009]

Regarding these characteristics it appears interesting to evaluate how both sales channels can be combined to tap unused potential. Fuchs/Ritz base their evaluation [FuRi2009] on the assumption that to date, E-Commerce and retail are considered separated in both technological and organisational terms. There is a substantial share of businesses that operate multi-channel systems. As of 2007, 25% of organisations below a sales volume of $5 million per year employ brick and mortar locations next to their E-Commerce solutions [Mar2007]. Between $5 million and $50 million, 43% of businesses utilise retail next to E-Commerce. Above $50 million annual turnover, 53% of companies use both sales channels.

3.4.1 Multi-channel commerce

Multi-channel commerce describes commerce that utilises multiple sales channels. E-Commerce and its subsets, such as mobile commerce, introduced new channels to the commercial landscape.

During the past years, retail and mail order vendors increasingly started to establish electronic sales channels. Expansion in the opposite directions, e.g. online shops that added retail store locations, occurred as well (cf. [Hei2008], pp. 6-7).

The trend to utilise additional commercial channels created a concern of channel cannibalisation. Yet over 40% of customers that were polled about the issue claimed to prefer companies with multi-channel commerce, which weakened the argument of cannibalisation.

According to Heinemann, E-Commerce leads to a strong increase in acquisition of new customers. Different companies reported between 15% and 60% growth in customer base with the introduction of E-Commerce as additional channel (cf. [Hei2008], p. 5).

3.4.2 Multi-channel strategies

Isolated strategy

The isolated strategy operates each channel independently. There is no communication or overlapping controlling between channels. As a result, customers can have multiple unrelated and untargeted contacts to a company.

Focused strategy The focused strategy maintains independent channels but customer services are focused on the operators' side. From the customer's point of view, individual services still appear isolated, but the companies' controlling effort combines multiple channels. This approach matches companies that operate multiple business models for the same market segment.

Hybrid strategy In a hybrid strategy, multi-channel services are being combined on both the customer's and the vendor's side. This strategy is suited for marketing measures because communication channels are relatively easy to connect and combine.

Linked strategy The linked strategy contains the highest grade of channel integration. Marketing, distribution and customer service channels are connected on the vendor's and customer's side. This strategy enables the most synergies between channels. In a real-world scenario, it is unlikely to find a strategy that combines every given channel thoroughly. Yet in order to increase efficiency, a linked strategy can serve as abstract target for multi-channel systems (cf. [MeBa2004], pp. 32-33).

There is a range of decision-making factors when choosing a multi-channel strategy: business model, positioning of existing brands, IT infrastructure and organisational structure of the company. For multi-brand businesses, it is advisable to follow a focused strategy because the targeted audiences are oftentimes different. Hybrid strategies are well suited for combining marketing measures and points of contacts for customers. Characteristics of individual organisational departments, such as distribution, can complicate multi-channel efforts. For example, high-priced products with strong customer involvement are not equally suited for online and store distribution (cf. [MeBa2004], p. 33).

3.4.3 The multi-channel behaviour of customers

Customers' willingness to associate multiple channels is reflected in multi-channel behaviour. The term describes the targeted usage of one sales channel to prepare or support a purchase in a different channel.

Channel correlations There are intense information related correlations between sales channels. 24% of purchases in retail stores include a preceded information phase online [vaHu2008]. These purchases make up for one third of retail store revenue. In

12% of the cases, customers visit the online shop of a vendor before completing a purchase in a brick and mortar location of the same company. In over 6% of purchases, E-Commerce motivates the decision to shop at the vendor's retail location. Multi-channel effects are prevalent in the opposite direction as well. 27% of customers who purchase online gathered information in a retail shop before. These purchases account for 39% of online revenue.

Channel switching Customers switch channels between information phase and purchase. This is due to the fact that customers gather information in channels with extensive advisory services but fulfil a purchase in a channel with lower pricing. The following figure summarises the most common reasons for customers to switch channels during a purchase:

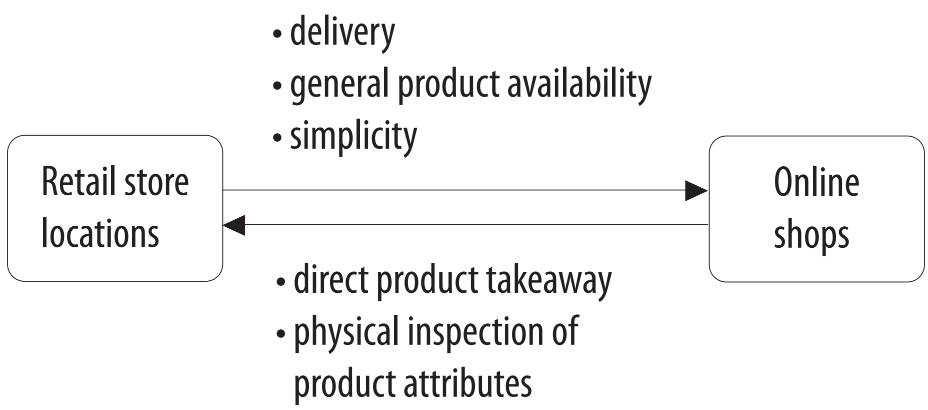

Figure 3–3: The most common reasons for customers to switch channels during a transaction

Source: adapted from ([vaHu2008], p. 62)

These reasons allow the following assumptions [vaHu2008]:

- Switches from E-Commerce to retail stores occur because of the possibility to immediately obtain the product as well as the option to physically inspect it.
- In the opposite direction (retail store to E-Commerce), the convenience of home delivery and availability of products are the main advantages for customers.
- E-Commerce is the only channel in which simplicity counts as one of the reasons for purchasing after gathering information in another channel.

These conclusions visualise the diversity of customers' requests and requirements for different sales channels. Furthermore, they show the value of differentiated multi-channel systems. Every channel has unique situational advantages, with no channel being superior per se.

The role of price

One common assumption is that the prospect of lower prices constitutes a channel switch between information and purchase. This is closely related to the individual pricing image of sales channels.

Analysis on the subject shows [vaHu2008]:

- It is uncommon for customers to switch from E-Commerce to a different channel in order to find out about pricing conditions. Online pricing is considered a reference.
- More often, the search for a lower price level motivates customers to visit online shops after obtaining information in another channel.
- Pricing is only one of multiple reasons for multi-channel behaviour. It is closely related to other factors, such as product availability or delivery options.

Cannibalisation

In order to estimate the revenue contribution of a sales channel within a multi-channel system, it is important to observe cannibalisation between channels. Cannibalisation exists if purchases of one channel are translocated to another channel without generating additional sales. Businesses that plan to add a new sales channel need to consider cannibalisation to correctly calculate the estimated gain. Therefore, existing multi-channel systems need reliable data to control and optimise sales processes.

Cannibalisation of retail sales by E-Commerce amounts to 14% of online turnover ([vaHu2008], p. 82). Reverse cannibalisation, e.g. translocation of online turnover towards retail locations, totals up to 15% of retail sales. Some of the added sales that are not cannibalised are based on unplanned purchases. In E-Commerce, the share of unplanned purchases is 44%. In retail stores, these purchases amount to 38%.

Harmonisation of channels

In order to maximise multi-channel gains, individual channels need to appear harmonised towards customers. If all channels are presented in an integrated manner customer loyalty is influenced positively. Due to the nature of each channel, not every dimension can be aligned completely. Shopping experience and advisory services of E-Commerce and retail differ, which is why there is a "natural barrier" for harmonisation:

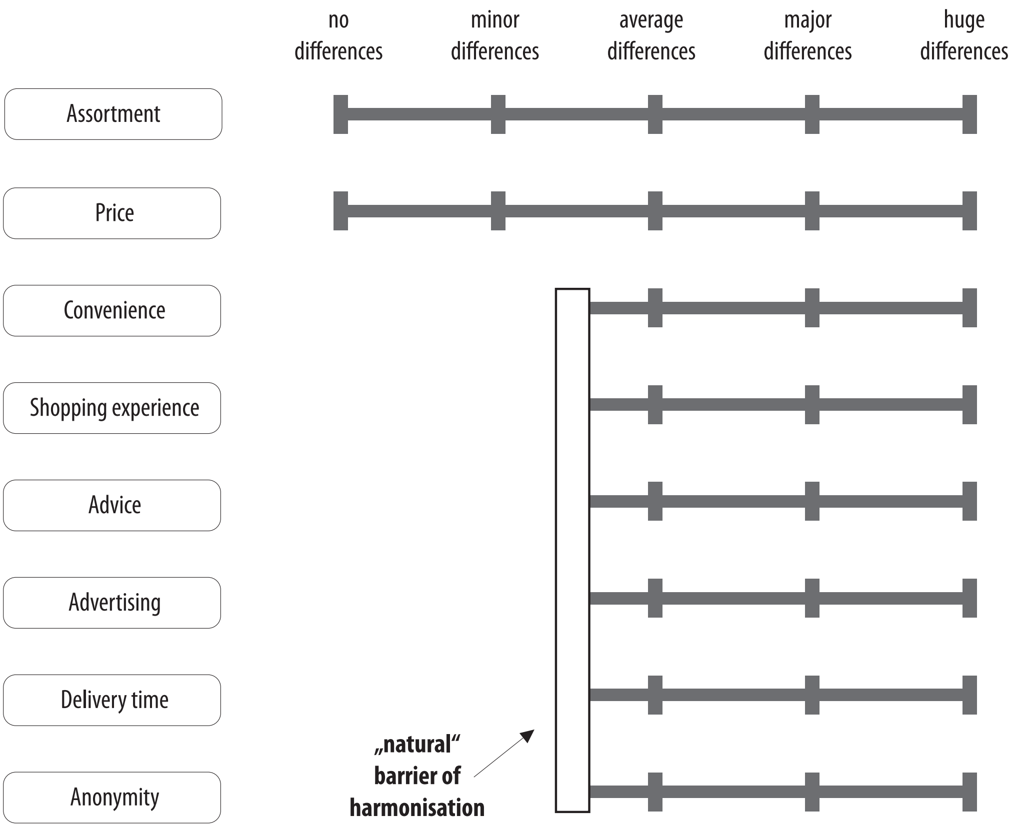

Figure 3–4: Opportunities and barriers of sales channels' harmonisation

Source: adapted from ([vaHu2008], p. 100)

3.4.4 The definition of Blended Shopping

There is acceptance for the combination of sales channels on the consumer's side. To make use of this opportunity as vendor, retail and E-Commerce have to be considered an integrated entity. This leads to the principle of Blended Shopping, which is defined as follows [FuRi2009]:

"Blended Shopping describes the implementation of information, mediation, negotiation, contracting, fulfilment and after sales phases with the inclusion of real-world sales and presentation mechanisms as well as network based sales functionalities."

Two approaches to Blended Shopping

Based on the multi-channel behaviour of customers there are two initial approaches to Blended Shopping: On the one hand, information and functionality existing in E-Commerce should be made available in retail stores. The purpose is to support customers in the decision making process and thus enable vendors to generate additional revenue. On the other hand, presentational elements such as store windows should be enriched with E-Commerce applications. This approach reserves the physical interaction with products and at the same time integrates E-Commerce technologies into a traditional shopping environment.

Industry capability

In order to investigate to which extent current services are capable of Blended Shopping, Fuchs/Ritz conduct a field study among three retail industries ([FuRi2009], pp. 5 ff.). The criterion for the choice of industries is the existence of at least one retail chain in Germany that offers products both stationary and via E-Commerce. This applies for bookstores, drugstores and department stores. Evaluation is directly related to the transactional phases known from E-Commerce [Mer2002].

Across all observed industries, retail chains publish detailed information about their products, services and branch stores online. Customers can request information on general product availability, yet it is not possible to view inventory stocks of a specific branch location. Thus there is no possibility for customers to find out if a product is available in their location of choice. IKEA is an exception in this case as the furniture store enables location-specific availability requests on its website.

All observed vendors offer product order in their online shops, although in some cases the assortment is narrowed. Drugstores and bookstores already employ an approach to link E-Commerce and retail stores. Online orders can be delivered to the retail store location or a specified address alternatively. In few cases, payment for online orders can be made in stores. These basic approaches show an orientation towards the needs of customers. But it is uncertain to what extent store employees are aware of these services.

Mobile devices Mobile devices pose a promising alternative to stationary information terminals in stores. But screen estate is significantly reduced and content needs to be reformatted for mobile usage. Within the field study, no vendor offers customised services for mobile devices ([FuRi2009], p. 8). Possibilities to use available E-Commerce services on a mobile device in-store are limited. Websites intended for desktop usage are hard to navigate on small screens. Specific information that might be of use within the store, such as store maps or product search, is missing. Information terminals are not used consistently to implement E-Commerce services. In most cases, products can be scanned with barcode readers to obtain additional information. An internet connection to retrieve additional product reviews or product alternatives is not available in most cases.

3.4.5 Barriers of Blended Shopping

Based on the results of the field study, Fuchs/Ritz summarise eight factors that prevent further improvement of Blended Shopping scenarios:

- E-Commerce services are not accessible via mobile devices because content is not customised and reformatted accordingly. Standard online shops can be used on mobile browsers, but navigation issues and lack of additional features make it unappealing to users.
- E-Commerce and retail stores are organisationally separated. There is no effort to create links from the vendor’s point of view.
- Employees are not educated about multi-channel measures. Due to the organisational separation it is difficult for personnel to see further capabilities.

- Products in online shops have their own navigational structure. Attributes and information of in-store products (i.e. product codes) are not being utilised.
- The policy of price transparency in retail differs from the approach online. E-Commerce vendors and customers are used to a high level of price transparency due to the comparability of products online. In retail, it is not as easy for customers to compare prices between stores. This neglects the fact that knowledge about alternatives can stimulate purchases. For example, customers need to consider if a minor price advantage is worth the delivery delay of E-Commerce.
- Stores lack access to existing information pools. User-generated content (e.g. reviews or ratings) could assist customers in decision making. Currently, there is no convenient way of obtaining such information within a retail store.
- Digitally available information on product usage is not utilised in stores. A strong advantage of real-world product presentation is the possibility to inspect a product first hand. While products gain more functionality that requires for instructions, there tends to be less advisory personnel available due to cost factors. Digital information on product usage could compensate for this effect.
- Retail stores do not allow for planned shopping. It is not possible to plan a shopping trip up front in order to save time or for convenience reasons. In E-Commerce, wish lists, shopping lists and configurators are common practice.

3.4.6 Prototype applications

Based on the barriers above, scenarios have been created in order to develop user-centred solutions ([FuRi2009], p. 10). The following prototypes represent approaches to overcome the evaluated barriers.

Interactive store window prototype

The interactive store window scenario assumes that a customer is window shopping outside of business hours and the displayed products motivate a purchase decision. In theory, the E-Commerce channel could be approached via mobile device to order the product online. But there is no designated mobile solution to interact with the products behind the glass. Initial iterations of the prototype utilised QR codes [Wik2009a] to attach machine-readable information to products. Due to optical conditions (i.e. glass reflections) that complicated code reading from outside the shopping window, this approach was discarded. The prototype was consistently re-designed to feature touch interaction. The touch screen is directly attached to the shop window. Product navigation is related to the given product arrangement. Ultimately, the solution enables customers to immediately order products or send a reminder via E-Mail. The prototype could be realised with well-established E-Commerce software. The touch screen interaction element had to be designed from scratch in order to match the situational context of a store window.

Shop 2.0 prototype

The Shop 2.0 prototype is based on the assumption that retail stores are primarily used by customers to physically inspect products, especially technology products like cell phones or mp3 players. The actual purchase presumably takes place online to take advantage of the lower price level. Lack of price transparency in retail stores, missing access to user-generated content (e.g. reviews) and missing options to plan purchases are the barriers to overcome with this prototype.

The result is an iPhone application that allows planning a purchase in-store, enables access to reviews and supports price comparison between retail and E-Commerce. In cases where price comparison shows a lower price in E-Commerce, the application points out criteria in favour of a store purchase. If a customer could save a minor amount by purchasing online, the application suggests that immediate product availability in the store might outweigh the savings online.

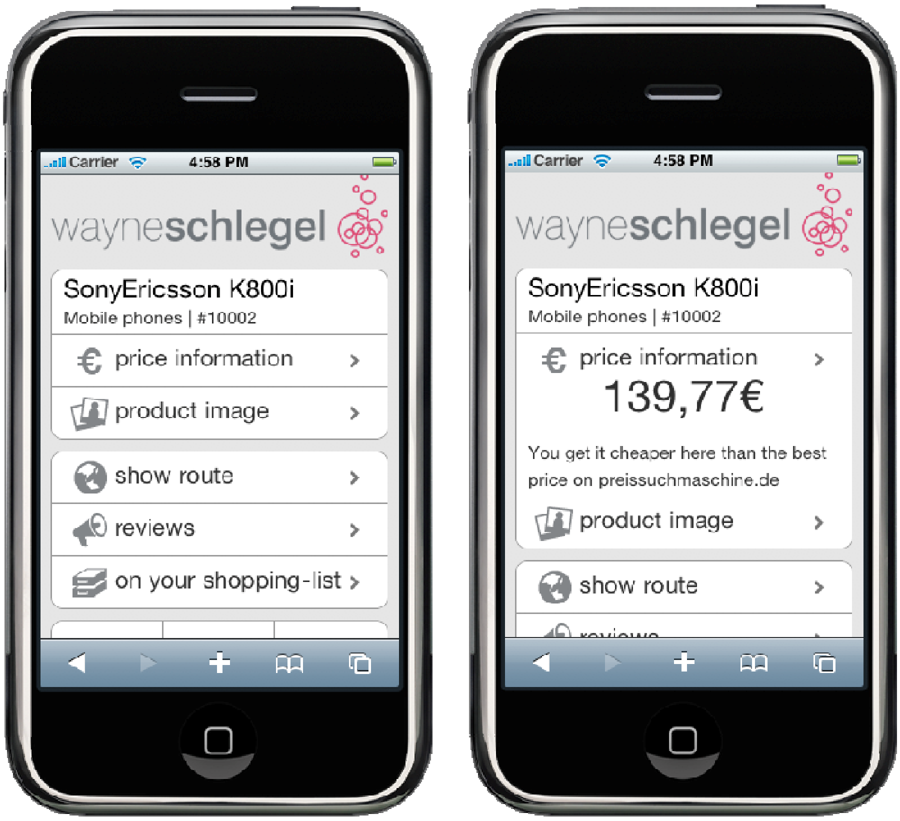

Figure 3–5: Screenshots: Shop 2.0 Prototype

4 Focus and methodical approach

The previous chapters illustrate the potential of Blended Shopping for vendors and customers alike. Oftentimes the required resources and structures are already available which allows for scenarios that bridge between channels. Prototypes of possible solutions provide a technological proof of concept. Integration of Blended Shopping into prevalent shopping environments contains special requirements for the application itself as well as for the surrounding structure of application support and additional services. These aspects are neglectable in prototype development because the goal is to develop a working application for a simplified scenario. Prototypes provide a conceptional proof of concept, yet there is no dedicated effort to develop business models aimed at a real-world implementation.

During the course of this thesis, such business models will be developed in order to get a more structured view on Blended Shopping scenarios and their characteristics.

Main tasks Business model development implies a list of main tasks, namely:

- describe Blended Shopping scenarios in a structured way
- illustrate scenarios comparably
- describe possible player constellations within a scenario
- describe and evaluate business model alternatives

Emphasis will be put on the players that participate in a scenario. Who can cover a certain requirement that arises from a concept? How do characteristics of players alter the application itself? What benefits do players and customers ultimately gain from a scenario? To answer these questions in a way that makes scenarios comparable, the modelling follows a predefined process:

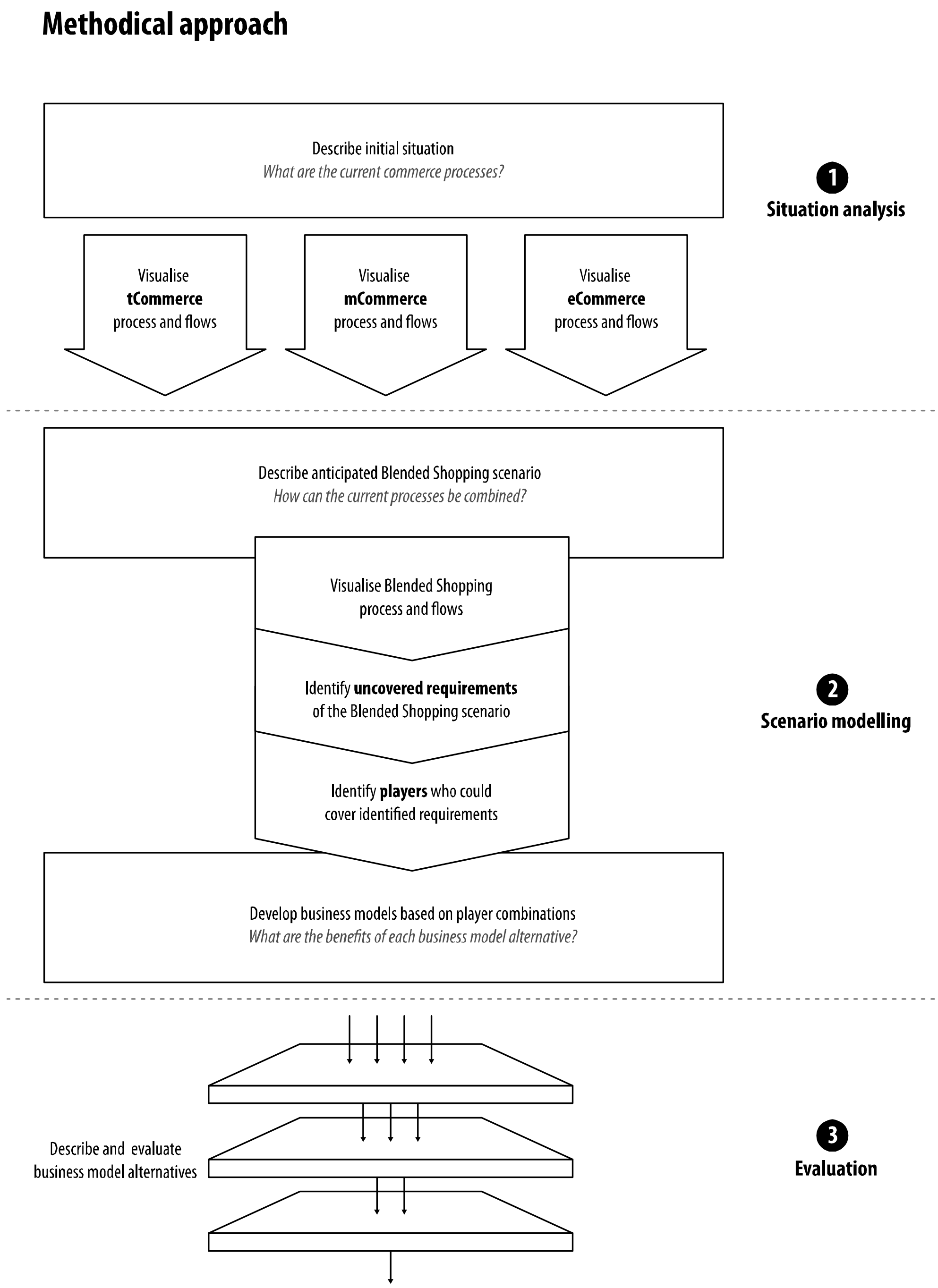

Figure 4–1: Process flow of the methodical approach

4.1 Situation analysis

The process starts with an analysis of the current situation. This "status quo" lays the foundation for the Blended Shopping scenario. Existing resources, structures and core competencies are the subject of this part. A summary of these factors resembles a brief overview of the organisation that wants to provide a Blended Shopping solution. The core element of this analysis is the description and visualisation of the current commercial processes. For each given channel there are two separate inspections:

- chronological steps of the shopping process from the customer's point of view
- flows of information, payment and goods between vendor and customer

Processes Knowing the chronological shopping process by heart helps to visualise which steps are taken by customers (or required by the vendor) until a sale is completed. Blended Shopping attempts to simplify or extend the process, which is why it is important to know the existing procedure. Listing these steps also provides information about the entities involved, such as employees, store objects or elements of E-Commerce.

Flow maps The flow maps aim to visualise individual flows between vendor and customer. The different points of contact for both parties are displayed. On the vendor's side these points represent the three different sales channels, e.g. traditional commerce, electronic commerce and mobile commerce. On the customer's side the three points represent ways to get in contact with a vendor. The contact can be direct, for instance a face-to-face sales conversation or a simple takeaway purchase in a store. Remote contact describes all activities that take place over a distance, such as gathering product information online. Delivery concludes exchanges of physical goods or money over distance, usually the delivery of a product or electronic payment.

4.2 Scenario modelling

The second methodical step revolves around the Blended Shopping scenario itself. The anticipated scenario is described in terms of the general underlying concept and features that are made available to customers. Based on the previous situation analysis, processes and flows are reshaped to match the expected scenario. In this step the flow map serves as a tool for remodelling the shopping process. The visualisation helps to clarify where the Blended Shopping solution applies, which streams are affected and which additional interfaces are created.

Moving from concept to business models

The next step is moving from a generic concept description to actual business model alternatives. In order to achieve this, it is crucial to identify the requirements that arise from a concept. Typical examples of areas that have to be covered are application development, technical support, information services or logistics. After these uncovered requirements are identified, they are observed in relation to the stakeholders of a scenario. The goal is to analyse which requirement could be adequately fulfilled by which player. The term "adequately" poses a methodical difficulty here. On the one hand, it is important to distinguish players by the quality of fulfilment of a requirement when developing a business model. On the other hand, quality is a subjective measure with a variety of possible dimensions. Therefore quality of fulfilment refers to the proximity between a requirement and a player's core competencies. If "mobile network infrastructure" is the requirement to cover, a mobile network operator (MNO) scores a better quality rating than an E-Commerce provider, simply because the task is closer to the core business of the MNO. While this is still subject to interpretation, it suffices the needs for arranging reasonable business models.

The result of these considerations is a list of business model alternatives, based on the combinations of participating players. The following step consists of fleshing out these alternatives and describing their individual benefits and characteristics.

4.3 Evaluation

The final step provides a more detailed analysis of promising business models that resulted from the modelling phase. The fundamental technological idea of a concept tends to remain unchanged across business models. Therefore, evaluation revolves primarily around advantages and disadvantages for operating players and the improvements that customers can ultimately benefit from. In order to achieve a manageable result, the evaluation makes use of a rating sheet. The rating sheet considers performance indicators for the operating players and factors relevant to the customer experience:

4.3.1 Performance indicators for operating players

- Increase in turnover: does the scenario yield a gain in revenue?
- Increase in customer base: does the scenario increase the amount of users of a product or service, without necessarily increasing sales? (i.e. more usage of a data plan a customer has already acquired)
- Low implementation costs: what are the relative cost factors in terms of infrastructure, human resources and implementation time?
- Increased efficiency in resource and process usage: does the scenario utilise existing processes and resources in contrast to extensive restructuring and introduction of new entities?
- Image gain: can players expect a positive image transfer from the scenario, either as part of the Blended Shopping service itself or through co-branding of partners?
- Increase in customer engagement: does the service increase chances of long-term customer loyalty towards the operating companies or brands?

4.3.2 Performance indicators for customer service

- Saved time: do customers save time due to special aspects of the constellation?
- Saved money: does the scenario provide a saving opportunity?
- Increased process convenience: are there features or shortcuts that simplify the shopping process?
- High value of added information: is the additional information of higher value compared to other constellations?
- High technical quality of service: is the application well-developed, usable and up to the current standards of technology? Is the level of expertise in support sufficient?

Justification of the method This particular set of indicators is not meant to display the entirety of factors relevant to every possible Blended Shopping scenario. It provides an overview of the most relevant areas, directing equal attention to operation and customer service. The rating sheet provides a tool to quickly assemble a list of performance indicators for a given situation to enable a rapid evaluation of alternatives. A template of the rating sheet is provided as supplement for individual customisation.

Rating system In order to incorporate their individual importance, performance indicators are weighted, with all weightings adding up to 1. Each indicator is then rated on a scale from 1 to 5 (5 being the best), depending on how well a business model fulfils that aspect. The weighted ratings (weighting * rating) add up to the final score. This approach is adapted from the method used in Strategic Factor Analysis Summary (IFAS, EFAS, and SFAS) [HuWh2000].

Rating interpretation When rating business model alternatives, the resulting score does not necessarily yield a simple "better or worse" statement. Some alternatives follow different strategic approaches that are not entirely comparable to each other. A common example is branding in collaborative scenarios. A department store chain could discover a MNO as effective partner for a concept, but the image transfer that occurs might be undesired or not in line with the existing marketing strategy.

5 Scenario: Interactive store window

5.1 Current situation

Wayne Schlegel Inc. is a department store chain in Germany. The company operates over 100 store locations across larger cities. Product categories include apparel, furniture, home appliances, electronics, cosmetics, photographic equipment, jewellery, toys and sporting goods.

Organisational structure

Supplementary to the store locations the company runs a centralised online shop. The E-Commerce assortment is similar to the offerings in-store, with only minor differences online. Product descriptions are in good order, which makes them suitable for alternative usage. Contained in the online shop is an extensive customer account management. Customers can deposit frequently used information like addresses and payment details to significantly shorten the checkout process. All E-Commerce activities are run by a dedicated department within the company. For logistical requirements, Wayne Schlegel pursues a partnership with DHL.

5.2 Current processes

5.2.1 In-store process

The current shopping process in store locations resembles a standard retail procedure:

1. Customer approaches the store
2. Targeted or spontaneous search for products at the store window or inside
3. Location of a product, physical inspection, possible buying decision
4. Optionally, personnel is asked for assistance on product information or location
5. Proceed to the checkout area
6. Optionally, coupons or loyalty programs are handled
7. Customer pays for the products (cash or electronic payment)
8. Customer exits the shop

Figure 5–1: Current in-store flow

5.2.2 Online shop process

The current online shopping process reflects the common transactional phases of E-Commerce. Depending on a customer's user profile, the checkout process varies in duration:

1. Customer approaches the shop as a result of search engine referral or in-store promotion
2. Targeted or spontaneous search for products in catalogue
3. Inspection of product description
4. Proceed to checkout
5. Handling of shipping and payment information, optional loyalty programs
6. Submission of the order
7. Payment via credit card or cash on delivery
8. Products are delivered by the logistics partner

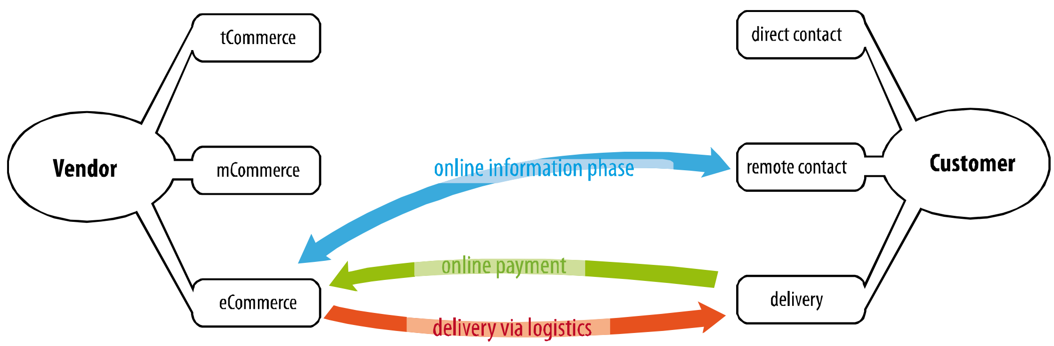

Figure 5–2: Current E-Commerce flow

5.3 The Blended Shopping scenario

The following situation acts as a basis for modelling the scenario: a customer is window shopping after the department store has closed. One of the products catches his interest and eventually motivates a buying decision. In such a situation, customers should be able to interact with the store window.

5.3.1 Features made available to customers in the scenario

To pursue the scenario's objective, a mobile application provides a series of functionalities for product interaction, information and purchase.

- Direct manipulation of displayed products: turn, highlight, etc.
- Display of detailed product information
- Display of user reviews and ratings for the product
- Ability to purchase product for home delivery
- Ability to request product information via E-Mail
- Ability to compare product details

The existing multi-channel system does not provide any added value through synergies. There is no connecting element that utilises data from E-Commerce within the store and "blends" both channels. This can be accomplished with the help of a mobile application. It comprises all data elements and makes them available to customers. This adds an external information channel via mobile device to the shopping process in-store. The required information is already provided by the database of the accompanying online shop. Contracting and fulfilment processes remain mostly unaltered as it is possible to draw on existing structures (e.g. existing payment methods and logistics).

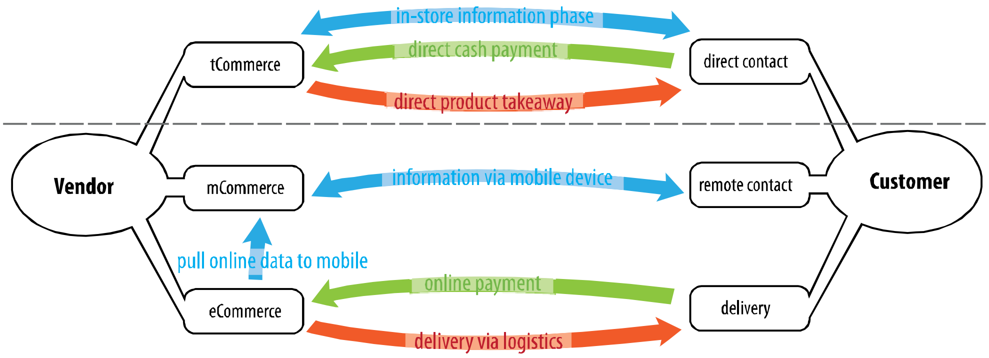

Figure 5–3: Anticipated Blended Shopping flow (application below dashed line)

Uncovered requirements

The main requirements of this scenario derive from its technological implementation. Application development and initial setup are the primary short-term tasks. Later during the process, the interactive application has to be maintained alongside the regular exchange of store window designs. Prototypes of the application are designed in a way that people who are not affiliated with the stores product assortment can maintain the setup. This detaches technical requirements from contentual details of the stores assortment strategy. As a result, the scope of possible players in this scenario is widened. The following table maps prospective players to the uncovered requirements of this scenario:

Figure 5–4: Uncovered requirements and scenario players

Player categories

The first category of players is closer to application development (i.e. the in-house web team, a specialised agency and a mobile network operator). The second category handles aspects of the store window that are directly related to products and the customers shopping experience (i.e. shop-in-shop partners and in-house decorators). This scenario presents no particular requirements for additional information sources. Therefore, players of the second category can proceed with standard business procedures to a large extent. DHL fulfils its role as logistics partner in the scenario. In order to stay efficient, the process of E-Commerce fulfilment remains unchanged across all business model alternatives.

5.3.2 The in-house model

In the first model, the Blended Shopping scenario is realised as in-house project. The application is being developed, implemented and supported internally. Shop-in-shop partners can make use of the interactive store window for their brand-specific display. In order to reach a wide audience, the application is being developed for a set of standard platforms (e.g. iPhone, Windows Mobile, Android). The service is tied closely to the existing E-Commerce processes, in order to utilise existing resources and lower implementation costs. The project is being promoted through existing marketing measures in-store or regular advertising.

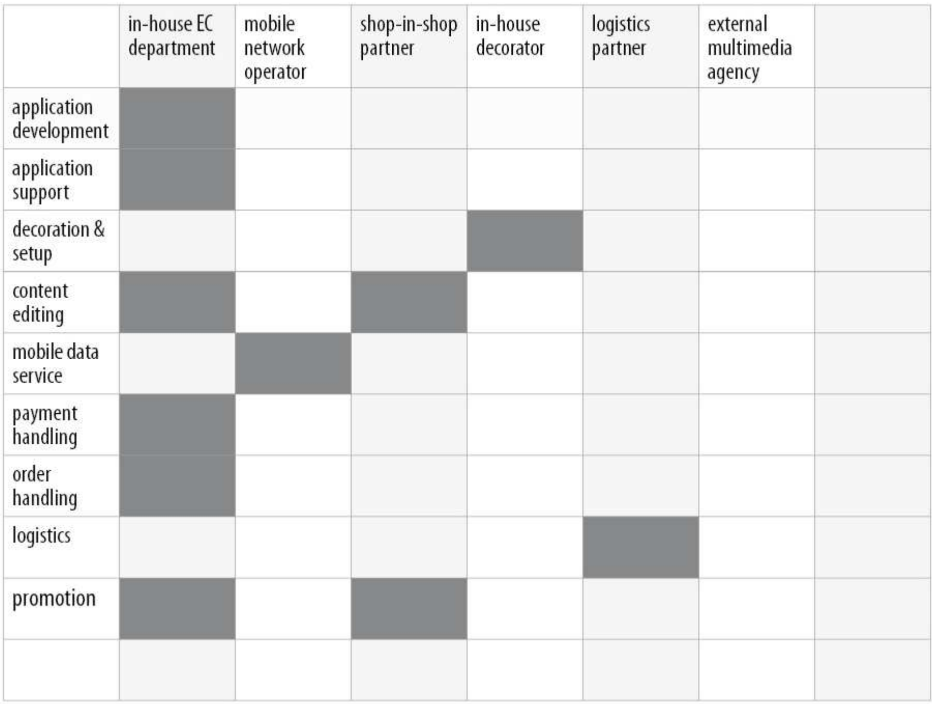

Figure 5–5: Uncovered requirements assigned to players (highlighted): in-house model

The definite argument in advantage of this model is customisation. The involved staff is familiar with goals and strategy of their stores which is likely to lead to a solution that matches products and customers' expectations. Without a predominant platform that has to be supported, it is possible to deliver an application that matches the given customer base if there should be a trend towards a certain device or platform.

The main issue of this model is development effort. The required skill set cannot be taken for granted. The project exceeds the expertise of the designated E-Commerce department as there is no in-depth knowledge about developing mobile applications. This leads to long development cycles and additional costs since the learning curve of technology poses a barrier. Implementation is likely to require restructuring of the E-Commerce department for ongoing support of the application. These restructuring measures shift the focus of the department store chain away from their core objectives.

	Weight	Rating	Weighted Score
Performance indicators (operating players)			
Increase in turnover	0,1	3	0,3
Increase in customer base	0,1	3	0,3
Low implementation costs	0,1	1	0,1
Efficient resource/process usage	0,1	1	0,1
Image gain	0,1	3	0,3
Increased customer engagement	0,05	3	0,15
Performance indicators (customers)			
Saved time	0,1	3	0,3
Saved money	0,1	3	0,3
Increased process convenience	0,1	3	0,3
High value of added information	0,05	3	0,15
High technical quality of service	0,1	1	0,1
Total weighted score	1		2,4

Table 5-1: Rating sheet: in-house model

5.3.3 The agency model

The second model observes the Blended Shopping realisation as part of agency cooperation. The agency handles application development, support and assists the regular setup in-store. The application is not restricted to a cellular network and all important platforms or devices could be served. Contracting and fulfilment use the existing E-Commerce structures for payment and logistics. This model allows the agency expand their service offerings towards point of sale marketing and pervasive computing. In case of an existing partnership for advertising or multimedia services, the Blended Shopping solution can be combined with established marketing concepts.

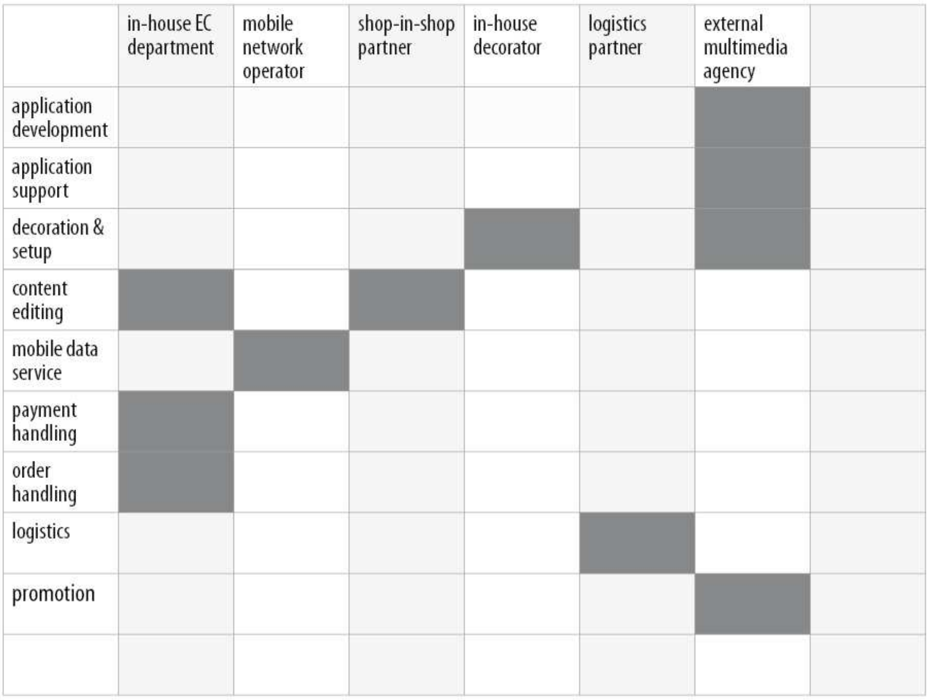

Figure 5–6: Uncovered requirements assigned to players (highlighted): agency model

The primary benefit of an agency as part of the model is application development expertise. For service providers with knowledge of E-Commerce and mobile development, Blended Shopping offers a way to extend activities towards point of sale marketing for lead generation. In case of an existing relationship, the Blended Shopping application can be tied to prevalent marketing measures. Due to the experimental and innovative character of this application, development cycles should be kept as short as possible. This ensures a quick exposure of the concept to customers to gain insights for further development. Next to short-term application development, an ongoing partnership for maintenance and support is conceivable. Outsourcing continuous technical support allows the department store chain to focus on day-to-day business.

One argument against adding a specialised agency to the model is the increase in costs, especially during application development. Utilising existing E-

Commerce resources seems to offer more efficiency to the department store chain. While this holds true for common tasks like managing the online shop, realisation of the Blended Shopping project involves specialised technologies and approaches. It causes additional mid-term costs and delays if the web department has to be acquainted with this skill set. Furthermore, putting the additional strain of application development on the web department would affect performance of day-to-day operation.

	Weight	Rating	Weighted Score
Performance indicators (operating players)			
Increase in turnover	0,1	3	0,3
Increase in customer base	0,1	3	0,3
Low implementation costs	0,1	4	0,4
Efficient resource/process usage	0,1	3	0,3
Image gain	0,1	3	0,3
Increased customer engagement	0,05	3	0,15
Performance indicators (customers)			
Saved time	0,1	3	0,3
Saved money	0,1	3	0,3
Increased process convenience	0,1	3	0,3
High value of added information	0,05	3	0,15
High technical quality of service	0,1	4	0,4
Total weighted score	1		3,2

Table 5-2: Rating sheet: agency model

5.3.4 The MNO model

The third business model alternative describes a partnership between a mobile network operator and the department store chain. The MNO handles application development, application support and the regular setup in-store. Part of the partnership is that customers gain an additional method to pay for products. Next to the given E-Commerce procedures, it is possible to pay for products via mobile phone invoice. For the MNO the model yields the opportunity of additional promotion for smartphones and mobile web services. At the same time, an increase in smartphone adoption rate and mobile data traffic is achievable.

The interactive store window embeds mobile services as pervasive computing at a point of sale. The MNO obtains a unique selling proposition in a new market segment. This model assumes application development for a specific mobile device, depending on the devices offered by the MNO.

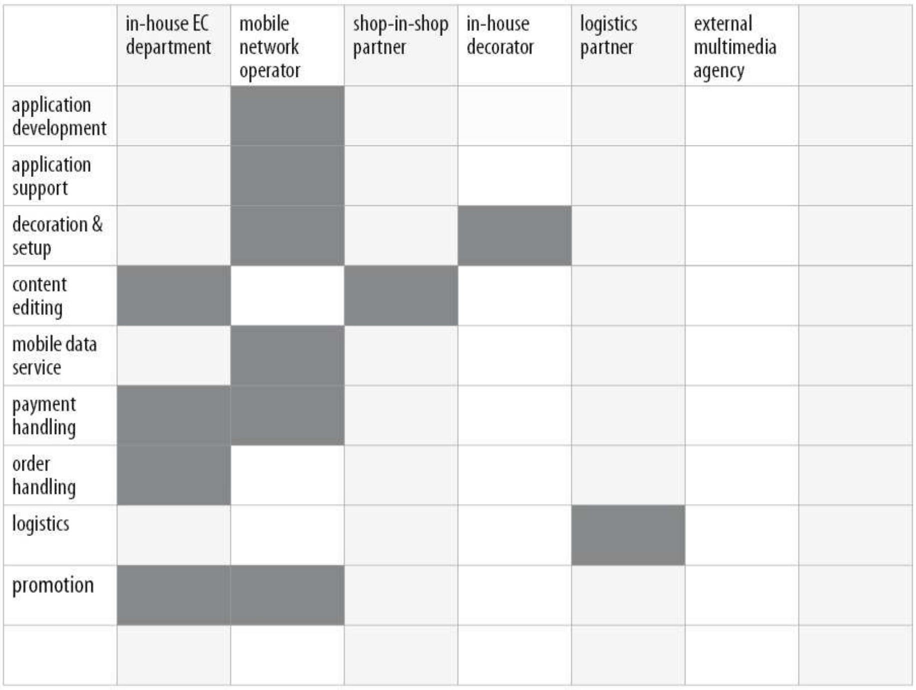

Figure 5–7: Uncovered requirements assigned to players (highlighted): MNO model

By restricting the range of targeted devices and platforms, development can be simplified significantly. It is easier to reach a releasable version and pursue iterative progress on that basis. Payment via phone invoice poses a convenience bonus for customers. Instead of offering the application as third-party software it could come pre-installed on new devices. By doing so, the store can overcome the initial barrier of introducing the application to customers.

A possible disadvantage is the dilution of services. Collaboration with an MNO may seem unconventional to customers of the department store. Yet this aspect can be used in favour of the business model: it enables both the store and the MNO to expand their businesses towards new market segments. The MNO can strengthen its position in the growing M-Commerce market by tapping traditional retail situations. At the same time, department stores benefit from providing E-Commerce services in-store and a possible image transfer from the MNO.

Players in this model act close to their core competencies. The MNO provides expertise in mobile communication and development, while at the same time introducing new services to its customer base. Meanwhile, store operation remains close to everyday customer services and regular setup of the store windows' themes. As a result, the scenario offers an effective separation of content (i.e. products in store windows) and presentation (i.e. M-Commerce and E-Commerce technologies).

	Weight	Rating	Weighted Score
Performance indicators (operating players)			
Increase in turnover	0,1	4	0,4
Increase in customer base	0,1	4	0,4
Low implementation costs	0,1	4	0,4
Efficient resource/process usage	0,1	3	0,3
Image gain	0,1	4	0,4
Increased customer engagement	0,05	4	0,2
Performance indicators (customers)			
Saved time	0,1	4	0,4
Saved money	0,1	3	0,3
Increased process convenience	0,1	4	0,4
High value of added information	0,05	3	0,15
High technical quality of service	0,1	4	0,4
Total weighted score	1		3,75

Table 5-3: Rating sheet: MNO model

6 Scenario: Shop 2.0 – a mobile application

6.1 Current situation

Wayne Schlegel Inc. is a chain of stores selling consumer electronics. Product categories include TV & video, home & car audio, photography, cell phones, video games, mp3 players and home appliances. The assortment is uniform across branches.

Part of customers' shopping behavior for electronics is an extensive information phase online. There is a variety of information sources ranging from forums and amateur blogs to professional review sites that cover a certain product group in-depth (i.e. digital cameras or mobile computers). Due to this, customers tend to be well-educated about the price, features and problems of products. This causes an unfortunate situation for the retail store: instead of performing the shopping process completely in-store – from advice to a direct takeaway purchase – some customers use the store primarily to find out about the look and feel of a product. Afterwards, they fulfil the purchase online in order to make use of the lower price level.

6.2 Current process

The current in-store shopping process represents the standard customer behavior in retail, except for the two possible routes during the last phase:

0. Customer gathers product information online
1. Customer approaches the store
2. Targeted or spontaneous search for products in the store
3. Location of a product, physical inspection, possible buying decision
4. Optionally, personnel is asked for assistance on product
5. (a) Customer purchases product and exits the store
5. (b) Customer exits the store and purchases product online

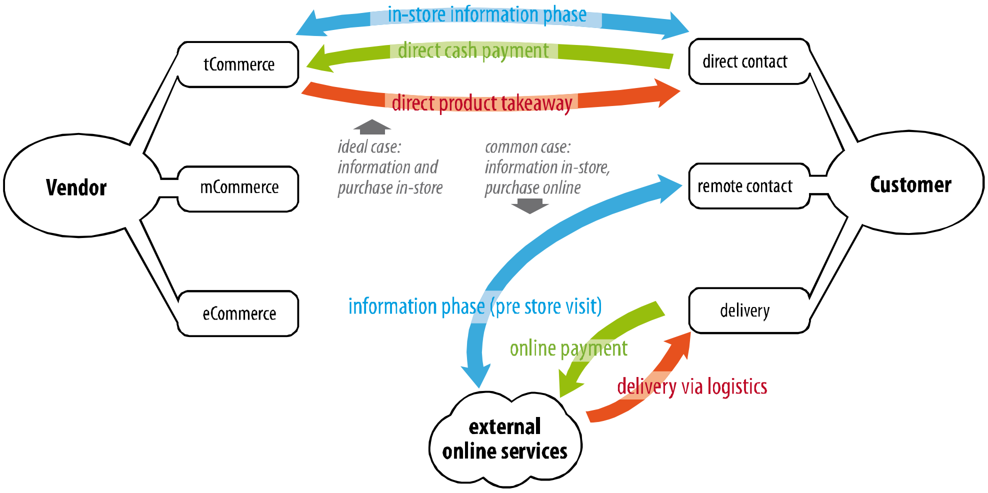

Figure 6–1: Current flows with prevalent customer behaviours

6.3 The Blended Shopping scenario

The current situation features two starting points for a Blended Shopping scenario: first, as described in section 3.4, the ability to directly take a product home is one of the major aspects in favour of retail. Second, the online information phase that takes place prior to a shop visit should be made available in-store.

In terms of pricing policy, there is little scope for the retailer to influence the given situation. Additional costs make it difficult to compete with E-Commerce on a simple price-to-price level. Instead, by explicitly communicating the advantages of retail stores (e.g. direct availability) to customers, bricks and mortar stores can utilise their strengths.

Reading up on products of interest online is a firmly established habit for customers. The potential for retail stores lies in removing the media disruption that inevitably happens when switching from an online information phase to a store visit.

In order to achieve this, the Shop 2.0 mobile application makes elements of the online information phase available in-store. This facilitates customers' decision making process by providing popular types of product information. More specifically, the application provides access to detailed product descriptions, user-generated product reviews and price comparison. Price comparison with online shops is a sensitive topic in retail, as both price levels are not comparable. Yet simple comparison is not the strategic purpose of the feature. The goal is to point out the advantages of direct product availability in cases where the online price is only marginally lower. Prototype versions of the application (see 3.4.6) include a threshold that determines the price range in which comparison takes place. If the online price is ten percent lower than in-store, the application would point out that by paying the extra ten percent, the product could be taken home immediately. If the price differs more than ten percent, the price comparison prompts no result. Ten percent resembles an exemplary value; the actual threshold can be defined depending on the situation. One of the following business model alternatives will not provide the price comparison feature.

To integrate the application further into the shopping experience, customers can plan their store visit in advance by creating a "products of interest" list. Based on this list, the application then creates a schematic store map that outlines the products' shelf locations.

6.4 Features made available to customers in the scenario

The Shop 2.0 application aims to enrich the customer's in-store information phase with additional sources. Further observation of the scenario assumes that the following features are made available to customers:

- Get more details about a product
- Get reviews and ratings for a product
- Compare prices for a product
- Create shopping lists prior to the store visit
- Display a shop floor map with navigational features

From a technological point of view, there are two ways to access these functionalities. The first option is to point the cell phones' camera at the barcode of a product. The application then depicts the standardised EAN code and identifies the product. The second option is to create a shopping list up front. Customers can add products of interest to the application (i.e. via product code) and access information about these products when visiting the store. This set of features could be realised on any modern mobile platform (see 3.3). The prototype has been developed as iPhone application. The decision to do so was based on the technical capabilities of the device and its relatively comfortable handling of third party applications.

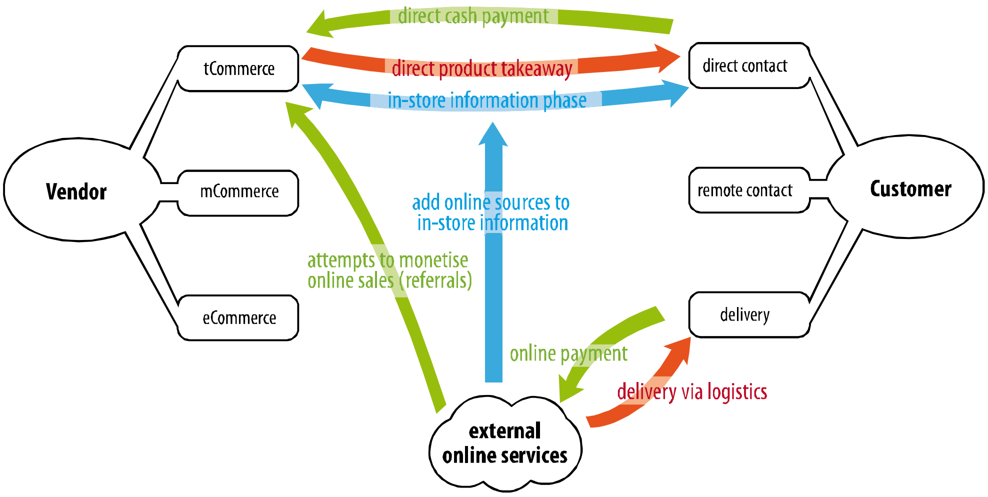

Figure 6–2: Anticipated Blended Shopping flows

Uncovered requirements

Most requirements that have to be covered in this scenario revolve around information. Sources of product details, reviews and prices determine the applications' quality and its strategic orientation. Depending on the sources utilised in the application, functionality is added or removed. For instance, if the retail store decides to only use internal product information, features like user-generated reviews and price comparison could be rendered impossible. This makes information the element of distinction in this scenario. Further requirements include application development, in-store setup, promotion and E-Commerce infrastructure, e.g. payment and logistics. While it is equally important to cover all requirements, the business model alternatives will put into focus the characteristics emerging from different information providers.

The interactive store window was reliant on support for regular setup in the store. In contrast to that, the Shop 2.0 application works mostly autonomous. The Blended Shopping scenario introduces no objects to the store that have to be maintained over time. The concept consists solely of the mobile application; all required information sources are being maintained independently of the scenario.

Figure 6–3: Uncovered requirements and scenario players

Player categories This scenario is shaped primarily by information providers. Well-established E-Commerce companies, such as Amazon, operate extensive product databases that are valuable resources for concepts like the one given here. Amazon is specifically listed as player due to its almost unmatched information base and API functionality [Ama2009a]. The service provides all three information categories (description, price and reviews) at the same time. A different type of information provider is categorised as price comparison engine: services that aggregate product price information from different online shops in order to find the least expensive vendor for a product. Some price comparison engines provide location based services that take into account retail store locations (i.e. guenstiger.de).

The E-Commerce department of the retail store is not contained in every business model alternative. In order to show the flexibility of the Shop 2.0 scenario, only one alternative (the in-house model) assumes the presence of a dedicated E-Commerce department within the organisational structure of the retail store chain.

The last group of players represents infrastructural services. Comprised in the store operator are all in-store activities, as well as inventory management systems and product databases. The mobile network operator (MNO) is an appropriate fit for the scenario because mobile applications are close to its core competencies.

6.5 The in-house model

This model assumes the existence of a dedicated E-Commerce department as part of the retail store chain. An online shop is being operated next to the retail business. The online shop in this particular scenario has a different orientation when compared to other multi-channel vendors. Instead of featuring the full assortment, only a few product categories – projectors and mobile computers – are offered for online purchase and delivery. This eliminates the need for store locations to feature the full range of products in these categories at any time. Instead, customers are given functionalities online to find a model that matches their individual interests with the possibility of home delivery.

For the remaining product assortment, the store follows a different strategy: the website only provides information about products and special offerings, similar to a regular direct mailing campaign. There is no possibility to purchase online. The informational services are aimed at persuading customers to visit a store location. This strategy pursues the objective of moving customers to the store for a major part of the assortment. The website fulfils a supporting role for retail stores instead of being a second, duplicate sales channel. In order to strengthen the websites' supporting function, the Shop 2.0 application allows customers to prepare shopping lists for products of interest online. Information from the stores' product inventory system and product descriptions from the website provide content for the applications' respective features.

	store operator	in-house EC department*	price comparison engine	online retailer (Amazon)	mobile network operator
application development					
product information					
user reviews					
price comparison					
in-store setup					
payment & logistics					
promotion					

Figure 6–4: Uncovered requirements assigned to players (highlighted): in-house model

One advantage of the retail-centric approach is that it appeals to the part of the customer base that has not yet adopted online shopping into its behavior. All marketing measures revolve around the point of sale, which allows for a clear market positioning. Customer electronics are a particularly price competitive market due to the plethora of E-Commerce businesses. Running the website as full sales channel would require lowering the overall price level in order to compete with single-channel online shops. Instead, by following the described strategy, the retail chain can utilise some advantages of E-Commerce without creating price competition within the company.

Unfavourable for realisation is the lack of skill and resources for application development. The retail chain requires a specialised partner to cover application development and optional support services.

Furthermore, there is no measure to utilise online purchases that occur after customers finished their information phase in-store. Except for the few product categories available in the stores' online shop, there is no way to monetise purchases that take place outside the store.

	Weight	Rating	Weighted Score
Performance indicators (operating players)			
Increase in turnover	0,1	3	0,3
Increase in customer base	0,1	3	0,3
Low implementation costs	0,1	2	0,2
Efficient resource/process usage	0,1	4	0,4
Image gain	0,1	4	0,4
Increased customer engagement	0,05	4	0,2
Performance indicators (customers)			
Saved time	0,1	3	0,3
Saved money	0,1	3	0,3
Increased process convenience	0,1	2	0,2
High value of added information	0,05	1	0,05
High technical quality of service	0,1	3	0,3
Total weighted score	1		2,95

Table 6-1: Rating sheet: in-house model

6.6 The MNO model

In order to show the flexibility of the Shop 2.0 scenario, this alternative forgoes the use of an internal E-Commerce department. Instead, cooperation with a mobile network operator is subject of the model. The MNO covers mobile application development, which reduces additional effort for the electronics store. The second cooperative partnership introduces a price comparison engine to the business model. This covers all information requirements apart from what is available through the retail stores' inventory system: price comparison, user-generated ratings and editorial product reviews.

While the previous model was a conservative approach to the concept, the MNO model provides the full range of added services to customers. By providing user-generated content at the point of sale, customers can perform the entire information phase in store, without media disruptions. The threshold for controlled price comparison has to be chosen individually, depending on the operators' preferences. Although there is an understandable aversion against empowering customers with price comparison, it has been proven (see 3.4.4) that within a certain price range, the convenience of product takeaway outweighs marginal price advantages.

This model yields an additional marketing opportunity for the MNO: based on its feature set, the Shop 2.0 application is primarily aimed at smartphones. It is not necessarily given that all customers interested in the service own a smartphone themselves. In order to promote smartphones and mobile web services, the MNO can arrange product samples of smartphones for customers to try out the Shop 2.0 application. By doing so, the MNO introduces new users to the habits of smartphone usage. The technology-interested audience of the store is likely to recognise the advantages of new devices, which eventually leads to additional customer acquisition for the MNO.

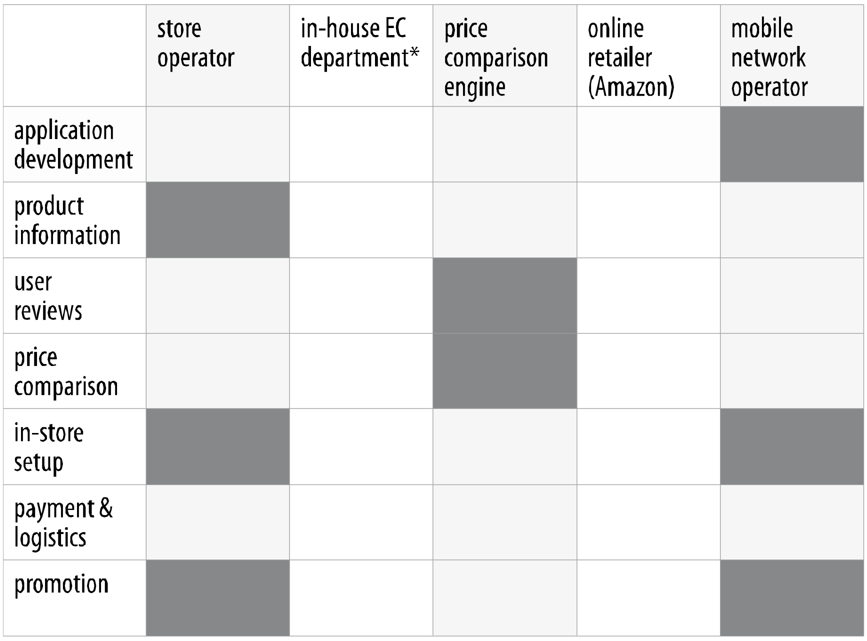

Figure 6–5: Uncovered requirements assigned to players (highlighted): MNO model

Integrating parts of the online information routine into the store provides an additional service to customers. The customer is put into a position that combines the best of both worlds from traditional and electronic commerce: on the one hand, user-generated product reviews are one of the most popular sources for decision making. Having them at disposal in-store can simplify information gathering and drive customers to the store earlier in the shopping process. On the other hand, the instant availability of a locally purchased product is one of the major arguments in favour of retail. Pointing out this advantage to customers during the controlled price comparison reinforces the position of retail in comparison to E-Commerce.

The MNO cooperation adds to the scenario by providing development expertise and mobile infrastructure in-store. Mobile applications are close to the MNO's core competencies, which is likely to result in a high quality product. Introducing new customers to mobile web services by letting them "test drive" the Shop 2.0 application is an additional promotional measure.

The price comparison engine provider gains additional traffic for its online service. Additionally, the Shop 2.0 application helps the service to make the leap from online business towards retail stores. Some providers, such as guenstiger.de, already feature price comparison for local stores, which underlines the potential.

	Weight	Rating	Weighted Score
Performance indicators (operating players)			
Increase in turnover	0,1	3	0,3
Increase in customer base	0,1	3	0,3
Low implementation costs	0,1	2	0,2
Efficient resource/process usage	0,1	3	0,3
Image gain	0,1	3	0,3
Increased customer engagement	0,05	4	0,2
Performance indicators (customers)			
Saved time	0,1	3	0,3
Saved money	0,1	5	0,5
Increased process convenience	0,1	4	0,4
High value of added information	0,05	4	0,2
High technical quality of service	0,1	4	0,4
Total weighted score	1		3,4

Table 6-2: Rating sheet: MNO model

6.7 The Amazon model

As the name implies, Amazon fulfils the role of information provider in this model. Amazon's Product Advertising API [Ama2009a] offers a source that is suited to cover the content requirements of the Shop 2.0 application. It includes features like product search, customer reviews and references to similar products. A crucial aspect of this business model alternative is the possibility to monetise sales referred to Amazon. The API allows developers to include an associate tag in their application to earn referral fees when customers buy qualifying products from Amazon. In the Shop 2.0 scenario, this applies when customers decide to fulfil a purchase online, e.g. in cases where the controlled price comparison does not convince them to buy in-store. This allows the retail store to monetise channel switches towards E-Commerce.

Because Amazon's API is an open platform, development can be covered by any player with sufficient expertise. Requirement for ongoing support is relatively low as the entire content part of the application is maintained by Amazon itself. The store operator does not need to cover E-Commerce infrastructure, e.g. payment and logistics, because contracting and fulfilment phases are also handled by Amazon.

At first it may seem undesirable to route revenue traffic to an E-Commerce player. But it has to be brought to mind that channel switches from retail to E-Commerce take place anyways, without a chance for retail players to intervene. In the first two business model alternatives (in-house and MNO), a customer who decides to leave the store in order to fulfil a purchase online is lost business. Using an affiliate program like proposed here enables the store to gain a share of the online sales' revenue. Compensation rates from referrals range from 4% to 15% [Ama2009b], depending on the monthly sales volume. Reconsidering the fact that online purchases would otherwise yield no revenue at all, this option appears more reasonable.

To summarise, this model provides added information value to customers in-store plus a share of revenue from online purchases that eventually take place.

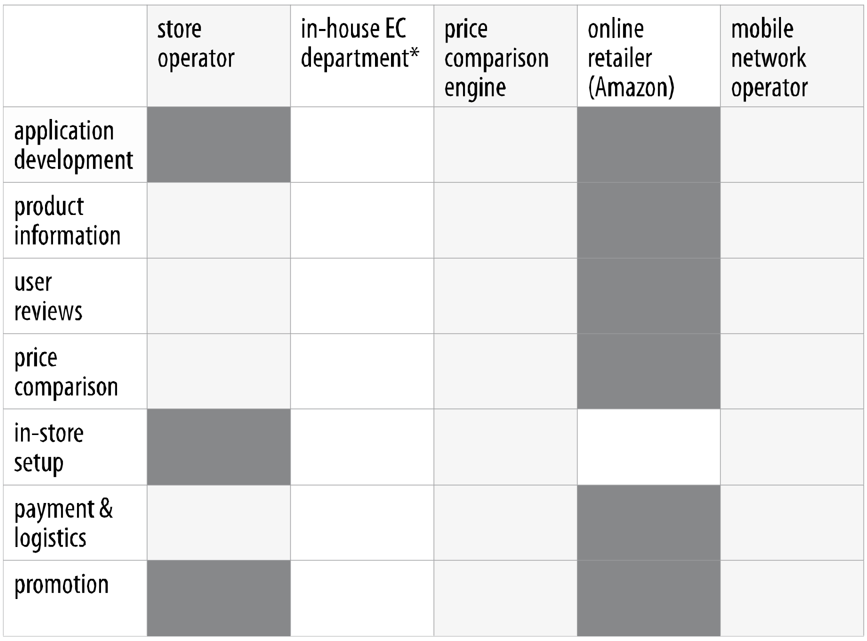

Figure 6–6: Uncovered requirements assigned to players (highlighted): Amazon model

This model contains the comfort of not requiring an internal source for user-generated reviews and product descriptions. The core aspect is the opportunity to partially monetise channel switch revenue that would otherwise be lost. This makes the Amazon model the only option that directly influences cash flow of the retail store. In addition to that, the extensive Amazon API enables E-Commerce integration without the need for additional infrastructure. This leads to an efficient usage of existing structures and a relatively inexpensive realisation of the concept.

For Amazon, a concept like this represents an exemplary approach to tap traditional retail business. The leap towards retail poses a growth opportunity when compared to the growingly saturated E-Commerce market. The model allows Amazon to step into retail while at the same time staying close to its core competencies. On a short-term level, the Shop 2.0 application provides a boost in sales through affiliate referrals by the store chain.

	Weight	Rating	Weighted Score
Performance indicators (operating players)			
Increase in turnover	0,1	5	0,5
Increase in customer base	0,1	3	0,3
Low implementation costs	0,1	5	0,5
Efficient resource/process usage	0,1	3	0,3
Image gain	0,1	4	0,4
Increased customer engagement	0,05	3	0,15
Performance indicators (customers)			
Saved time	0,1	3	0,3
Saved money	0,1	4	0,4
Increased process convenience	0,1	3	0,3
High value of added information	0,05	4	0,2
High technical quality of service	0,1	4	0,4
Total weighted score	1		3,75

Table 6-3: Rating sheet: Amazon model

6.7.1 Additional note regarding the Amazon model

As of July 2009, Amazon does not allow usage of its Product Advertising API via mobile applications. The relevant section of the License Agreement reads:

You will not, without our express prior written approval […], use any Product Advertising Content on or in connection with any site or application designed or intended for use with a mobile phone or other handheld device.

([Ama2009c], section 4(e))

The quoted section contains a link to request said written approval but Amazon does not give any permission at the current time (July 2009). This could be due to the fact that Amazon has acquired its own mobile shopping application (snaptell.com).

As a result, a business model like the one outlined above cannot be realised in its current form. Yet this thesis aims to outline business models for the purpose of showing the possible variations of Blended Shopping, with only secondary regard to technological feasibility. In theory, the Amazon model could be developed with a different information provider.

7 Barriers of realisation – FH Aachen as situational partner

The outlined business models show possible strategic approaches of Blended Shopping. Considering the structures that exist in multi-channel systems, the models are feasible for a range of players in commerce. But field study (see chapter 3.4.4) shows that as of now, the few attempts of integrating E-Commerce into retail are experimental at best. This leads to the question: why are there no thorough, real-world implementations of Blended Shopping in the current shopping landscape?

7.1 Possible barriers during project progression

It is possible to make reasonable assumptions about factors that leave the potential of Blended Shopping untapped. When looking at a given project timeline, barriers appear at different milestones during project progression. This chapter points out the barriers in chronological order, including a service proposition from FH Aachen as situational partner.

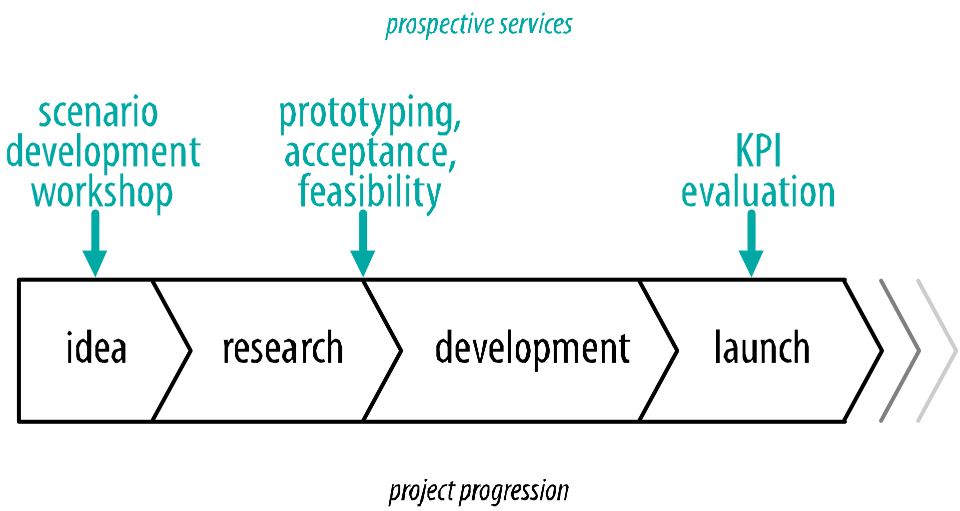

Figure 7–1: Exemplary project timeline with prospective FH Aachen services

Push vs. pull strategy The process outlined above assumes a push strategy by the application provider: an idea serves as origin and the implementation's goal is to push this idea into a prospective market. A pull strategy would put market research first and idea generation second. Market demands that have been identified would be targeted with a designated solution.

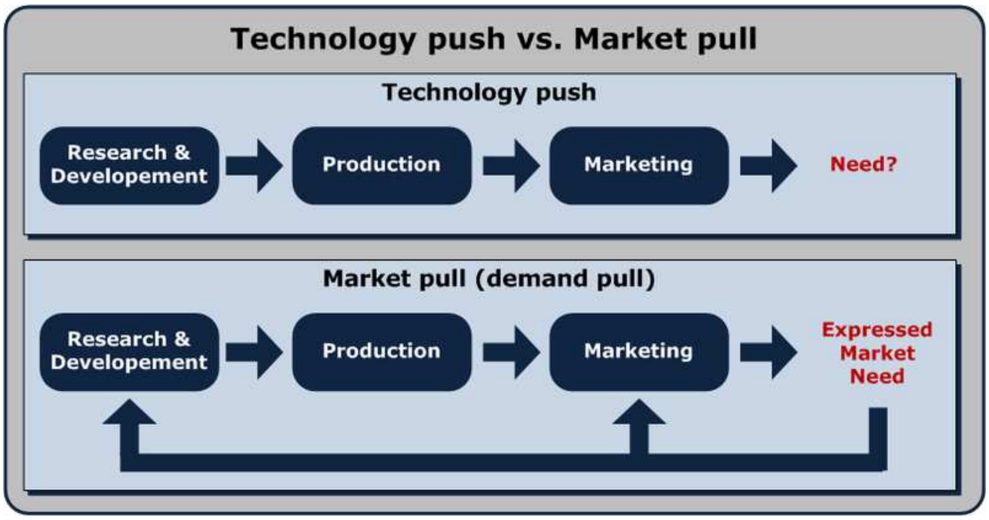

Figure 7–2: Technology push vs. Market pull

Source: [Wik2009b]

Lack of concept ideas The first barrier for Blended Shopping is a lack of profound concept ideas. A large part of generating ideas consists of analysing current multi-channel resources from the special perspective of Blended Shopping. While value chains of individual sales channels are well-known, possible intersections of multiple channels remain hidden until they are methodically worked out. This is due to the fact that sales channels tend to be separated within the organisational structure of a company. E-Commerce departments form a separate organisational unit, detached from brick and mortar business units. With regard to this, a moderation method specifically aimed at multi-channel measures and Blended Shopping was developed at FH Aachen. It provides projects with a methodical workshop to generate ideas and develop scenarios during the conception phase.

Investment risk As ideas grow more tangible, a high investment risk poses a barrier for realisation. Similar to other technology-driven developments, Blended Shopping suffers from optimism bias when conducting cost-benefit analysis. As of now, there is little data about return of investment (ROI) and customer reactions of multi-channel applications. The latter should not be underestimated as customers' traditional shopping habits can negatively influence acceptance of new concepts. Current applications are developed at the level of technology demos. The result is an unclear market situation that complicates the justification of investments. Yet Blended Shopping yields the opportunity to offer new services in an otherwise saturated market (see chapter 3.1.6).

Acceptance measuring

The goal of FH Aachen as situational partner is to reduce the amount of unknown variables when estimating an investment. Based on the concepts generated by the ideas workshop, objective market research provides insight into existing applications and prospective market positioning of a scenario. Surveys and focus group research then determine the potential customer acceptance.

Technological feasibility

Oftentimes it is uncertain if prevalent systems can be integrated with manageable effort in order to provide Blended Shopping. Because of this, evaluation of existing technologies and prototype development are carried out in order to evaluate the technological feasibility of a concept. Subsequent usability testing of prototypes serves as benchmark to estimate customer behaviour early on.

Exemplary process for prototyping

The applications mentioned in section 2.4.4 can serve as examples to outline the prototyping process: they have been developed at FH Aachen and Hogeschool Zuyd in Maastricht, the Netherlands over a course of 8 weeks in October 2008. Development followed an Extreme Programming (cf. [May2008]) approach. Applying a similar approach to a commercial project would require a team of three student assistants and one supervisor. The approximate costs account to 19200 € for an 8 week project (assuming a daily wage of 480 €). In contrast, hiring a specialised agency with the required skill set adds up to about 26400 € (assuming a daily wage of 880 €), which is a 37.5% increase in costs. This is in no way advice to draw on final year students in order to save costs. The strength of professional agencies lies in the high velocity when aiming at production level quality. As profit-oriented organisation, a positive relation between costs and revenue has to be achieved in order to stay competitive. Educational institutions are not tied to that need for economical success. This opens up space for experimentation and analysis during development, which moves results in a different direction. While agencies urge to finalise projects efficiently and deliver high quality products, universities deliver a prototypical implementation sufficient for early benchmarks. At the current state of Blended Shopping, it is more important to quickly gain insights into customer reactions than to finalise an application that eventually turns out to be a conceptual fail.

Looking at the initial issue of investment risk, it can prove worthwhile to conduct a short-term project (i.e. at FH Aachen): it confirms – or objectively declines – a prospective investment at a fraction of a final project's budget. Furthermore, prototype benchmarking can yield insights that ultimately increase the revenue generated by Blended Shopping, in which case evaluation pays for itself.

Lack of objective KPI measuring

Once a scenario is in place, there is no independent measuring of key performance indicators (KPI [Reh2009]). Eventually the player that covered application development performs an evaluation of performance indicators. Higher education institutions can follow a scenario with an unbiased evaluation alongside operation (cf. [FuRi2008] about cost-benefit evaluation of mobile applications). The research-oriented approach provides an independent view required for effective success measuring. Innovative concepts like Blended Shopping require extensive research after launch, as new findings influence ongoing development for improvement. In this phase of project progression, FH Aachen takes a position similar to staff departments in a line and staff organisation [Kno2009].

There is a series of barriers that can prevent successful realisation of a scenario. Blended Shopping contains the special circumstance that required elements, e.g. retail and E-Commerce structures, are given in most of the cases. No in-depth reengineering of value chains is required. The primary attempt is to create added value from prevalent processes. No additional entities are introduced, only bridging elements that facilitate synergy effects. Therefore, risk remains manageable if there is sufficient market research and benchmarking prior to the final implementation.

8 Summary and future perspective

Over the course of this thesis, business models for Blended Shopping scenarios have been described and evaluated with regard to different dimensions. The main element of the methodical approach was a comparative description of scenarios. This was followed by a process to develop business model alternatives: after outlining the prospective scenario, requirements that have to be covered for realisation have been identified. In the next step, players who could cope with a requirement have been listed and briefly rated based on their core competencies' proximity to the requirement. The result was a series of promising player constellations to base business models upon.

Level of detail Scenarios and business models are described in a level of detail that provides a "recipe book" of exemplary approaches. A more detailed observation in terms of technological depth would exceed the scope of this thesis.

Barriers of evaluation Due to the lack of valid economical data a relative, rating-based evaluation seemed most appropriate. Given the absence of a real-world Blended Shopping implementation, there is no basis for raising empiric data. The absence of information on cash flows, return on investment or the separated analysis of channels in a multi-channel system rendered most conventional evaluation methods unfitting. Even if a conventional cost-benefit analysis could have been conducted, the results would have been of questionable scientific value due to the artificial nature of data to work with.

The solution The outlined difficulties were resolved by developing an evaluation method based on exemplary performance indicators. The main purpose was to supply a tool to evaluate prospective Blended Shopping scenarios in which a base of economical data is available. Individual characteristics of a scenario demand for customised indicators in order to comply as close as possible with a given situation. Therefore, a rating sheet template is provided as supplement. As outlined in the methodical approach, the actual ratings are not meant to support a simple score-to-score comparison. Instead, they visualise the main characteristics of a business model and support the goal of comparability.

To follow up the evaluation procedure, chapter 7 gives an insight into possible barriers that prevent implementation of Blended Shopping. The capabilities of a situational partner like FH Aachen are demonstrated to emphasise that these barriers are manageable, if not necessarily by the collaborating players alone.

Remaining questions

In order to pursue the topic further, future studies in the realm of Blended Shopping scenarios are likely to be based on ROI (return on investment) and KPI (key performance indicators) data of real-world implementations. Such data can provide the basis for in-depth economical evaluation aimed at proving the profitability of Blended Shopping. While the thesis at hand taps the wide range of options for Blended Shopping, the question of actual cost effectiveness remains unresolved.

Future perspective

As of now, there is a large share of businesses operating multi-channel systems. Thus a lot of companies already have the required structures to incorporate Blended Shopping. Phenomena like the iPhone that boost mobile applications and facilitate a mobile lifestyle enable customers to make use of innovative shopping approaches. These circumstances create a nurturing foundation to employ new multi-channel concepts. In this context, Blended Shopping represents an innovative – yet currently experimental – basis to build upon.

In order to enable future progress in this sector, a change of mind in the current retail industry is required. Price transparency and market situation of E-Commerce are perceived as constant threats to traditional commerce. Nonetheless there is a necessity to accept online resources as platforms for added customer services. Store operators need to make additional efforts for providing convenient information services if they want to manifest their role in the market. The empowered customer of today will make use of services that provide added value, with or without the influence of retail players.

When planned and executed well, creatively used technology can shape the future landscape of shopping. Blended Shopping demonstrates a possible next step as the markets in traditional and electronic commerce become increasingly saturated. It is an opportunity for key players of different sectors to collaborate in order to tap potential profit.

A Enclosed CD

The enclosed CD contains a Microsoft Excel template of the rating sheet used in chapters 5 and 6. The template serves as customisable tool to evaluate prospective Blended Shopping scenarios.

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Aachen, den 4. August 2009

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