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Collaborative Shopping Networks: Sharing the Wisdom of Crowds in E-Commerce Environments

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Abstract

Social web services have gained enormous popularity over the past years because of a steadily increasing demand for user participation in the whole web sphere. Social networks like MySpace or Facebook and media sites like Flickr or YouTube clearly demonstrate the variety and functionality of social sites. Significantly affected by this trend, online retail and e-commerce environments rapidly changed within the last years. Users were integrated into existing e-shops and mutated from simple buyers to fully integrated customers. Thus, a modern shop visitor can recommend products, leave comments, rate vendors or publish wish lists. This recent phenomenon, called social commerce or social shopping, leads to more customer satisfaction, user participation and social interaction. Accordingly, there is a strong demand for innovative social commerce models and concepts like crowdsourcing, consumer generated content or live shopping. This paper shows the results of an extended analysis of collaborative shopping networks and demonstrates the development of a representative interaction model. An evaluation of social commerce models gave insights into functionalities, interactions and entities of successful social web applications. To create a collaborative shopping network model, conventional web services as well as selected best practice cases were analyzed in detail. To meet the demands of modern consumers, success factors are presented in the final part.

Keywords: collaborative shopping network, social commerce, online retail, collective intelligence, crowdsourcing, consumer generated content

Introduction

The internet is still growing in a fast way and we have seen an interesting evolution over the last years. Summed up by the buzzword "Web 2.0"(O'Reilly 2005), modern web applications allow users to collaborate, participate and interact online. Driven by new functionalities, technologies and standards the web has become more social and interconnected. The fast growth of social networks and the successful concept of member activities are central phenomenons of the social web. Two graphs, created with the popular traffic ranking engine Alexa, demonstrate this evolution. Five established social networks (MySpace, Facebook, Orkut, Hi5, Friendster) were compared with regard to their daily reach, expressed as the percentage of all Internet users who visit a given site, and clearly show a strong increase (Figure 1) over the last years.

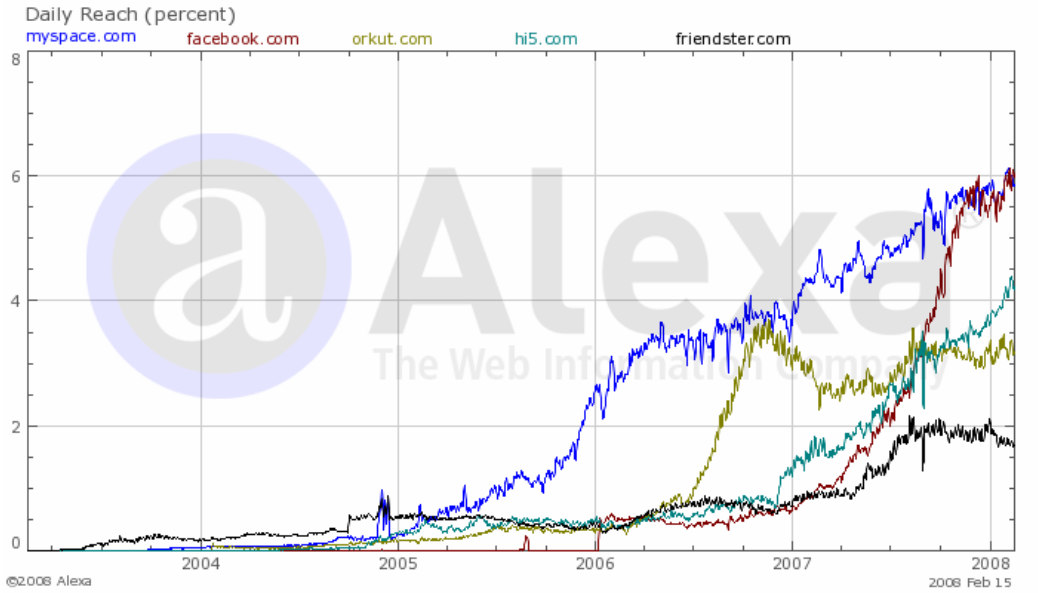

Figure 1: *Traffic of well known social networks and e-commerce sites*

Comparing Amazon and eBay, the pioneers in online commerce, with MySpace (Figure 2) clarify that their daily reach declined over the last two years while social networks are gathering more and more attention, members and traffic.

Figure 2: *Traffic of well known social networks and e-commerce sites*

These current trends have also a strong influence on B2C and C2C e-commerce. In consequence of social networks' market power and their mass of potential customer, new shopping concepts are being developed. Social commerce is the synonym for the next generation online commerce and is significantly affected by a fast preceding social networking. Affected by the enormous expansion rate and the conquest of niche markets, online shops generated a new generation of business and sales concepts within the past few years, which differ fundamentally from conventional e-shops (Anderson 2006).

The factors of influence (Figure 3) of social commerce are characterized by different determinants. Generally, the term social web comprises the global evolution of the web, mainly driven by the abruptly increased number of users and their changed user behaviors. Nowadays, users produce content for other users. The web is not a one-way street anymore, but rather corresponds to the main idea of a participative internet. Social web services allow users to interact and share data with other users and thus have gained enormous popularity over the past years because of a steadily increasing demand for user participation in the whole web sphere.

Furthermore the request of the web community and consumers for more participation and transparency is a driving factor of social commerce. User surveys clearly showed that potential customers of a product attach more importance to recommendations and ratings of other users, than to classical product descriptions and advertisements. (The Nielsen Company 2007)

Figure 3: *Factors of Influence on Social Commerce*

Innovative concepts and developments announce a new age of online commerce, whereas crowdsourcing and consumer generated content are exemplarily figured out as distinctive milestones of these new developments. Crowdsourcing is a neologism, which was coined by Jeff Howe (2004) and describes, contrary to Outsourcing, not the outsourcing from business tasks and –structures to third party companies, but the outsourcing to the intelligence and the manpower of a mass of voluntary staff on the internet. A big number of mostly gratuitous or low paid participants are solving tasks and problems or participate in research- and developing projects. E-commerce is mainly used for the collection, categorization and rating of products or services. The customers of a supplier are the personal filters for other potential customers. User Generated Content describes generally content, which is not generated through a vendor of a web offer, but through the users of a product. The term of user Generated Content is closely connected with the technical developments of the internet in the last years. Classic examples are the comment functions in weblogs, video- or photo platforms. In this environment of online commerce, this is called consumer generated content. Customers generate content like reviews, product photos or video instructions for other consumers. Recent E-Shops offer a range of functions, to allow an active integration of users and customers. Due to new technical feasibilities like AJAX, RSS or open APIs, online shops offer interactive tools and can interact with other platforms and services of the social web (Li et al. 2007).

Sharing the wisdom of crowds (Surowiecki 2004) in e-commerce environments leads to collaborative shopping networks which are an impressive type of innovative shopping concepts. Such platforms have a strong community character and could be run as collaboration networks or in combination with e-shops, where products can be bought directly. The shop turns to a community and the consumer to a fully integrated content distributor. Consumer generated content displays a considerable added value for other users and allows shop owners to integrate functions, which comprise new forms of interaction (Schubert and Ginsburg 2000; Moreno Chaustre et al. 2004; Füller et al. 2006). The convergence of media lightens the borders of content, advertisement,

distribution and consumer. Collaborative shopping networks with a strong community character substitute classic e-commerce platforms step by step.

As a consequence, the time of monotony in online retail is a thing of the past. Collaborative shopping networks are positioned mainly in niche markets beside well known big players like Amazon and eBay. That phenomenon leads to more customer satisfaction, loyalty and finally to more revenue for the vendor (Hagel and Armstrong 1997). Currently many vendors are launching such new platforms, and social web features will become a must-have for every shop owner in near future. Thus, every site owner should focus on upcoming trends to be part of next generation shopping. To identify those trends, an extended analysis of best practice social commerce models was performed. Another aim of this paper is to outline the design of a collaborative shopping network by presenting an interaction model as well as identified success factors.

Related Work

Basic literature of Web 2.0 (O'Reilly 2005; Ankolekar et al. 2008) and social web services (Gill 2004; Boulos et al. 2006) gives a good overview on the topic. Especially James Surowiecki (2004) analyzed the wisdom of crowds, an aggregation of information in groups, resulting in decisions that are often better than any decision of a single member of the group. The book presents numerous case studies and anecdotes to illustrate this argument and touches on several fields, primarily economics and psychology. The phenomenon of social networking and its driving are topic of related literature (Skog 2005; Backstrom et al., 2006; Kumar et al. 2006; Stutzman 2006; Boyd and Ellison 2007).

In the field of social commerce different articles (Tedeschi 2006; Leitner and Grechenig 2007) underline the importance of this new concept. Chai et al. (2007) presented a survey of revenue models for current social software systems. In their paper they analyzed 77 different social software websites and their revenue models. Also Rappa (2002) has done a good categorization of web business models. Finally, for the development of the collaborative shopping network interaction model in the last part of this paper, we have been inspired by a special styled user model (Glass 2007) for Flickr.

Methodological Approach

To get insights into future social commerce services, especially collaborative shopping networks, we defined the following main research questions at the beginning of our work:

- What are the main service categories in social commerce?
- Which functionalities are essential for collaborative shopping networks?
- What are the future trends in social commerce?
- Which revenue models are used for social shopping sites?
- How does interaction in a collaborative shopping network look like?

To answer those questions we decided to apply a multi-stage methodological approach (O'Leary 2004) to cover all aspects of this wide research field.

Rapid Screening and Case Selection

An overview of current literature as well as analyses of existing trend studies and expert opinions built the theoretical basis for this paper. research, To get an initial list of social commerce services we took data from relevant web directories (mashable.com, techcrunch.com, web2list.com etc.) Similar to rapid appraisal in a next step we screened every social commerce service and separated sites out which were in an early beta stage or were not really relevant for social commerce.

Amie Street	DealsPlus	Iliketotallyloveit	Productclash	TheFind
AskVille	DesignByHumans	ImageKind	Productwiki	ThisNext
Bazaarvoice	DiscRevolt	iNods	Prosper	Threadless
Biblio	DooYoo	Iqons	Quoop	Tradoria
Big Cartel	Dropcash	iStockPhoto	Reevoo	Treonauts
Blish	eDelight	Jellyfish	Sellaband	ViaVol
BoardPusher	Edelwiser	Junkdepot	ShareYourLook	Wesabe
Bottletalk	Epinions	Kaboodle	Shirtcity	Whatisblik
Bravisa	eSwarm	Konsumo	Shopify	WipBox
BuyersVine	Etsy	LaFraise	Shopit	Wishpot
CafePress	Favouritethingz	Lemonade	Shoppero	Wists
Care2	Frucall	LibraryThing	Smatch	Wize
ChipIn	Fundable	Lulu	Spreadshirt	Woot
Clipfire	Gifttagging	MyDeco	Squidoo	Yedda
Closo	Gimahhot	MyPickList	Stuffpals	Yoosic
Crowdstorm	Goodstorm	Naked & Angry	StyleFeeder	Zazzle
Darmik	GoSasa	OSOYOU	Stylehive	Zillow
DaWanda	Grabaloo	Peerflix	Stylemob	Zlio
Dealighted	Gumshoo	PopShops	Summize	zMobs
Dealjäger	Handeln	Pricejunkie	Swapthing	Zoundry

Figure 4: *Selected Social Commerce Sites*

The final list (Figure 4) consisted of 100 different social commerce sites. Every selected site was listed in a matrix for next stages of research.

Site Evaluation and One Page Summaries

After the rapid screening of every site and the creation of a survey matrix, we defined a metric to perform a standardized evaluation (Figure 5) of the selected 100 social commerce services. Furthermore, we created for every object a unique one-page-summary including criteria like meta data (foundation, revenue, functions, special features, members, etc.), standardized rating fields and some free reserved space for a qualitative review of each social commerce service. After creation of the template, the results of the analysis were recorded in parallel in the matrix as well as in one page summaries.

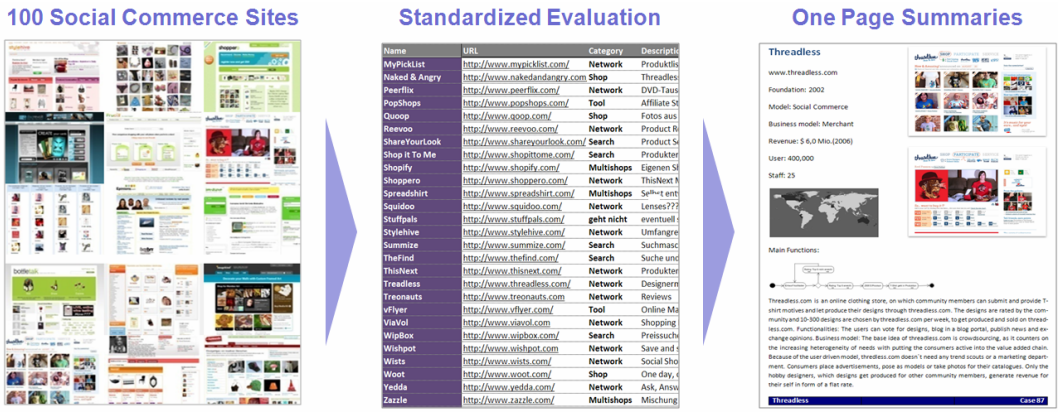

Figure 5: *Site Evaluation and One Page Summaries*

Subsequent to the analysis, main findings and trends have been identified and documented.

Extended Analysis and Interaction Model Design

After cumulating findings on future social web services, a specific interaction model of a collaborative shopping network was designed. As a combination of conventional e-commerce environments with community driven functionalities, therefore require the application of an explorative approach to define a catalogue of core entities, functions and interactions. The blue and purple colored sites (Figure 4) have been identified as the category of collaborative shopping networks which were essential for the design of our own interaction model. Collaborative shopping networks which are colored purple will be presented in the next chapter of this paper. The main entities (consumer and product) have been determined to develop the interaction model through an extensive analysis of traditional online shopping systems (Rahman and Bignall 2001; Koivumäki et al. 2002; Treese and Stewart 2002; Burt and Sparks 2003; Meng et al. 2004; Yang and Mamadou 2006). In addition sub-entities (profile, group, repository, vendor) and general web community features have been considered. (Kim 2000; McLure Wasko and Faraj 2000; Bouras et al. 2004; Choi et al. 2004; O'Murchu et al. 2004; Zhang et al. 2006; Miyoshi et al. 2007).

Best Practice Case Studies

Out of all analyzed social commerce sites five relevant collaborative shopping networks (Crowdstorm, MyDeco, Stylehive, ThisNext, Threadless) are presented in this section. These best practice cases have been selected because of their individual focus and their efficient revenue models. The selected models are significant to demonstrate some innovative community features and revenue models of collaborative shopping networks and were used for subsequent design of the interaction model in the last part of the paper.

Crowdstorm | crowdstorm.com

Crowdstorm is a recommendation platform for consumers to find a product by measuring the buzz around products. Users recommend products, and the crowd defines the best products by recommending what they know and like. Good products go to the top of the list, weak products disappear: the setup is very much like the popular news website Digg. Buzz is measured by the amount of activity surrounding a product: how many times a product has been viewed, how many bloggers have written about it, and how many Crowdstorm users have commented on it. UK-based Crowdstorm was founded by Phil Wilkinson, who also set up online price comparison sites ShopGenie and Kelkoo. It aims to be one of the internet's best sources of impartial product information.

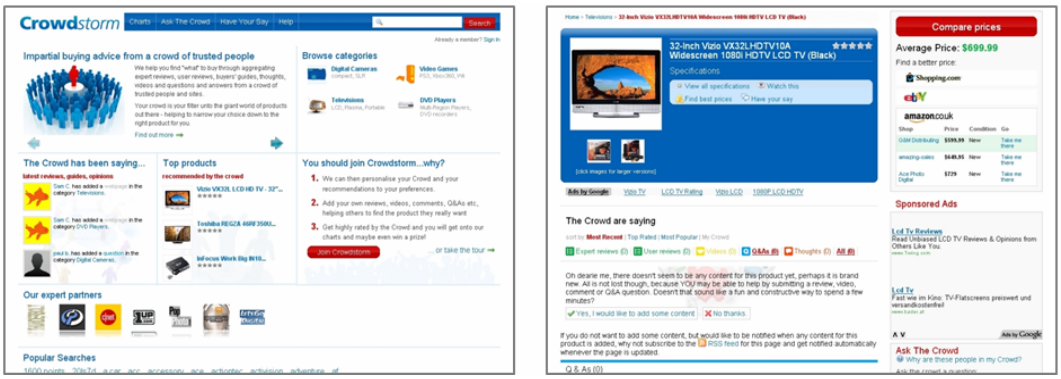

Figure 6: *Crowdstorm*

Functionalities: Users can add other users as friends, either people they already know or those they've met on Crowdstorm and whose product recommendations they trust. Future enhancements

will let users post their own product images and videos, and top-rated members will also be invited to beta-test new products from big brands.

Revenue Model: Crowdstorm has three main revenue streams: lead generation to price comparison partners, site advertising and affiliate advertising.

MyDeco | mydeco.com

MyDeco is a collaborative interior design network where rooms can be styled in 3D and the designs can be shared with other users. MyDeco was founded in February 2007, in London. Currently there are 35 employees. The user can directly access to resources of over 500 vendors and more than 1 million products.

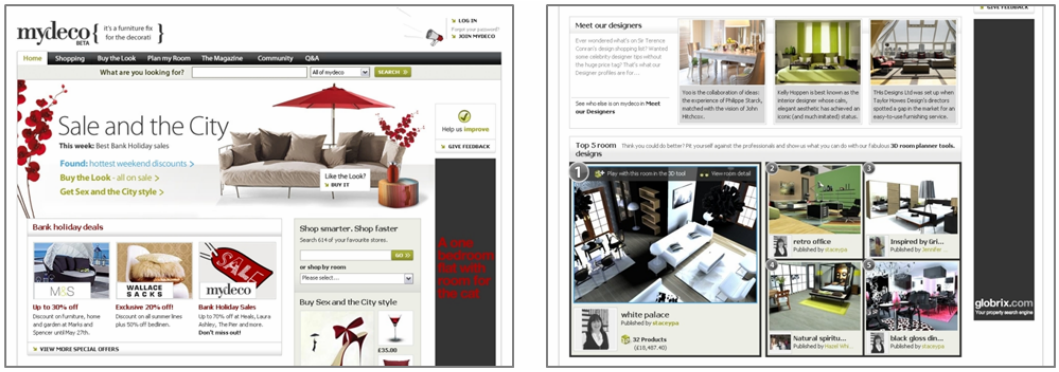

Figure 7: *MyDeco*

Functionalities: Users can build a 3D view of their flat via drag´n´drop, to visualize potential purchases and views from different angles in advance. Besides a selection of furniture and accessories, which can be bought as well, there is the possibility to select different colors, wallpapers and floors. To offer an easier shopping experience, there is also the possibility to choose a complete configured adjustment including the whole shopping list and a budget check. Own designs can be saved and rated from the community members. MyDeco offers some common community features like an own profile, personal data, blogs, groups and the possibility to communicate with other members.

Revenue Model: MyDeco is not directly selling any of the furniture, but instead works as an intermediary, taking a cut from every sale the site generates for its retail partners. Furthermore the revenue is done by selling advertisement spaces on the website. And MyDeco has an additional micro-affiliate model. Any small interior design business or an individual can upload a room design. If someone takes a design of another member and purchases the adjustment, the Designer gets a provision up to 3 percent.

Stylehive | stylehive.com

Stylehive is a social bookmarking platform focusing on fashion products and shopping. It offers a network for costumers, bloggers, publishers, designers and merchants. Here the newest and most interesting products, brands and designers should be made worldwide available.

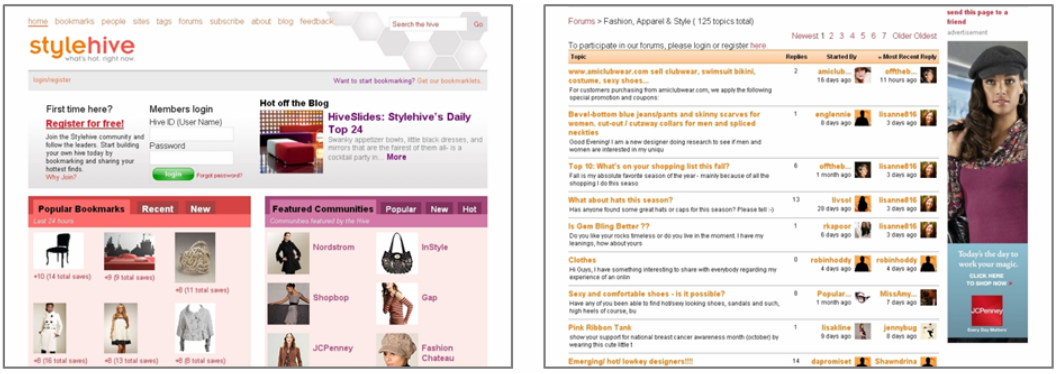

Figure 8: *Stylehive*

Functionalities: On this social shopping platform, users can bookmark, comment, recommend or redirect online fancy products, write blogs, use forums or create personalized shopping and wish lists. Every user is a member of at least one community and shares shopping experiences with friends, family and like minded people. The platform is based on a point system with so called Stylehive points. Every community member gets points for creating or copying a bookmark or copying a copied bookmark. The users get feedback for their trendsetting skills, and the most often copied bookmarks are listed in a popularity list. Users can use a follow feature to track the activities of other users.

Revenue Model: Stylehive benefits through partner companies, which take part in an affiliate program. Products are not sold directly on the platform, but the business model is a social shopping platform, also called "shopcasting", a buzzword based on the words shopping and broadcasting. This is a kind of information distribution based on tags. These tags are integrated in site and refer to products, thus leading the consumer directly to merchants, where the product can be bought.

ThisNext - Product Network | thisnext.com

ThisNext is a social commerce site where people recommend their favorite products so others can discover what's best to buy online. It blends two powerful elements of real-world shopping otherwise lost for online consumers: word-of-mouth recommendation from trusted sources and the ability to browse products in the way that naturally leads to discovery. ThisNext has also developed a suite of distribution tools for bloggers, online communities and commerce sites. ThisNext features a slick design and sends visitors down one of three paths: Discover, recommend and shopcast. In the discover section, users may browse products recommended by others. Clicking on an item allows them to add this item to their wishlist, to recommend it, or to find out where to buy the product. Users can recommend products by creating themed lists (from 'Japanese Snacks' to 'Things I Cannot Do Without'), or simply by clicking on an easy to install 'Add to ThisNext' browser button.

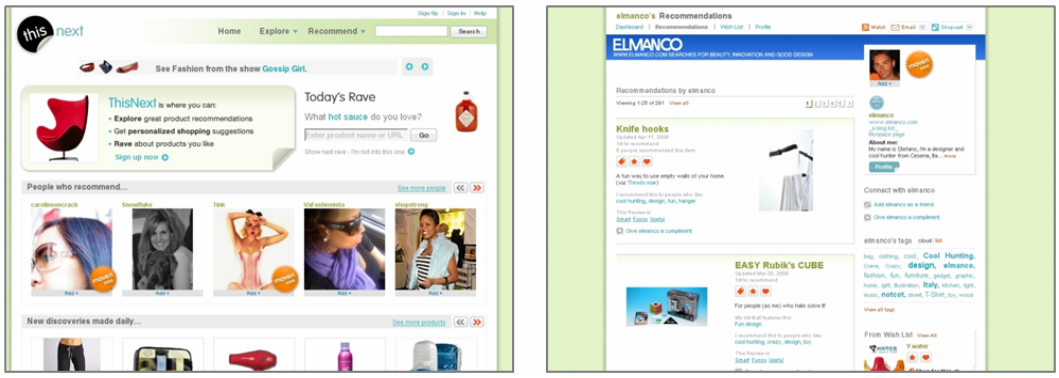

Figure 9: *ThisNext*

Functionalities: Users can upload photos, write a personal section and add favorite websites. They can add other users to a list of recommended users, which displays their username and profile picture on their page. ThisNext's standout feature is shopcasting: bloggers can create small banners for their website. These so-called shopcast badges either display their own recommendations or those of the ThisNext community, broadcasting the products they love or must have.

Revenue Model: ThisNext is a recommendation network without an own e-shop. ThisNext benefits through partner companies, which take part in an affiliate program or over included contextual advertisements, usually Google, on their network.

Threadless | threadless.com

Threadless is an online clothing store where community members can submit and provide t-shirt motives to produce their own designs via Threadless. The basic idea of Threadless is crowdsourcing, as it counters on the increasing heterogeneity of needs by putting the consumers actively into the value added chain. Because of the user driven model, there is no need for trend scouts or a cost-intensive marketing department. Consumers place advertisements, pose as models or take photos for their catalogues. Only the hobby designers generate revenue for themselves in form of a flat rate. Thus, Threadless provides the platform and manages the production and distribution of the t-shirts. The designs are rated by the community, and every week 6 out of the top-voted designs are chosen by Threadless for production and sale on Threadless.

Figure 10: *Threadless*

Functionalities: Users can vote for designs, blog in an area, publish news and exchange opinions. After buying a shirt the user can submit a photo wearing the shirt to his profile. The user gets one credit point for the submission. If Threadless uses the picture on the product page as a full size

product photo, the owner will get ten points. One credit point is equal to $ 1.50 which can be used to buy more shirts.

Revenue Model: Threadless is a fully integrated collaborative shopping network where users can also buy the products directly in an online store. So, most of the revenue is generated through direct product sales. On average, around 700 designs compete in any given week. Each week, the staff selects six designs. The designer of each winning t-shirt receives $2000 in cash, as well as an additional $500 for every reprint.

Business Model Insights

Resulting from the analysis of social commerce services and especially collaborative shopping networks, the following trend-setting findings can be determined:

Service Categories

In the social shopping space you can find basically three categories of services:

Collaborative Shopping Networks: These platforms have a strong community character and could be run as collaboration networks or in combination with an online store, where products can be bought directly. (e.g. ThisNext, Threadless, MyDeco etc.)

Bookmarking Services: In simple bookmarking services consumers can bookmark products and create wish lists. (e.g. Backpack, Kaboodle, Wists etc.)

Multishop Services: More complex shopping frameworks which allow users to set up their own store with their favorite items on their own sites. (e.g. Goodstorm, Zilo, Spreadshirt etc.)

Special Platforms: Models which are not belonging to the other categories like live shopping platforms or special product search engines. (e.g. Woot, Preisbock etc.)

Functionalities

Frequent Functions (> 70%): Customizable user profiles, product images, product rankings, product ratings, product reviews, corporate blogs.

Normal Functions (30 to 70%): Forums, product syndication feeds, private messaging services, favorites, wish lists, groups, user generated tags, friend lists.

Rare Functions (< 30%): Widgets, badges, user driven blogs, product videos, user chats.

Revenue Models

Within all investigated social shopping sites the following significant revenue models (> 5%) were determined:

Onsite Advertising: Advertising is a very popular form of revenue generation and it used on many social commerce sites. Most common forms were contextual advertising, usually Google AdSense, and banner advertising.

Affiliate Programs: Affiliate programs are revenue sharing arrangements set up by companies selling products and services. Owners of social commerce sites are rewarded for sending customers to a specific third-party company.

Direct Sales: Fewer collaborative shopping networks had included an e-store in their environment to gather revenue directly from sales of products.

Only a few (< 5%) of the analyzed social commerce services had a membership revenue model. A survey about revenue models of general social web applications done by Chai et al. (2007) identified some similar revenue models and some others, which were not significant for our survey.

Identified Trends

Resulting from the analysis of all evaluated social commerce cases, especially collaborative shopping networks, the following business model trends can be determined:

Crowdsourcing: Working steps are sourced out to the users, and thus collective intelligence is used in e-shops. The grade reaches from small functions to fully integrated product life cycles and user generated marketing.

Live Features: Through real time functionalities and the use of life media, a special user experience is guaranteed. For example a consumer can see the percentage of sold products per hour.

Network Search Engines: Platforms for specific pools of products, which provide innovative search and filtering functions as well as individual integrated search engines in social shopping frameworks.

Personal Customization: According to his wishes, the customer has the ability to configure products online. For example, every user can print his own logo or picture on several standard products.

Photo and Video Integration: Integration of visual media allows to generate networks which are similar to media platforms. Many collaborative shopping networks are integrating photos from Flickr and videos from YouTube.

Reintegration and Syndication: Networks can communicate with others or third party applications can be included in existing social networks. For example, a social shopping platform could generate new consumers through an open application programming interface (API) integration of its services.

Shopping Mashups: Shopping mashups are characterized as application that combines data and content from two or more external online sources. The external sources are typically other web sites, and the relevant data may be extracted in various ways by the mashup developer. Content used in shopping mashups is typically sourced from a third party via application programming interface (API).

Widgets: Little tools or applications, which have special functions, can be included in blogs or other social networks. Shopping widgets are opening new marketing channels to vendors.

Collaborative Shopping Network Development

Out of the identified categories for social commerce we have selected the collaborative shopping networks for development of an interaction model. For that purpose the social shopping platform is used as a place for online collaboration and an e-shop could be included as marketplace. Users promote their products, whereas most of the functions and workflows are driven by the community. Considering presented findings of conducted best practice cases we decided to integrate all functions, listed in the part before, to generate a holistic model.

Interaction Model

The final developed collaborative shopping network interaction model (Figure 11) integrates the main entities consumer and product as well as the sub-entities profile, group, repository and vendor. Moreover, many smaller entities like tags, feeds, blogs or widgets were considered as well. The interaction traces show the complex interconnections, providing the basis for the identification of several functionalities characterized below.

User: A user joins a collaborative shopping platform due to campaigns, the invitation of a friend, a search result or a result of a price comparison engine. This user can have a blog, several favorites or wish lists, which are shared with other community members. Users of a social shopping platform arrange themselves in different groups and find friends or other users with similar interests. All members of a group have the possibility to discuss on products, to tag products to highlight them, to write recommendations and comments on products as well as to create their own ranking lists to show others their preferred products. In B2C models users write comments and notes on products or in groups. In C2C models users can sell own articles on marketplace scenarios.

Product: Products are listed in categories, may feature descriptive tags, have a certain context and are assigned to a specific content, including additional information. A product can be part of a search result, can be marked as a favorite and may be annotated with comments or notes from community members. The repository of a B2C platform is derived from suppliers and sold from a vendor. On a C2C platform, products of users are sold. Products can be structured in different categories and described by specific content. Users can find the repository of a vendor in price compare engines. A vendor starts campaigns to acquire customers, to sell products, which are produced from suppliers or the vendor himself. All products of a vendor are part of his repository. He may keep a blog to inform users. Vendors are able to manage products over the backend and to start directed campaigns and other marketing activities based on users' behavior. The whole collaborative interaction cycle should be seen as a continuous process. After buying a specific product, the user will recommend it within the community, share information with other users, and perhaps they will put it on their wish list. On the other side the vendor can address buyers with marketing campaigns, and an integrated community allows a direct conversation to future potential customers.

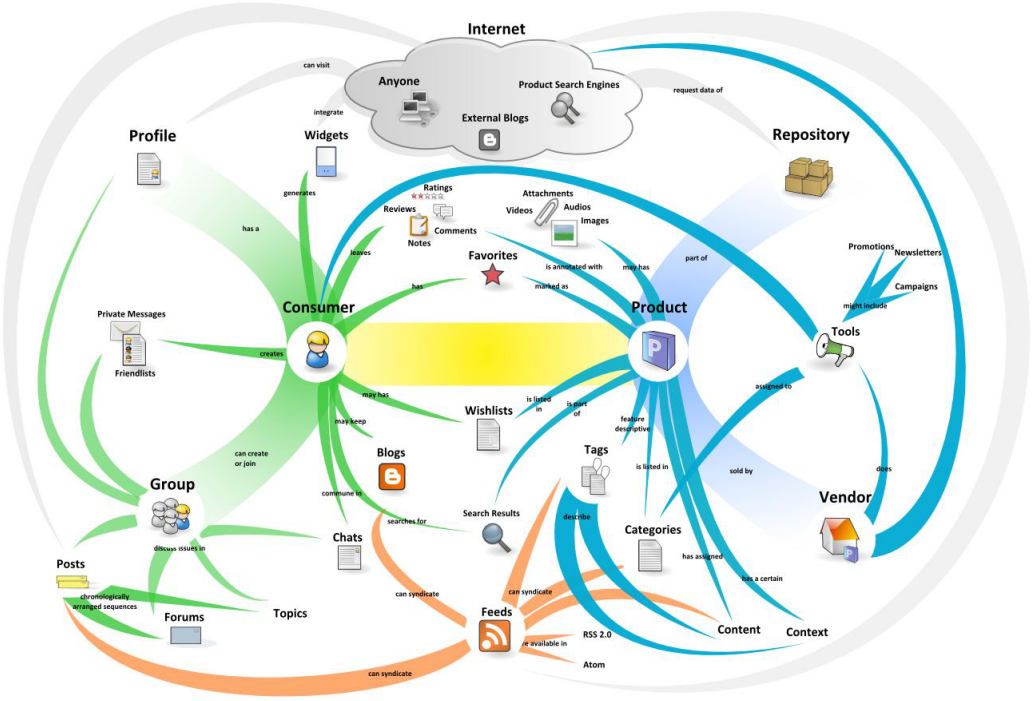

Figure 11: *Interaction Model of a Collaborative Shopping Network*

An internet connection with the system can be established via several interfaces. Thus, the framework can be opened for third party applications and as a consequence, communication with the global web sphere is possible (Breslin 2005). For example, integrated Feeds which are driven by RSS or Atom can be tracked in real time, or interactive product lists can be included over widgets in every blog over the web.

Key Success Factors

In addition there have been identified several key success factors for setting up a collaborative shopping network. Nowadays the most demanding challenge is to launch a new application successfully by quickly winning a critical mass of members. Successful collaborative shopping networks and social software in general have to focus on relevant core functionalities and an increase of user experience. Users have to get motivated for active participation by including platform specific features. Successful applications must be unique, entertaining, extremely useful and relevant to a huge number of users (Buskens 2002; Machado 2005; Siomkos et al. 2006). Thus, developers of new platforms have to find the right combination of entities, functionalities and marketing campaigns. The main goal of a vendor must be to provide consumers with a functional environment to win regular customers (Lei and Xu Wang 2005). Every owner of already existing e-commerce platforms has to check if his environment fulfills users' requirements.

Conclusion

Over the last years, a boost of innovative developments pushed the social web, an environment where users collaborate and participate online. Nowadays we can find a broad range of social web services. The spectrum reaches from smaller social media networks to more complex multi-blog communities and fully integrated social commerce platforms. Collaborative shopping networks, as a part of the next generation e-commerce, have been selected out of 100 social commerce sites to gather information for building an own model. The analyzed sites reach from smaller discussion and bookmarking platforms to more complex shopping networks with an included online store and numerous community functionalities.

The presented results show that successful social applications have to focus on an increase of user experience. Users demand tools to interact with their community by presenting their personal style, funny quotes and sayings to become valued customers. Efficient community features are required to motivate customers for active participation. The most demanding challenge besides quickly winning a new community is to find an adequate revenue model which is accepted by all involved stakeholders. However, successful platforms like MyDeco or Threadless clearly show that it is possible to build lasting revenues.

Demonstrated by the development of a collaborative shopping network interaction model in the last part of this paper, the process of combining relevant entities and functionalities is shown. The process model can be used as a generic framework to build entity-specific social web services with strong community functionalities. Fitting requirements of state of the art social web services and opened to third party services like blogs or social networks, the demonstrated models are scalable and can be merged easily. In future we will use the designed models to realize some prototypes of specific social commerce services. Further empirical research and user tests are planned to get deeper insights into specific combined functionalities and entities.

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