

Web Assessment - Measuring the Effectiveness of Electronic Commerce Sites Going Beyond Traditional Marketing Paradigms

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Abstract

Successfully conducting business on the Internet calls for new marketing paradigms that meet the requirements of the unique combination of its inherent characteristics: electronic markets, technological platform, and marketing issues. In this context, electronic markets are the framework in which market transactions are performed on the Internet. Underlying Internet technology forces marketing activities to be different from the ones applied to traditional sales channels and performance marketing is the essential ingredient for creating the best offering for the customer. The Web Assessment model unites these constituting characteristics into one approach for the evaluation of commercial Web sites. The Web Assessment methodology has been developed over the last one and a half years and the initial ideas have already been presented at conferences on information systems ([20], [21]). Based upon the Web Assessment methodology a software tool was created in order to enable Web users to make an online evaluation of their favorite Web sites. The paper describes the underlying model and presents the first observations which could be made when using the tool. The findings outlined in this paper were collected from participating Internet users who completed the online questionnaire. The data is a collection of subjective user assessments of various Internet commerce applications. There are various kinds of observations which can be made with the Web Assessment tool. We selected examples portraying a "single company profile" and an "inter-business comparison". The inter-business comparisons is explored in more detail using the examples of two bookstores – the already legendary virtual Amazon.com versus the traditional bookseller Barnes & Noble.

1. Introduction

The Web has created a new marketing arena with new rules and new opportunities. Many approaches for the assessment of Internet marketing strategies (e.g. [3], [12]) are based on existing marketing paradigms. Unlike these business-based schemes, the Web Assessment model intends to go beyond traditional concepts analyzing new potentials from the above mentioned perspectives (market, technology, marketing). As pointed out by Palmer and Griffith [12] Web site design includes both marketing and technical issues. It is argued that the elaborate use of electronic media creates new marketing opportunities which call for new marketing concepts. The Web Assessment Model does not claim to give advice on the suitability of Web commerce for a certain business. It does neither support the ex-ante decision of whether to go online and invest in an Electronic Commerce platform or not. But it might prove useful for the analysis of the eventual quality of a commercial Web site from a consumer perspective. On the market view, the model is based on the three transaction phases - information, agreement, and settlement - and a special community component which is a powerful feature of the underlying communication infrastructure (as will be explained in the following sections). A continuously updated documentation of this project can be found in the Web Assessment section of the NetAcademy on Business Media (http://www.businessmedia.org/businessmedia/businessmedia.nsf/pages/wa_tool.html). The model can either be used by researchers or Internet marketers. Merchants might want to assess the status of their current Web site looking for ways of improvement. Researchers can use the model in order to identify best practice examples and to list strengths and weaknesses of existing sites from a consumer perspective.

2. The idea behind the Web Assessment model

The Internet could be, at least from a technological point of view, the closest approximation towards a perfect, frictionless market. It offers ubiquitous information which enables buyers to compare the offerings of vendors worldwide. One prognosis of a possible turnout of customer behavior is that all marketing activity can be reduced to one competing factor that is *price*. Says e.g. Business Week: "But in Net commerce, the whole premise is that consumers will be, and should be, fickle. So the comparison shopper can use Amazon's delightful book reviews and other nifty features and then disloyally buy the product from Barnes & Noble if the price is lower." If this was really the case all research that has been and is currently conducted in the area of Internet marketing would be condemned to be in vain. Fortunately, not all customers seem to be comparison shoppers. Says one of the participants of our study who assessed the Amazon Web site: "Hey, it's amazon.com...what more do we need to say :). Seriously, however, I chose this site because it is one of the best (I shop on the 'net for software, books other 'information' products quite a bit) and its BEST by far feature is the quality of personal service [...] and the quality of the push media...I rely in part on Amazon to give me information about book publishing - this service would itself be worth paying for and they do it for free, thereby hooking me absolutely." So Amazon has apparently found a unique Internet selling proposition. This is where the Web Assessment model is aiming at: identifying possible success factors that differentiate one Web site from others in the same business. The following sections deal with the three core perspectives from which the Web Assessment criteria were derived: The transaction phases/community component (market perspective), the Internet-inherent characteristics (technology perspective), and performance marketing (marketing perspective).

3. Underlying perspectives of the Web Assessment Model

3.1. Electronic Markets: Transaction Phases

Electronic Markets are the environment in which players interact in the global electronic business media (the Internet). Malone et al. [9] have argued that new IT infrastructures will allow to circumvent and eliminate intermediaries in both value systems and supply chains in particular and thus lead to the emergence of electronic markets. Electronic Markets are first and foremost markets, institutions or mechanisms which serve the market

participants to allocate resources ([17], [23]). Information and communication technology is used to establish market places in cyberspace, to enable buyers and sellers to meet, evaluate offerings and negotiate digitally with little or no restrictions because of distance or time.

Moreover, it has long been established that information technology has significant impact on industrial organization as well as individual organizations. Malone et al. [9] (see also [14], [11]) suggest that companies are changing the way they operate due to significant reductions in the cost of obtaining, processing, and transmitting information. A multitude of examples from different industrial sectors, like clothing, books, wine and tourism show the trend towards direct sales by the supplier or manufacturer to the final customer (e.g. [2]). However, the same emerging electronic marketplaces offer revenues and profits for specialized intermediaries. Technical and institutional obstacles, high information costs, missing transparency and security flaws – distinctive features of the Internet at the moment – provide a huge field for intermediation, in some cases even re-intermediation ([8], [16]).

Although the purpose of this paper is not to explore these changes in depth, it is important to note that these alterations imply a continuous evolution of the firms' value chains and industry value systems ([14], [15]), as IT transforms not only intra-organizational structures and processes but also the nature and structure of linkages between them, the interaction patterns with customers, and the transaction process as described in the next section.

Transaction Phases

A market transaction may be divided into three phases ([18], [24]) which are information, agreement, and settlement phase.

- **Information Phase**
In the information phase customers collect information on potential products and services. They look for possible suppliers, asking for prices and conditions. The information phase covers the initial satisfaction of a consumer's need for information to conciliate his demand for a product or service with the offer.
- **Agreement Phase**
Negotiations between suppliers and customers take place in the agreement phase. The phase serves to establish a firm link between supplier and buyer that will eventually lead to a contract, fixing details such as product specifications, payment, delivery, etc.
- **Settlement Phase**
The last of the conventional steps is called settlement phase. The (physical/virtual) delivery of the product

ordered will take place during this phase. Also possible after sales interactions like guarantee claims or help desk services occur.

In virtual environments, however, a further degree of interaction becomes a central issue. A reader who buys a book at Amazon.com is automatically a potential source for reviews. If many readers with similar tastes and preferences join her efforts, an online community of similarly minded people comes into existence. The notion of community lies at the heart of the Internet revolution.

- **Community Component**

The concept of "Community", discussed in recent literature ([13], [19]) serves as essential tie between two transactions. The "communication" taking place among customers and between customers and the firm, links the product more firmly to them. Shared interests allow for the building of communities that generate a certain level of trust among their respective members (e.g. [1], [4], [5]) thus inspiring a fertile electronic commerce environment.

When considering a world where people (consumers) are anonymous and empowered to create their own and -deliberately chosen - identity classical trading rules may prove not to be effective. Spar and Bussang [22] point to the fact that an absence of established business rules on the Internet may result in a commercial environment affected by insecurity. Virtual communities that set standards (e.g. Netiquette) will generate confidence and allow for the constitution of "Trusted Intermediaries" who guarantee generic services such as contracting, payment, logistics and security, and who serve as an entity transforming the anonymity and anarchy of the Internet into a market with identifiable customers and recordable transactions.

3.2. Technology: Media-inherent Characteristics

As already mentioned before the Web Assessment focuses on the deployment of telecommunication infrastructure and the resulting technological possibilities. Table 1 lists the core characteristics which were used to develop the Web Assessment criteria.

Table 1. Media-inherent characteristics

Media inherent characteristics	
1.	Hypermedia presentation
2.	Database interface (expert system)
3.	24-hour access (time)
4.	Anonymity
5.	Ubiquity (space)
6.	Asynchronous communication
7.	Configuration possibility (interactivity)
8.	Transfer of cost benefits to the customer

3.3. Marketing: Performance System

In marketing the term performance marketing [2] defines the quest to offer a customer not just the product itself, but to propose a specific solution for individual customer segments, if not each customer itself. Why should a company try to cater for such small customer segments? Customers today show a very rational and price sensitive behavior. A firm thus cannot just offer the genuine product or service itself, but needs to offer integrated solutions embracing the following elements in order to successfully differentiate itself from the competition: i) core product/service, ii) a product system, iii) bundling, iv) complementary external offerings, v) price and quality arrangements, vi) delivery, vii) set-up and training, viii) continuous service agreements, ix) and an emotional customer experience. The resulting performance system in the case of an airline might look like listed in table 2.

Table 2. Retail (airline) example of a Performance System

0	Product / Service System	Flight from Zurich to New York with Swissair, or packaged Swissair offer, e.g. flight Geneva - Amsterdam - Zurich
1	External Bundling	Combination of onward flight with partner airline, hotel arrangement, theater tickets, etc.
2	Generic Services	Integration of payments, logistics systems, e.g. airline credit card, city check-in, etc.
3	Customer specific: Additional Services	Focused offers, e.g. youth fares, package holidays, business packages, adventure trips, etc.
4	Emotional Customer Experience	Youth club, forum for frequent flyers or leisure travelers focusing on special destinations, e.g. Big Apple Club


4. The Web Assessment Tool

The Web Assessment Tool was created in order to collect assessment data. The list of criteria was implemented into an online WWW form. The outline of the questionnaire was developed in accordance with the requirements listed in Kromrey's work [6] about models and methods for the gathering and evaluation of empirical data and guidelines for the development of computer-supported questionnaires by Möhrle [10]. As mentioned before, the questions were derived from the Internet-inherent characteristics. In order not to overload the questionnaire we decided to restrict the number of questions for each transaction phase to the most important. Thus, not each of the media-inherent characteristics is represented in every transaction phase. This helps to keep the questionnaire short and to motivate assessors to proceed to the very end. The assessment scale varies from "I strongly agree" to "I strongly disagree" spanning four different values. People often tend to chose the middle option of a given set of answers so we decided to implement an even number of values to encourage assessors to unveil their preferences either in favor or against the criterion. Besides, there is a "zero option" for saying "not applicable". This should be used whenever the criterion is not relevant for the Web site (e.g. logistics are not relevant in the case of digital products). Each assessment question is accompanied by a detailed explanation which can be accessed via a hypertext link. Figure 1 displays a fragment of the online assessment form.

Phase 4: Community Component
[-> explanation](#)

	4	3	2	1	0
	strongly agree	somewhat agree	somewhat disagree	strongly disagree	not applicable
Good Access to Community 	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Uniqueness/Originality of Information  (information is difficult to obtain from other sources)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adequate Number of Members 	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 1. Fragment of the Web Assessment questionnaire

The document symbols () contain hyperlinks to the respective explanations. The Web Assessment tool has been designed using Lotus Domino technology. The tool is part of the Net Academy project (<http://www.netacademy.org>) which aims at the design of a system for the structuring, acquisition, mediation and dissemination of domain-specific scientific knowledge on the basis of a generic, Internet-based platform.

In a final section assessors are asked to rank the overall goodness of the site. Remember that the best profile is not simply the one that includes the highest scores. The success of an Electronic Commerce site has to be judged separately according to financial success (from the vendor perspective) and fulfillment of customer needs and expectations (from a consumer perspective). The consumer perspective is checked in a final question where participants evaluate the general quality of the Web site. In order to be able to judge the literacy of the assessors one question includes the self-categorization into different experience groups.

4.1. Web Assessment Criteria

The following section describes the Web Assessment criteria which were implemented into the online questionnaire.

Table 3. Information Phase

#	Criterion	Explanation
1	Good user interface	The "user interface" assesses ease of use for frequent users as well as for first time visitors. This does also comprise loading times of pages and guidance in the interaction process with the Web site when completing a transaction.
2	Good structure of content	The "structure of content" measures ease of access as well as first and second impression of the logical structure of the content. Tables of contents, navigational frames or image maps are typical features to facilitate navigation.
3	Reasonable information quantity	The "quantity of information" focuses on the range of information on company, product and services.
4	Apparent benefits from stored customer profile (e.g. client-specific offers)	Most Web sites require customers to register or at least to supply some basic personal information. Good Web marketers should remunerate their customers for "revealing" this kind of information. This could be either by <ul style="list-style-type: none"> • directly crediting money or services, examples are: http://www.bonusmail.com, http://www.cybergold.com • granting discounts for product sales
5	Good products/ service combination possibilities (cross-selling: combine products and/ or services)	"Combination possibility" examines the breadth of the product range and the possibility to combine various product offerings (either to the company's own products, or third-party goods/ services) online. It measures the amount of cross-selling, i.e. the combination of various goods/ services (such as an airline ticket and a hotel reservation).
6	Good availability/ performance of the system	"Availability/ performance" (in respect to geographical aspects) measures the global availability of the system. It judges the availability to customers regardless of their geographic location. Special mirror sites could e.g. improve global performance. Since this aspect is one of the main advantages of the Internet it gains special consideration. "Availability/ performance" (in respect to time) measures the loading times which are of great importance for user comfort.
7	Cost benefits passed on to the client	The use of electronic sales channels often reduces transaction costs. Provided that margins remain unchanged vendors should be able to offer products on their Web site at a lower price.

Table 4. Agreement Phase

#	Criterion	Explanation
1	Adjustable customer profile (e.g. payment information)	Business transactions usually require customers to reveal some basic personal information, e.g. payment information. For a greater comfort this kind of information can be safely stored for reuse in a subsequent session.
2	Guided ordering according to profile (personalized services)	In order to receive a higher degree of personalized services customers could be willing to reveal additional information. Besides, the system might track user activity. A detailed user profile containing personal information such as age, gender, hobbies, preferences, etc. helps to treat each customer differently. This could result into guiding mechanisms, enable the system to come up with suggestions, or to even grant special client discounts.
3	Possibility of customized products	Some customers might be interested in buying combinations of products (product systems) or only fragments of a product (only parts of a magazine or newspaper). The Web site could support the customization of user-designed products.
4	Transparent, interactive integration of business rules	The underlying business rules should be transparent to the user. Business rules are: general terms and conditions, guarantees, possibility for returning products, etc. Click buttons to accept terms and conditions and a guided interaction are helpful in this context.
5	Good implementation of security issues (digital signature, secure server, TTPs)	Security issues are one of the most discussed topics of Electronic Commerce. Good Web sites should offer reliable security features (such as SSL, digital certificates, etc.).
6	Good contact possibilities with vendor (help desk for problems during order process)	"Contact possibility" examines the various ways to establish communication with the vendor. It may comprise the implementation of a help desk or a call center. The Web site could offer <ul style="list-style-type: none"> • the opportunity to write and read questions of common interest (FAQs) • a feedback possibility via E-Mail or Web forms (i.e. via the electronic medium) The feedback response times must be adequate to the medium used.

Table 5. Settlement Phase

#	Criterion	Explanation
1	Easy selection of generic services	"Generic services" are software modules that are available on the entire Web platform and always present themselves in a uniform interface. Generic Services support an electronic transaction (such as the purchase of a book online). Examples are electronic payment systems, logistics services, electronic contracting modules, etc. Their brick-and-mortar counterparts are power sockets, telephone hooks, water taps, and the postal system that should be the same wherever you are (this applies at least within the same country). An easy selection of such services means that they are integrated into the settlement process. This can be by selection of different choices for e.g. payment systems (Ecash, credit card, SET, check, bill, etc.) or logistics services (UPS, FedEx, US Post, etc.). Also the tracking of order information should be supported (e.g. the customer might choose to get an E-Mail message whenever a step of the settlement is completed).
2	Good integration of generic services	A good integration of such services means that they are sensibly used wherever necessary comforting the user by their common interface and their routine operation. Typical generic services in Electronic Commerce applications are payments, electronic contracting (dealing with prices and conditions) and logistics. Other Generic Services are: shopping carts, one bill for multiple shops, shopping lists, etc.
3	EC-application makes effective use of customer profile (e.g. payment and logistic information)	During the settlement of a business transaction some basic personal information needs to be revealed (e.g. payment information or delivery address for physical goods). For a greater comfort this kind of information could be safely stored for reuse in a subsequent session.
4	Good tracing and tracking (e.g. direct access to personal order information)	A good example for an integration of a logistics service, (in this case of a third party) can be found at http://www.amazon.com . After ordering customers are provided with information how to trace their order at the UPS tracking site.
5	Good IT-integration (connection with customer's infrastructure)	Especially for small and medium-sized businesses (SMEs) an export filter (a link to their accounting system) for financial data could be of great value (e.g. information can be exported into MS Money).
6	Convenient after-sales support	The Web site should also support the handling of after-sales services (e.g. guarantee form, feedback form).

Community Component

A commercial Web site should help to establish a relationship among customers on the one hand and between customers and the company on the other hand. It thus facilitates the means to establish a community of people sharing common interests. Customers interact and exchange information e.g. about experiences with company products or services.

The information from customers to customers provides an additional level of confidence. Additionally, the company gets the chance to directly respond to customer requests and needs, thereby strengthening the bond between the company and its clients.

Table 6. Community component

#	Criterion	Explanation
1	Good access to community	The following definition applies to the notion "Virtual Community": <i>"Virtual Communities describe the union and the communication between individuals who share common values and interests and who use electronic media to get in touch with another. Their communication is independent from restrictions of time and place."</i> These "Virtual Communities" may be loosely or more closely attached to a special Web site. A high value of the "access to community" criterion indicates a good link between the product offer and the community component of the Web site.
2	Uniqueness/ originality of information (information is difficult to obtain from other sources)	This criterion evaluates the value of the information that can be obtained from the community area. A community which includes experts who actively contribute to the community area might supply information that cannot be retrieved from other sources. TV Guide, for example, features online interviews between community members and movie stars and stores them on its Web site. In this case, the community area is really worth visiting.
3	Adequate number of members	The value of a community are its members. There must be some "key members" who show a special dedication to the community. Nevertheless, as the number of members increases so does the probability of good questions, answers, reviews and other contributions and hence a rich community experience.
4	Well-implemented collaborative filtering (e.g. systems gets you in touch with similar-minded people)	When joining a community members are usually looking for people with similar tastes or interests. There are two main kinds of user profiles that can be stored in a community database <ul style="list-style-type: none"> • personal information about interests and tastes entered by the user (self-assessment) • tracking of interactions performed by the user (activity log) The self-assessment should contain a selection of pre-defined categories (e.g. gender, age, favorite music, etc.). This information is not subject to many changes whereas the activity log is meant to trace dynamic information (page accesses). After a while the system may use the dynamic information to derive patterns of user's interest and behavior.
5	Member may choose his/ her appearance within the community (e.g. choosing a personal avatar)	Some Web sites offer the possibility to chose a representation of one's self (e.g. Worlds Away, Ultima Online). These representations are called "avatars". They appear in the form of animals, people, or characters from comics strips. Sometimes it is even possible to assemble the character choosing from a given set of heads, bodies, arms, etc.
6	Privacy is sufficiently protected	Sometimes you might gain access to a community forum without revealing personal information about yourself. There are clients who prefer the anonymity of the Web to the face-to-face encounter in a brick-and-mortar shop.
7	Perceived real added-value from membership	This criterion evaluates the value of membership. Besides the information that can be obtained from the community area there might be an additional value creation, e.g. in the establishment of personal relationships with other members. According to Armstrong and Hagel [1] there do exist so-called "communities of relationship". Specific shared experiences of life are the basis of these communities. ParentsNet is one example for this type of community.
8	Good, customized push mechanisms (information is automatically being sent to member)	There are two different mechanisms to establish a customer relationship via E-Mail Push-Technique: The Web system automatically supplies the customer with information. Either the customer chooses to receive specific information updates or the information provider sends unsolicited information which might be of interest to an established or possible customer. Push mechanisms can be customized by customers. The information provider may offer different categories of information updates where the client can check boxes in order to receive the information required (examples are Netscapes In-Box Direct and Amazon.com).
9	Good pull mechanisms (member can ask for information updates)	Pull-Technique: The customer actively seeks information and retrieves this information on his / her own whenever needed. Pull effects are typically the result of ads, discounts or a good (visible) place in store shelves.

5. Selected Findings

Over the last year we asked people (researchers as well as practitioners) to use the Web Assessment tool in order to assess their favorite Web sites. The resulting data sheets were collected and processed with the help of an evaluation software. So far, we were able to collect 70 data sheets from more than 55 different assessors. We expressively asked the WA participants to evaluate only those sites that they are really familiar with. Since each user usually has a limited set of favorite Web sites most

people only made one or two entries. The data thus represents a small sample of high-qualified user opinions.

The following section describes ways of evaluating the Web Assessment data and preparing them in a way that they can be used to analyze weaknesses and strength of existing Web sites. First, we are looking at the singly company profile which gives a graphical overview of the overall performance of a Web site. We then compare different profiles of companies operating in the same business drawing up an inter-company comparison. In order to identify general success factors it will be necessary to

look at Web sites which are actually yielding profits. Profitable Web sites can offer best practice profiles. Providers of less successful Electronic Commerce applications can then be compared against the profitable ones. The comparison of profiles and the thus identified differences may suggest important aspects for improvement.

5.1. The Single Company Profile

Table 7 is an example for the aggregation of eight different user opinions for the information phase. The mean value displays the aggregated ratings. The deviation column illustrates the degree of consensus among the assessors. The zero value represents complete agreement; values higher than 1 indicate a high degree of discrepancy.

Table 7: Single company profile for the information phase

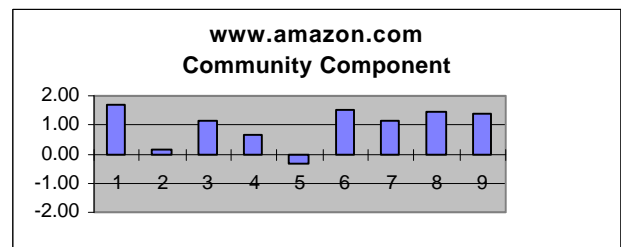
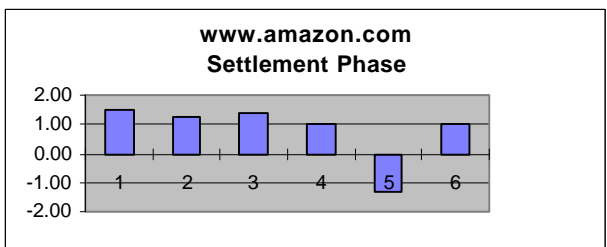
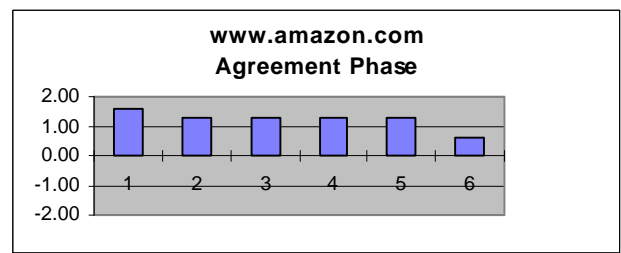
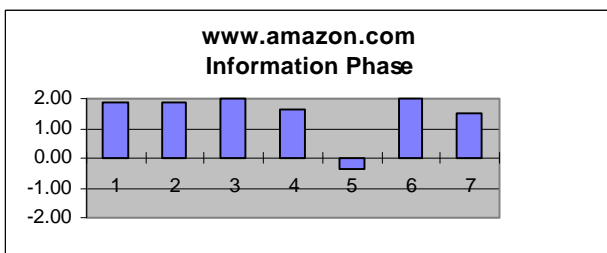
Information Phase	A 1	A 2	A 3	A 4	A 5	A 6	A 7	A 8	Mean	Deviation
User Interface	2	2	2	2	2	2	1	2	1.88	0.24
Structure	2	2	2	2	1	2	2	2	1.88	0.24
Information Quantity	2	2	2	2	2	2	2	2	2.00	0.00
Benefits	2	2	-1	2	2	2	2	2	1.63	0.73
Combination Possibility	-2	0	2	-2	-1	0	-1	2	-0.33	1.06
Performance	2	2	2	2	2	2	2	2	2.00	0.00
Cost Benefits	2	2	2	1	2	-1	2	2	1.50	0.82

The examples shows complete agreement for the "quantity of information" offered on this site as well as for the overall "performance of the system". The values for "design of the user interface" and "structure of content" are almost equally attributed. Nevertheless, there is

a discrepancy for cost benefits and combination possibilities. A possible explanation could be that the assessors developed their opinion on different experiences with product offerings. There may be products on this server which are apparently cheaper than usual, making the benefit transfer obvious to the client. Other products, on the other hand, may already be sold at a very low margin in brick-and-mortar business which does not allow for even lower prices on the Web site. The same applies to "combination possibilities" which might be appropriate only for a limited range of products.

In the following diagrams the x-axis represents the assessment criteria within the different transaction phases. The value range is from +2 (I strongly agree) to -2 (I strongly disagree). It is important to mention that the val-

ues do not represent the quality of the Web site (overall high scores do not equal a high-quality Web site) but they indicate the aspects which the company perceives to be necessary on the one hand (0 to 2) or which they feel not be important on the other hand (-2 to 0).



5.2. The Inter-Business Comparison

In order to identify general success factors, it will be necessary to look at Web sites which are actually yielding profits. For this reason, each assessor was asked to classify the Web sites according to the business for which it was designed. Profiles of less successful Electronic Commerce applications can then be compared against more profitable ones. The comparison of profiles and the thus identified differences may suggest important aspects for improvement.

Amazon vs. Barnes & Noble

In the following figures, a comparison was drawn between the two big booksellers on the Internet. The columns suggest that the Web sites are quite similar to each other. Both companies put an emphasis on services in the information and the community phase. They are obviously not interested in bundling their products with external partners and they focused on low prices. Their community approach is different. Amazon make use of an open-community approach where everybody has access to all the information. On the Barnes & Noble site users first have to contribute to the system before access to the community area is granted. The assessors' opinion reflects that the Amazon approach is the more successful way of establishing a long-term relationship with the customer.

focuses on the external view regarding a business-to-customer relation. To further validate the proposed framework and to assess electronic commerce applications, the model needs to be applied to subsequent retail sites, but even more to a business-to-business case, as this is expected to be the major growth area in electronic commerce in the years to come.

The Electronic Commerce Sites that have been assessed so far showed some common characteristics: the information phase was always the one with the highest assessment scores and the best functionality. This is no surprise since it reflects the development of Internet Commerce where companies typically started to transform their paper-based product catalogs into the new medium and are now adding interactive elements. The same applies to Virtual Communities which have only recently begun to be discussed in Internet literature.

We aim at establishing a set of reference cases that will allow to collect more data and eventually build up a benchmarking database in order to derive best business practices. Furthermore the model will be extended to accommodate the internal perspective and will be applied to company internal and cross-company information systems (intranets, extranets).

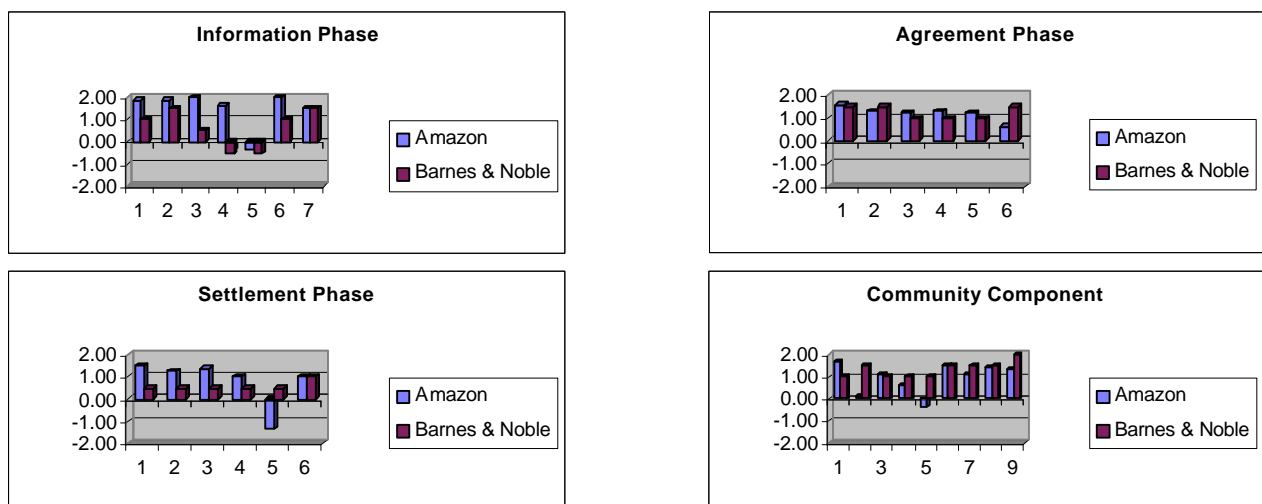


Figure 3. Inter-business comparison

6. Further Research and Concluding Remarks

The model proposes a method for evaluating Web sites, making a comprehensive analysis of the usage of the new medium in a particular business case. The paper fo-

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