

CLASSIFICATION AND USABILITY OF RETAIL E-COMMERCE SITES

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ABSTRACT

In this paper authors present a three-degree classification and thirteen groups of usability of online retailing sites. The article contains general results of research into designing of e-commerce services from 2000 – 2002 based on order of Wirtualna Polska S.A a leading Internet portal in Poland. Thirteen groups of usability are described by ninety-three particular usabilities. Such detailed description of e-commerce usability refers to descriptive model of online retailing developed recently by the authors. In the very model usability of e-commerce sites is a REGULATOR between system INPUT defined by market factors group, technology factors group, human factors group, and OUTPUT defined by importance of online retailing: market share and sale's structure. That is the reason that usability of e-commerce sites is the main point of online retailing understanding. Usabilities research is one of the steps of formalizing descriptive model.

Key Words: 21. Knowledge and Information Management, 9. E-business, Internet Retail.

1. INTRODUCTION

In ~~the~~ previous papers (Szczerbicki *at al* 2003, 2004) and Maciej Waszczyk PhD Thesis (Waszczyk 2004) ~~the~~ authors built ~~a~~ descriptive model of online retailing. In the model, ~~the~~ importance of online retailing (IOR) depends ~~s~~ on usability of retailing Internet sites (URS). On URS influence ~~there are~~ three groups of factors: market factors group (MFG), technology factors group (TFG) and human factors group (HFG). According to this, ~~usability of~~ transaction sites is ~~ana~~ regulator in the complex system of online retailing.

In this article authors would like to bring closer this question by describing types of e-commerce activities and usabilities groups of e-commerce sites. Presented material is a generalisation of research in 2000 – 2002 of 362 Internet sites. On the basis of those 93 functionalities were described and functional specifications of several e-commerce sites built (See also: Waszczyk 2000a, 2000b, 2001a, 2001b).

2. USABILITY AND MARKETING

Jakob Nielsen, ~~opening his book entitled in~~ „Designing Web Useability” ~~writes-writes~~ that usability rules the net and that if a client does not find the product he will not buy it (Nielsen 2001). He states a radical opinion that usability (or usability) should ~~both~~ be in the centre of attention ~~both~~ while ~~designing and analysing~~ Internet sites ~~designing and their analysing~~.

Nielsen designed his own service <http://useit.com> only as a text, without popular ~~in the~~ Internet graphics, although recently he has changed it.

Marketing approach is contrary to engineering approach to Internet sites designing. According to the former, usability is important to a certain limited degree, while market share and ways of using of WWW sites depend mostly on adequate graphic elements, attracting customers. Marketing approach is closely connected with treating the Internet as a communication medium between advanced users who do not seek colourful pictures but the content. Engineering approach is connected with treating the Internet as a communication medium between WWW publisher and not always advanced users who need to be attracted like readers of colourful magazines. The article deals with marketing in a limited scope and therefore the discussion will remain unsolved. ~~Never-the-less,~~ according to the authors, one should not be used without the other, as the colours and graphic elements (mainly pictures and icons) are important in both navigation and marketing communication.

2. CLASSIFICATION OF E-COMMERCE SITES

Classification should fulfil two conditions: completeness and separation. That means separate ideas should fill the whole set and do not cover each other. It should be noted that even if the completeness condition is fulfilled at the moment of division, the Internet market changes so dynamically that in a few years' time the presented classification may not be adequate. As far as the second condition – separation – is concerned, this classification would not fulfil this condition if one takes under consideration the fact that Internet sites can be simultaneously B2B and B2C and C2C. That is way this division applies to forms of activity, not kind of services as commonly done. Conversely this classification excludes those e-commerce activities that are based on product presentation without possibility of a transaction via the Internet. In particular one should mention a popular in the Internet catalogues that have a similar usability to B2C shops or B2B warehouses with an exception that they do not use ~~an~~ electronic cart or at least an online form.

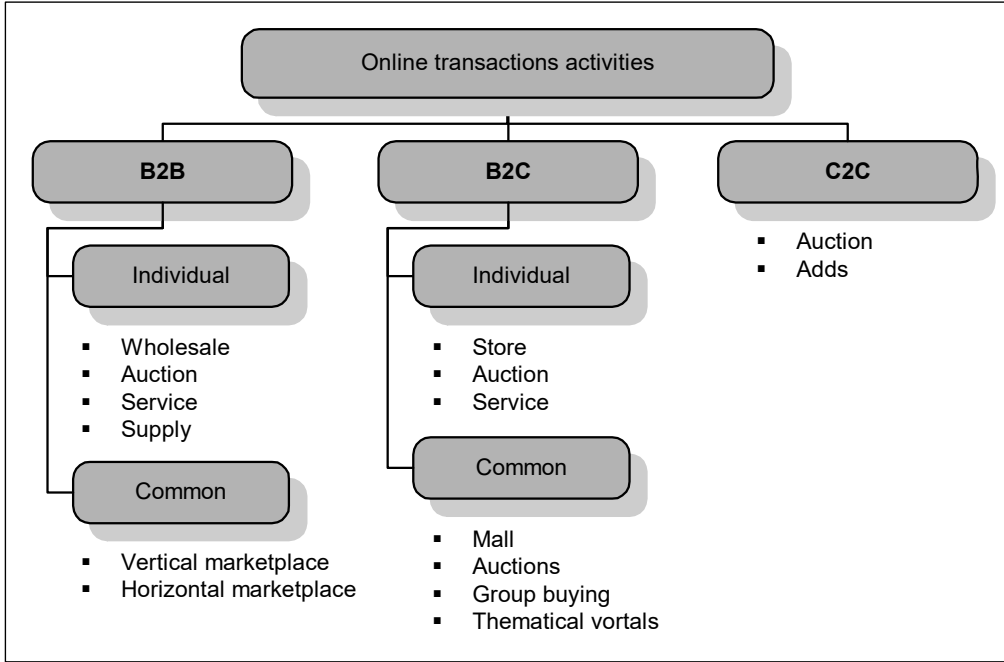


Figure. 1. Three-degree classification of e-commerce activities.

According to research, we can divide online activities into three-step mode [Figure 1]. On the first degree of the classification we can distinguish such activities as follows.

- B2C (business to customer) - doing business between companies and households.
- C2C (customer to customer) - doing business between households.
- B2B (business to business) - doing business between companies.

In that article B2G activity (business to government), ~~that is doing business between companies and government~~, we can define as the part of B2B activity.

The second degree of the classification based on differentiating of transaction activities can be divided into the following.

- B2B individual – the company provides Internet activity for making transactions with other companies: 1. based on own products, 2. selling products on own account, 3. supplying.
- B2B common – the company provides Internet activity for arrange transactions between other companies. This activity arranges wholesale marketplace for companies.
- B2C individual – the company provides Internet activity for making retail transactions with households: 1. based on own products, 2. selling products on own account. B2C individual/store – the company provides Internet activity for making retail transactions with households based on specific prices.
- B2C common – the company provides Internet activity to arrange transactions between other companies and their customers (households). This activity builds marketplace for retailing.

In C2C activity there is no second degree of the classification.

The third degree of the classification can be as follows. In B2B individual activity a company can make online individual transactions with own customers and suppliers.

- B2B individual/warehouse – the company provides Internet activity for making transactions with other companies based on specific prices.
- B2B individual/auction – the company provides Internet activity for making transactions with other companies based on bidding prices.
- B2B individual/service – the company provides Internet activity for making transactions with other companies based on services (e.g. financial).
- B2B individual/supply – the company provides Internet activity for making transactions with own suppliers.

In B2B common activity a company can arrange transactions between other companies.

- B2B common /vertical marketplace – the company provides Internet activity for arrange transactions between other companies in area of one line (trade) or product sort.
- B2B common /horizontal marketplace – the company provides Internet activity for arrange transactions between other companies without specific lines area.

Online retailing B2C on individual mode can be provided as store, auction or service.

- B2C individual/store – the company provides Internet activity for making retail transactions with households based on specific prices.
- B2C individual/auctions – the company provides Internet activity for making retail transactions with households based on bidding prices.

- B2C individual/services – the company provides Internet activity for making retail transactions with households based on services (e.g. financial)

Companies can also build a B2C retail marketplace to arrange transactions between other companies.

- B2C common/mall– the company provides Internet activity to arrange transactions between other companies and their customers (households) based on specific prices.
- B2C common/auctions – the company provides Internet activity to arrange transactions between other companies and their customers (households) based on bidding prices.
- B2C common/group-buying – the company provides Internet activity to arrange transactions between other companies and their customers (households) based on prices which are reduced if number of customers increase.
- B2C common/thematic portals – the company provides Internet activity to arrange transactions between other companies and their customers (households) based on specific services as: tourism, building. Based on specific prices. There are four kinds of marketplaces: malls, auctions, group-buying, thematic portals.

The Last but not least, retail activity lies in C2C transactions' arrangement. In that case households can sell and buy new and used items on auctions' and adds' sites. We can distinguish as follows.

- C2C auctions – the company provides Internet activity to arrange transactions between households based on one-side bidding prices.
- C2C adds – the company provides Internet activity to arrange transactions between households based on double-side bidding prices.

As mentioned there can be classification problem where companies buy products in the Internet sites provided on B2C mode. In that situation they purchase small quantities of goods on retail prices as common customers, requiring an invoice and including the costs in their account. It can be a B2B situation, if we one takes into consideration the definition of retail by R. Cox and P. Brittain. According to them retail is a selling goods and services to a final customer on condition that they will be for his own use, his family or household (Cox *at al* 1999). In consequence there could be only few pure B2C sites as only the Internet banking can restrict their services to households use only.

Therefore B2C trade activity also applies to business transactions when B2C sites are used. Such approach is convergent to the Polish definition of retail by Chief Central Statistical Office where retail is defined as selling goods in retail locations in quantities adequate to the needs of individual customers.

Therefore we should always remember that there are different activities linked to different sites. One site can provide an auction and shop activity for example. We can distinguish seven general kinds of sites: store, mall, auctions, adds, group-buying, thematic portals, services.

- Store – Internet site provided by company in aim to sell products based on specific prices. Usabilities of the store are often: products description with image, electronic cart, different payment methods.
- Shopping mall – Internet site provided by company in aim to build marketplace between selected selling companies and customers. Shopping malls do not sell on own account (low-touch e-commerce). Usabilities of

the mall are often: store builder, permanent or transactions fee, shop and products description with image, different payment methods. Sellers pay a monthly fee and/or a transaction fee.

- Auctions – Internet site provided by company in aim to build marketplace between selling companies and households and buying customers. Price is bidding on one-side mode often as English auctions sometimes as Dutch auctions. Sellers and/or buyers pay a fee of transaction.
- Adds – Internet site provided by company in aim to build marketplace between selling companies and households and buying customers. Price is bidding on double-side mode. Sellers and/or buyers pay a fee of transaction.
- Group-buying – it is not often met Internet site provided by company in aim to build marketplace between selling companies and buying customers. Price is reduced if number of customers increases. Sellers pay a fee of transaction.
- Thematic vortals – Internet site provided by company in aim to build marketplace between selling companies and buying customers in area of one line (trade) or product sort. Vortals can be joined to horizontal portals. Sellers pay monthly a fee and/or transactions fee. The most popular are: tourism vortals (tickets, hotel reservations); building vortals (blueprints), financial vortals (accounts, credits, investments), information technology (software, hosting, mail boxes) and mobile (logos, rings) sites. Important part of thematic vortals is rich information contents.
- Services – Internet branch of financial institutions as banks, brokers provided in aim to make transactions by clients and to moderate customer care.

While the classification of activities could fulfil conditions of completeness and separation, the above distinction is a typology for one simple reason: one WWW site can consist of many activities. The best example of that can be portals or services dedicated as thematic vortals to comparing products and shopping from different sites: auctions, shops and the others.

2. USABILITIES GROUPS

We can describe usability of online retailing sites in thirteen groups of usabilities. Groups of usabilities as search, navigation, transaction, payment etc. are made up of ninety particular usabilities. Usability of online transaction sites was researched using our own method. The first step is to find keywords for the kind of online transaction site, for example: blueprint, home-plan for building vortals. The next steps are to review search results and make short list of representative sites. The following step is to find main criterion of sites' rank. Then 10 to 20 sites need to be analysed as regards of 40 – 100 usabilities. Now we can build synthesis, description and interpretation of usability and we can design a perfect transaction site.

We should build simple database. The idea is to use MS Excel to write in rows names of sites and in columns names of usabilities. In crossing cells we fill in Yes or No or other signs, like numbers etc. In that way we can generate statistics, for example: „78% percent of stores has categories on index page on the left side under top of the page” or „86% of building sites use complex and multi-criteria search on index page”. Based on statistics we can design usability of the Internet site (See also: Waszczyk 2002).

- General: e.g. models and types of services, languages, marketing identification, transaction and non-transaction activities.

- Navigation: e.g. ergonomics, types of pages (homepage, search page, category page etc.) and links between them, categories, types of menu and links position, vertical, horizontal or matrix navigation.
- Search: e.g. simple, complex or multi-criteria search, criteria of search, presentation of search results, result sorting.
- Registration/logging: e.g. stage where a user can meet registration or logging to explore service content, compulsory and non-compulsory fields in forms, added value services as mailbox, password's generating.
- Product presentation: e.g. length of description, size and focus of picture, 3D or multimedia presentation, interactive colouring or product assembling.
- Promotion: e.g. forms of promotions on homepage and others, static or rotating promotion, text or HTML mailings etc.
- Advertisements: e.g. advertisement selling, advertisement forms (banners, mailings, links, promotion in search and catalogues), partners, auto-advertisements.
- Transactions: cart or order form, set price or bidding price, confirmation of transaction etc.
- Payment: forms of payment (e-card, virtual wallet, SMS, MMS, direct, cheque etc.).
- Supplements: community, grading system, non-transaction content.
- Personalization: recommendations system, algorithm of conscious or non-conscious personalization.
- Advisory: active (e.g. mails or chat with experts) or passive (e.g. Frequently Asked Questions or Help), helpdesk, call centre etc.
- Administration: for seller, buyer (e.g. my auctions, wishes) or moderator, online or offline administration, export/import of data.

In publications on the Internet sites' usability, particularly in Niensens' books (Nielsen *at al* 2001) reports of his company Nielsen Norman Group Nielsen 2000a, b, c, d, e, f, g) or Creativegood reports (Creativegood 2000a, b) an explanation of kinds of usabilityes can be found. The most frequent are: searching, registration and logging or navigation. The above mentioned division depicts the abundance of transactional Internet services and enables their detailed description.

3. CONCLUSION

This article describes a division of the Internet transaction services' activities as well as the usability of those sites. The material is a part of wider research on e-commerce and presents some of the research findings.

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