PERSONALISATION AND CUSTOMISATION
A strategic leverage to sustain e-trading market share

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Abstract: Electronic banking (e-banking) has emerged the most popular way for retail banks to provide financial services to private households. Stock trading transformed into e-trading as retail banks created comprehensive web portals for customers to perform financial transactions. Low search costs have sparked fierce price competition. For companies to sustain profitability and retain customers, service differentiation is vital. Personalisation and Customisation (P&C) techniques allow banks to provide this individualised and differentiated service and foster a stronger customer relationship. Various P&C approaches have been examined through case studies of top e-trading companies. A three-layer architecture can be used to which enables P&C to provide an individual service without undermining core business functions.

1 INTRODUCTION

All electronic-services (e-services) suffer greatly from lack of personal attention towards its customers. E-banking is no exception as clinical e-services have seriously undermined the banking experience. This has also proved to be the case for e-trading.

E-trading is under heavy price competition, due to low search costs. The ease of information over commission charges forces many e-trading services to compete purely on price. For successful retention of trading customers, these services must enhance service differentiation and abandon pure price competition. In the past, service differentiation was undertaken by investment advisors having met face-to-face with customers, thus ensuring the provision of the right service and matching the stocks to the needs of the customers' purposes. Facing e-trading and given vast amount of data which are not tailored to meet individual users' needs, the user chooses for itself from hundreds of domestic and foreign stocks.

Personalisation and Customisation (P&C) is the next step towards closing the gap between traditional trading service and modern clinical e-services. It guides each customer by filtering and presenting only relevant information to the individual, thus making stock purchasing more efficient and manageable to the average user. P&C techniques solve the problem of impersonal services by giving the customer exactly what they require (Spector, 2002). It fosters the relationship between the bank and its trading customers and gains the trust of the customer in order to successfully complete the transaction (Allen et al., 2001). Consequently P&C realises the strategy of service differentiation. This enables the sustainability of superior service quality, customer retention, and ultimately higher profitability.

This paper presents a survey of innovative e-trading services upon which P&C techniques are evaluated to construct a guideline for best practices.

2 RETAINING CUSTOMERS IN E-TRADING

2.1 E-trading Services in Retail Banking

There are three core activities upon each trading transaction: stock-market data analysis, stock purchasing, and stock portfolio management and reporting. For e-trading to succeed as the as the preferred medium for trading, it has to provide the aforementioned activities in addition to authentication, mapping of available services and alerts to-stock market movements.

Good trading services would not present information overload, but provide the right balance of information and functionalities. P&C technique establishes this balance to obtain optimal usability. These techniques allow the user to individualise the stock-trading experience by providing means that allows the user to specify and meets their own requirements through user profiles. Successfully implemented, the trading service uses these profiles to predict users' actions and provides information and functions pre-empt of request.

2.2 Personalisation and Customisation: Concepts and Measures

Personalisation and Customisation is the act of manipulating information and functionality based on the users' profile or previous activities (implicit), or set by the user (explicit). These P&C techniques are:
Explicit customisation refers to the case whereby the user explicitly customises any part of the functionality or interface based on revealed requirements, e.g. optimisation of navigation using "My Favourites" (msn.com).
Profile based customisation uses a profile of interests and behaviour that is built up of the user to select the appropriate content or functions to display, e.g. localisation of language and content (google.com); pre-population of form entries (yahoo.com).
Behaviour or "click-stream" based customisation selects content or service to display based on the users' behaviour of past activity, e.g. automatic notification of updates to previously visited pages (vbulletin.com).
Collaborative based customisation considers past behaviour patterns of a service user or community of users, e.g. recommended of contents to which others

users in the same context are most interested in (amazon.com).

A system that provides services normally comprises of an interface layer and a functionality layer. The functionality layer defines all business functions that are made available through the interface. This architecture tends to offer all users with the same set of system functions and services. Extension by another layer (P&C layer) allows rules to filter only the relevant content and specific functionalities, as shown in Figure 1. These personalisation rules are governed by user and content profiles. User profiles contain attributes the location, job title and interests of the user. Content profiles would contain the price, brand and creator of the product (Instone, 2000).
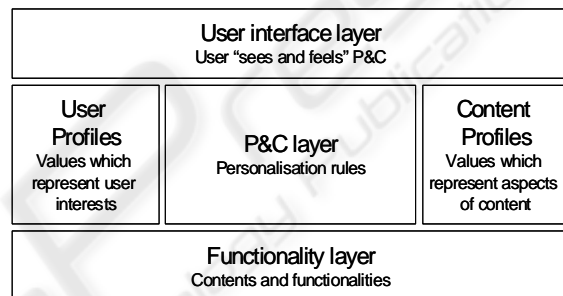

Figure 1: P&C information architecture

The level of user involvement determines the balance of implicit to explicit P&C techniques used in a system. The degree of P&C use must be monitored, as too heavy use of explicit user involvement upfront discourages users. With the right balance of explicit and implicit involvement, users build up trust and are more willing to commit more sensitive profile information. Implementing P&C techniques in e-trading service will foster costumer trust and clearly defined responsibility of the e-trading service would encourage loyalty and customer retention.

2.3 Research Methodology

A survey followed by a qualitative analysis features the research approach we have adopted. The survey takes a cross section of top performing e-trading companies across Europe and the US. They are E-trade (US), Charles Schwab (US), Reuters (US), TD Waterhouse (US), Ameritrade (US), Egg (UK), Royal Bank of Scotland (UK), Alex (the Netherlands), and Binck (the Netherlands). The use of P&C techniques was highlighted and evaluated for all trading activities in each of the nine
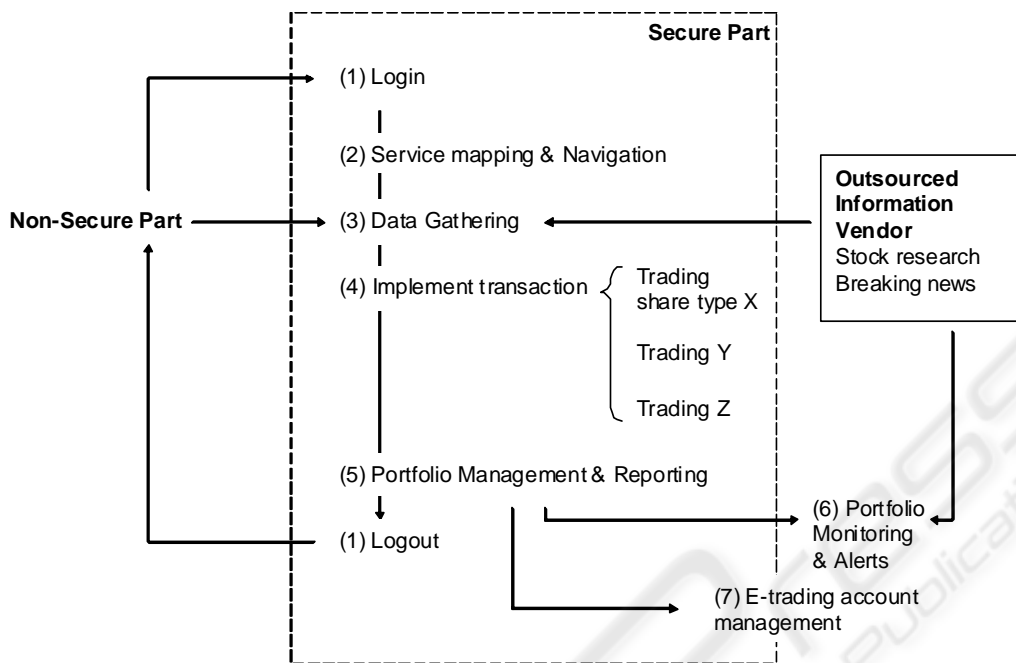
Figure 2: Trading activities to be evaluated

companies. This produces a guide for optimally implement P&C techniques in e-trading.

For a rigid and comprehensive investigation of each e-trading company and to establish where to best organise P&C into the most relevant stages, a generic trading transactions process was generated from an overview of each service. Opportunities of P&C were then categorised in accordance to each stage of activity. Some activities do not require a secure environment whilst for others a secure environment is essential. The seven major activities in e-trading are depicted in Figure 2, which reflects the areas of research.

User identity verification is conducted as the first activity (Activity 1), which allows the user to login and sign out. Service mapping and navigation (Activity 2), provides an overview of all available services. Data gathering (Activity 3), presents market activity and breaking news often from outsourced information vendors such as Bloomberg and Telerate (Veale, 2001). Trading and stock ordering (Activity 4) allows the purchasing and selling of stock based on purchasing criteria and limits. Portfolio management and reporting (Activity 5), presents the collection of stocks held and archives past trading activity. Portfolio monitoring (Activity 6), alerts the user of market condition regarding stock held of interested in. E-trading account management (Activity 7), performs administrative duties and allows the use to set trading preferences.

We evaluated each company based on the seven activities based on the following five usability criteria. (Beynon-Davis, 2004):

Level of "individualisation" evaluates the success of P&C techniques and the level of intelligence each e-trading service provides.

"Ease of use" rates the companies on clarity of navigation, logic of e-service and consistency of contents and layout.

"Accessibility" evaluates the help functions and stock-trading guides for new user or inexperienced share trader.

"Efficiency" scores the time per transaction, number of keystrokes to purchase one stock and the levels of navigation present in each company.

"Facility to return" rates the ease of error correction after mistaken input.

From this ranking, the top companies use of P&C techniques can be highlighted and evaluated.

3 BEST PRACTICES IN E-TRADING

The top five companies were E*Trade, Alex, Binck, Reuters and Egg with Table 1 depicting the results.

The evaluation based on usability criteria showed that two categories of e-trading sites could be distinguished, those companies targeting

Table 1: Top performers in e-learning

Trader / Activity	E-Trade	Alex	Reuters	Binck	Egg	Schwab	TD Water-house	Ameri-trade	RBS
1 User Identity Verification	5	5	5	5	4	4	4	3	3
2 Service Map & Navig	5	5	4	5	5	4	4	4	4
3 Data Gathering	4	4	4	4	4	4	3	4	4
4 Stock Ordering	5	5	5	4	4	4	4	4	4
5 Portf Mgmt & Reporting	5	5	4	4	4	3	3	3	3
6 Portf Monitor & Alerts	4	3	5	4	5	5	5	4	3
7 E-Trading Acc Mgmt	4	5	5	4	4	4	4	4	3
Total Score	**32**	**32**	**32**	**30**	**30**	**28**	**27**	**26**	**24**

experienced customers (those with more than three years of trading experience) and non-experienced customers (less than three years). The top company targeting experienced customers was E*Trade and targeting non-experienced customers was Alex. The distinction between targeting experienced and non-experienced customers does not only differ on functions, but also on amount of market information and depth of analysis (as observed in Ameritrade), and commission charged; the trader chooses the most appropriate package. To successfully maintain market share in each market, all e-trading services should provide both types of platforms and let the user choose the package that it requires.

4 PERSONALISING E-TRADING SERVICES FOR COMPETITIVE EDGE

Due to low search costs e-trading is under heavy price competition. The ease of comparing commission charges forces many e-trading services to compete purely on price. For successful retention of customers, e-trading companies must provide a superior service through individualisation so as to closely match customer's needs. Furthermore a superior service it will enhance differentiation and abandon unprofitable price competition. P&C techniques form part of this individualisation strategy and currently implemented techniques are outlined in Table 2.

As shown, P&C techniques can be performed in all phases of e-trading. A selection of the five most effective techniques is presented below. The number

between brackets refers to the corresponding type of customisation as described in Table 2.

4.1 Customisation of Menu and Interface (2a & 2b)

One of the most obvious means of customisation is allowing the user to adjust the menu and navigation map of the website. This results in highly accessible functions. Schwab Trader has successfully implemented this type of customisation, as shown in Figure 3. It allows the user to arrange and save the layout of charts and stock market analysis.

The user determines the most important activities and information for display and saves this layout. By saving different interface layouts a user can create different profiles: e.g. one basic layout for trading at work, and a more extensive layout that allows for detailed stock analysis for the evenings at home.

4.2 Interactive Data Charting (3a)

The data-gathering phase of e-trading is very suitable for customisation. Charts and figures can be configured in different ways, e.g. trend lines can be added and modified, and different charts can be integrated to establish moving averages. Figure 4 shows an example of interactive data charting as implemented in the Schwab Trader website. With this type of customisation, efficiency of use is significantly improved with the option of saving the chart format setting for future uses.

Table 2: Current P&C Techniques

Activity	P&C Techniques	Trader or Company
1 User Identity Verification	1a Change preferred start page, e.g.from "non-secured homepage" to "log in" page.	Schwab
	1b Individualise first secured page to users' preference, e.g. change from secured homepage to inbox or portfolio management pages.	Schwab E*Trade
2 Service Map & Navig	2a Fully customisable menu bar and windows, e.g. change the number of, position of and size of windows	Schwab
	2b Creation of several custom display profiles depending on the complexity that trader needs for current trade, e.g less analysis and stock news presented to user when e-trading is performed at work, comprehensive stock research when user implements trading in evenings weekends.	Schwab
	2c Drop down menu of frequently visited functions pages or information services set by user, e.g. favourites.	Reuters
3 Data Gathering	3a Format display of interactive charts according to user settings, e.g according to pre set time range of prices.	Schwab Ameritrade Reuters
	3b Displaying news and quotes related to trader's interest or portfolio holdings.	Reuters
	3c Advisor's message and emails of trading tips on shares which fit traders' profile.	Schwab-Messenger Reuters-MSN
	3d List all stocks previously browsed in current session	e-bay
4 Stock Ordering	4a Self-selection between simple view (non-experienced users) or complex view (experienced users). The user decides whether its walk-through mode or expert mode and determines the number of checks and limits of trading	Binck
5 Portf Mgmt & Reporting	5a Sort stocks in portfolio to display according to user requirements	E*Trade
	5b Create custom views of portfolios and watch-lists.	Reuters
6 Portf Monitor & Alerts	6a Pre-set alerts on stock price movements, e.g upon reaching price limits, trading service send alart to any medium of communication including e-mail, MSN. SMS or i-mode.	Egg
7 E -Trading Acc Mgmt	7a User specifies the frequency of confirmations, e.g user is able to turn on or off stock order confirmation.	Ameritrade
	7b Create key-stoke short cuts t o vital functions , e.g. cont+p to view portfolios page.	Yahoo

4.3 Personalised Stock Research and Trading Advice (3c)

An instant messenger window gives the e-trading interface a more individualised feel; the customer does not face a static data chart. Schwab Trader has provided customers with a so-called "Communications Panel" that answers customer specific queries in real time (see figure 5). This is important in building up a customer firm relationship and thus adds to customer retention. "Ease of Use" and "Accessibility" is high as the interface is based on the widely used MSN Messenger layout. Reuters, for example, solves these two problems by directly using MSN Messenger for real time customer queries.

4.4 Individualise Complexity of Transactions' Criteria (4a)

Customers will have different amount of trading experience. For those users who are not accustomed to finance, there should be a simple stock-ordering interface with minimal distraction and confusion.
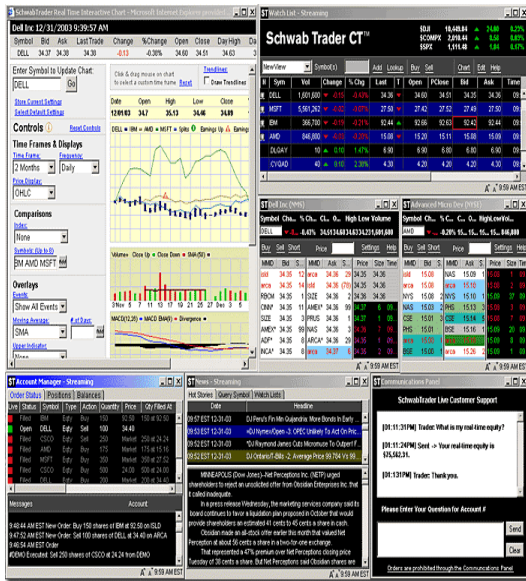
Figure 3: Schwab Trader's fully customisable trading interface
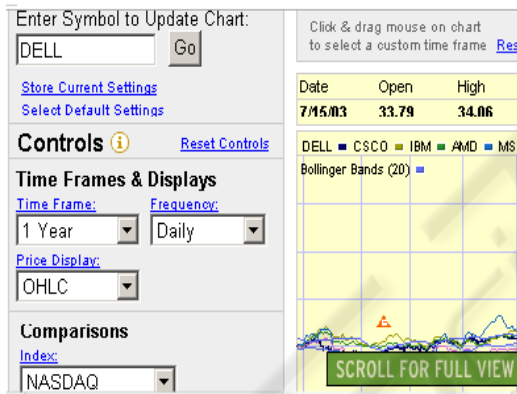

Figure 4: Schwab Trader's interactive charting

For those who have traded extensively, they require a more complex interface that allows for further refinement of the purchasing conditions.

Binck, has implemented this concept by providing two different trading interfaces (see figure 6), a simple view and a complex view. The simple view provides high-level guidance and literally 'walks' the user through making trade transaction. The advanced view allows the user to make extensive use of stock purchasing conditions. The advanced view also provides little help of guidance and hence minimal interference.

4.5 Custom reports (5a & 5b)

Trading activity is profitable, but is highly risky. The firm (agent) simply implements the trade on behalf of the customer (principal). This can lead to
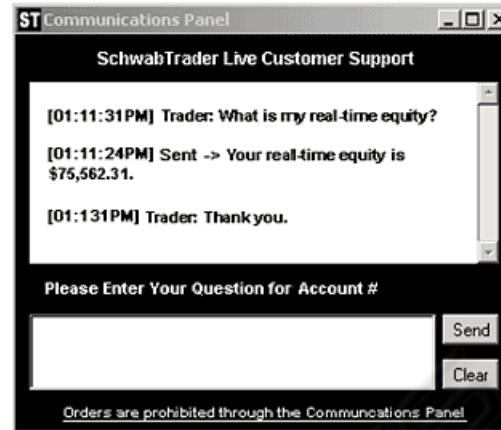

Figure 5: Schwab Trader's personal trading advisor

the principal-agent problem of the firm (agent) not acting in the best interest of the customer (principal). Records of trading activity in the form of reports ensure the clear definition of responsibilities (Mishkin, 2001). For reports of portfolio performance to be of use, they have to be easy to interpret. The user often does not need to see all the data, so something is needed for sorting the data into relevant information.

E*Trade and Schwab Trader use customisation techniques to create an interactive report which lists the relevant information for the user to interpret and use. E*Trade's P&C technique in sorting stocks displays the stocks held according to different requirements including "performance", "research" and "trader".

Schwab Trader's applies the same technique and allows the user to sort stocks in its watch list. Sorting conditions include "company name", "volume of stocks", and "level" and "percentage" of change. These views can be saved to be retrieved at a later stage (5b).

4.6 Caveats

Comparing the e-trader rankings in section 3 with the examples of P&C techniques, there is a clear warning that the sole use of P&C techniques does not imply high usability. Although E*Trade and Alex were ranked as the highest firms providing e-trading services, they were not central of discussion in P&C techniques. This suggests that extensive use of P&C techniques is not a substitute to good interface design based on the five ratings criteria. Additionally users may make mistakes that are recorded, or fill in wrong personal information that generates bad profiles (Esteban, 2000). This could render profile based and behaviour customisation techniques useless. Only the monitored use of these
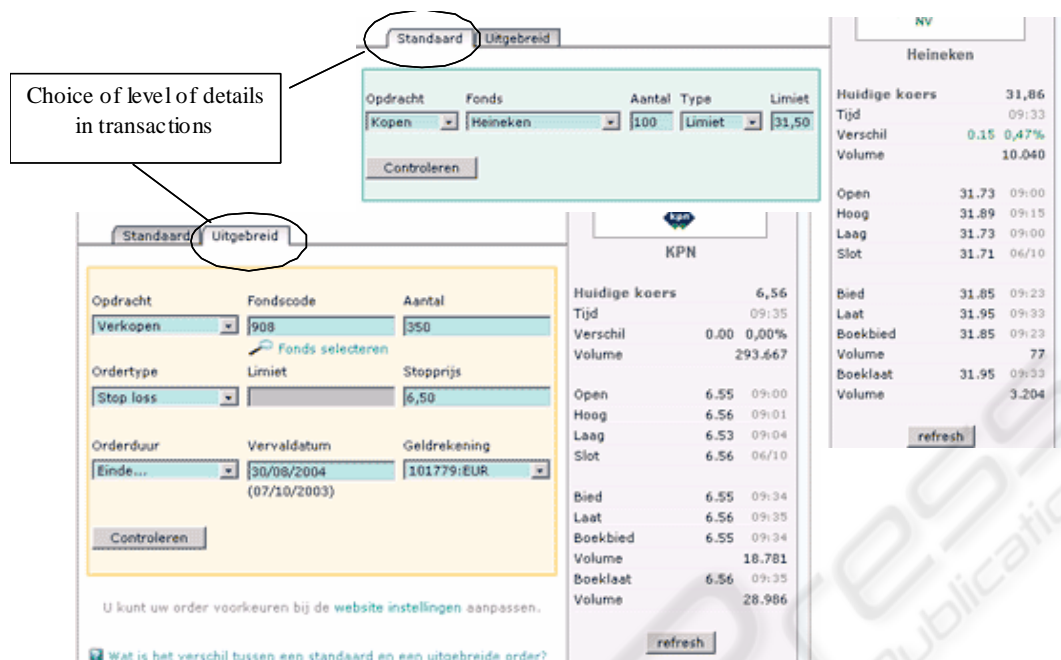
Figure 6: Binck's Stock Transactions interface

techniques will add value and foster customer trust, which will build on exciting customer-firm relationships. This will lead to the retention of e-trading market share.

5 CONCLUSIONS AND FUTURE WORK

Customer retention is an extremely important factor to a firm in remaining competitive. P&C techniques are an important means of achieving this goal. The research of top performing e-trading companies has suggested a series of efficient methods in P&C for e-trading. Most of which have built P&C techniques into the interface of the company's application

The increased use of P&C techniques suggests that these techniques add value to the interaction between the customer and the supplier, i.e. the financial institution. Models describing the pre-transaction process of e-commerce, such as the Landscape model developed by Verhagen (Verhagen, 1999) originally presented P&C techniques as "adaptation" of the website and " customisation" of the product on offer. The new P&C techniques we investigated show that P&C takes a more central role in de pre-transaction process: both the supplier and the customer have the ability to further tailor the transaction process to the needs of the customer. The supplier can customize the pre-transaction process based on customer characteristics and previous actions of the customer.

Even product characteristics (fees and payment conditions) may be customised to specific customer characteristics. The customer can customise using his or her own user profile, and can increasingly "adapt" the product on offer – in this case the stock purchasing order – to his or her preferences.

Further research in other fields of e-commerce may be necessary, but based on this research it seems fair to conclude that the current pre-transaction models describing e-commerce are too limited in describing personalisation and customisation. Information and interaction currently take a central role in these models. On the other hand the research suggest that the progress in P&C techniques will take a more central role.

REFERENCES

Allen, C., Kania, D. and Yaekel, B., 2001, One-to-One Web Marketing: Build a Relationship Marketing Strategy One Customer at a Time, John Wiley & Sons

Beynon-Davis, P, 2004, *E-Business*, Palgrave Macmillian, Basingstoke

Esteban, A. D., Gómez-Navarro, P. G., Jiménez, A. G., 2000, Evaluating a User-Model Based Personalisation Architecture for Digital News Services, in *proceedings of 4th European Conference, ECDL 2000*, Lisbon

Instone, K., 2000, Information Architecture and *Personalization. An Information Architecture-Based Framework for Personalization Systems*, whitepaper,

at http://argus-acia.com/white_papers/personalization.html

Mishkin, F, 2001, The Economics of Money, Banking and Financial Markets, Addison Wesley, Boston

Spector, R., 2002, Anytime, Anywhere: How the Best Bricks-and-Clicks Businesses Deliver Seamless Service To Their Customers, Perseus Publishing, Cambridge

Veale, S. R., 2001, *Stocks Bonds Option Future*, Prentice Hall Press, New York.

Verhagen, T., July 1999, Towards an Internet-generation Pre-transaction model, in *Serie Research Memoranda*, Research Memorandum 1999-37, Vrije Universiteit, Amsterdam, The Netherlands.