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Flow in eBank Satisfaction Measure

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Abstract: We know from the literature and from experience that consumers combine utilitarian perceptions, emotions, non-logic and symbolic features to produce attitudes, affective states and ultimately, behaviour. This reasoning is valid for the Internet as well. In this work we take a hybrid approach, using several models (Technology Acceptance Model, Flow Model and Personalization Concepts) from the fields of Marketing, Psychology and Information Systems, in order to give a wider description of the eBank consumer behaviour. Flow is proposed as a possible metric of the consumer experience online, and the estimated model shows that this construct is a major determinant of satisfaction (measured as a cognitive state), positive affects and exploratory behaviour (measured as research behaviour regarding unplanned information and unplanned contracts), even in a goal-directed activity like banking. The adaptive personalization has shown to be a relevant determinant of the flow state. A specific scale has been developed and applied to an online survey at a major Portuguese online bank. Seven hundred and fifty-four valid observations have been collected and the estimated structural equation model affords an integrated perspective of perceptions and provides relevant information for cluster procedures.

Keywords: eBank private consumer behaviour, flow state, perceived quality, emotions.

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INTRODUCTION

eBank customer segments are generally based on two main variables: operations (number/type) and profitability. However, there are other no less important and rarely measured variables, such as the psychographic ones - perceptions, attitudes and emotions- involved in an interaction with the web service. These variables can help to establish new clusters and provide some insights into an understanding of consumer behaviour. It is just as important to know why consumers use the eBank as it is to understand how they feel while they are using it.

The main objective of this research is to find out whether there are other variables, besides the pure management ones, that are relevant in the explanation of consumer satisfaction and loyalty. We propose the existence of a flow construct in a hypermedia business service such as internet banking. Even though this is a predominantly goal-directed service, the Internet channel provides wider possibilities for hedonic perceptions and behaviours.

From the literature of consumer satisfaction we have chosen some frequent constructs such as perceived quality and loyalty, which will be included in our investigation.

From the flow literature we have seen that some antecedents must be considered, such as challenges, control, skills, enjoyment and experience.

FLOW AND QUALITY AS ANTECEDENTS OF SATISFACTION

The **flow** state has been proposed as a possible metric in the online user's experience (Hoffman & Novak, 1996; Novak, Hoffman & Yung, 2000; Chen, *et al.*, 2000; Poole & O'Cass, 2001; Koufaris, 2002). Once in flow, the user is highly concentrated, engaged in the activity, forgets everything that is around him (or her) and has a distorted perception of time. Perceived **control** has been used in many research works as a flow antecedent and is defined as the user's perceived level of ability to navigate on the web successfully (Ajzen, 1991; Novak *et al.*, 2000). One of the direct flow outcomes is the **exploratory behaviour** during a web navigation. The user is willing to explore the web pleasantly, even if it is goal-directed motivated navigation session. We defined this construct by adapting the literature formalizations to the eBank context, adding operations such as unplanned information search and unplanned contracts (Baumgartner & Steenkamp, 1996; Novak *et al.*, 2000), in a way similar to unplanned purchases in Koufaris' (2002) work.

Considering the affective nature of satisfaction, the models have been improved and adapted to the complexity of consumer behaviour with more accuracy (Westbrook & Oliver, 1991; Liljander & Strandvik, 1996; Oliver, 1994). Srijumpa *et al.* (2002) have concluded that, in the eBank context, satisfaction is a positive emotional state (pleasure, joy and excitement) that results from comparing the service with one's expectations. We will use emotions as a predominant affective construct. **Enjoyment** is defined as a unidimensional emotional construct through the combination of the activation and joy dimensions. This procedure has been used in a consistent way in previous studies (Ghani & Deshpande, 1994; Childers *et al.*, 2001; Novak *et al.*, 2000; Koufaris, 2002; Koufaris & Hampton-Sosa, 2002).

Based on quality literature, we have defined this as a second order construct, manifested in the *offer* (products and services), *convenience*, *trust in the medium*, *trust in the information* and *support*. Some aspects of the Technology Acceptance Model (Davis, 1989) have been included, such as competence (Cheung & Lee, 2000), reputation (Pavlou, 2001), performance and speed (Malhotra & Galleta, 1999; Koufaris & Hampton-Sosa, 2002), and convenience (Kwon & Chidambaram, 2000), which correspond to the SERVQUAL dimensions (Zeithmal *et al.*, 1990) of reliability, security, answer capacity and empathy, respectively. The quality goes beyond utility, so the utilitarian vector implicitly includes the perceived quality set (Rust & Oliver, 1994) (although the opposite is not necessarily true). In this study satisfaction is used to reveal two dimensions of the consumers' perceptions: confrontation with one's expectations and the evaluation of the bank service. The measure of this construct is based on other research about electronic banking (Methlie & Nysveen; 1999). As to the **loyalty** measure procedure, we consider that it cannot be done solely based on past behaviour. Instead, the intention to use the eBank in the future must also be considered, in order to distinguish loyalty from other forms of repeated use (Moutinho & Smith, 2000; Pedersen & Nysveen, 2000).

The **personalization** feature is one of the main tools of client support in this channel and it gives the user the possibility to reduce the time spent on information search, interactive help and decision simplification in complex contexts (Laroche *et al.*, 2000). The personalization systems can be categorized in customisation (where the user personalizes his/her own environment) and based on user profiles (known as adaptive or proactive configuration, like a recommendation agent). This is an exploratory construct that tries to measure the evaluations about aesthetic features and personalization on the web.

The user's accumulated **experience** with the service has been described as a relevant influence on the user's perceptions and behaviour (Novak *et al.*, 2000). The experience calculation was made based on two of the bank's variables: how

long the customer has been with the service and number of connections made since the first day with the service.

HYPOTHESIS DEVELOPMENT

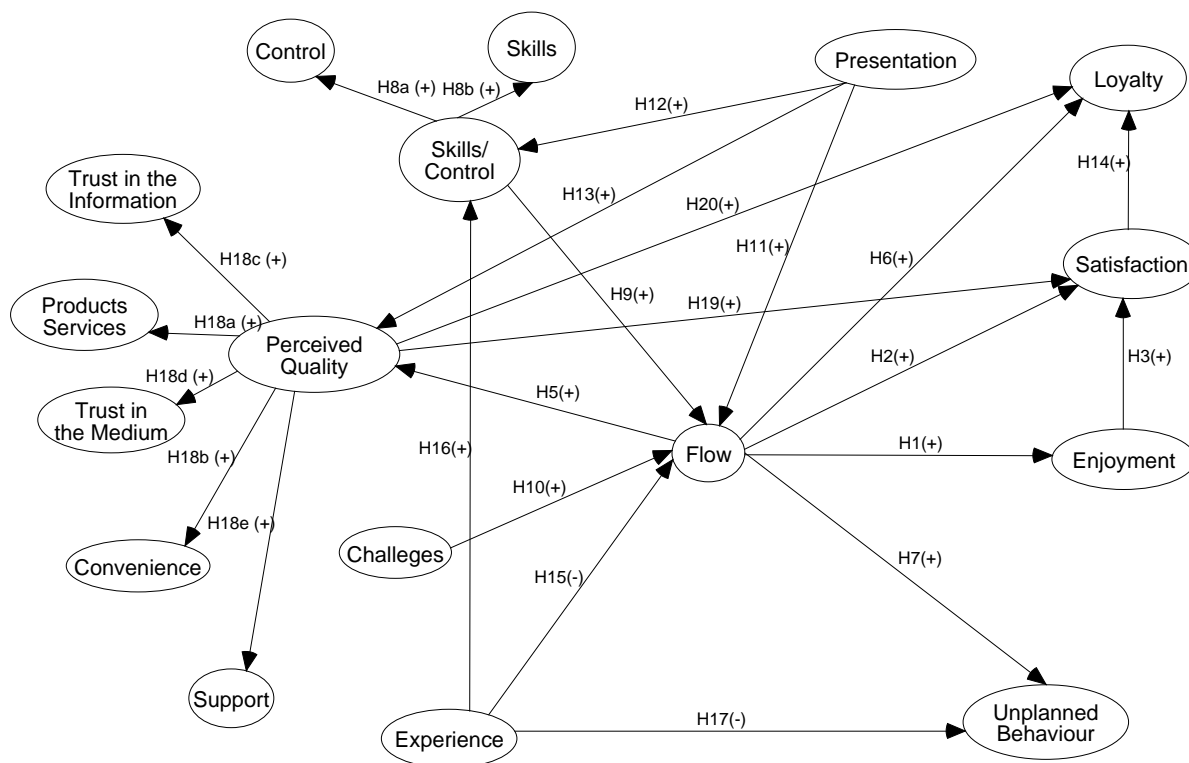
To simplify, in Figure 1 we present the proposed model and the implicit hypothesis as well. In order to evaluate whether emotion has a discriminating effect on the perceived quality levels and whether it moderates the impact of quality on satisfaction, we assume hypothesis H4a: Users with a greater level of enjoyment will have higher perceptions on perceived quality, and H4b: The impact of perceived quality on satisfaction will be significantly higher In users with a greater level of enjoyment.

RESEARCH METHODOLOGY

Several qualitative interviews with leader eBank sector experts (in Portugal and Spain) were carried out to improve the survey instrument, and a *pretest* with MBA students was also performed. We redefined some constructs and items that were adapted to the European bank context. The survey was done on-line with the private customers of the major eBank in Portugal. It was available to 10029 active users (who registered more than 10 logins to the service in the last 3 months); 754 complete answers were collected.

With the data we estimated a structural equation model using AMOS 4.0 and we also proved the unidimensionality, internal consistency and validity constructs.

The confirmatory factorial analysis allowed a scale evaluation and the model depuration. The model development strategy was used, allowing respecifications. Finally, several competitive models were evaluated. Some multi-group analysis was implemented to study the emotion effect in perceived quality, and the moderating role of demographic variables in the impact of flow on other constructs. We will also explore whether any relevant segmentation exists based on the survey constructs and demographic variables as well.

FIGURE 1. Proposed Conceptual Model

RESULTS

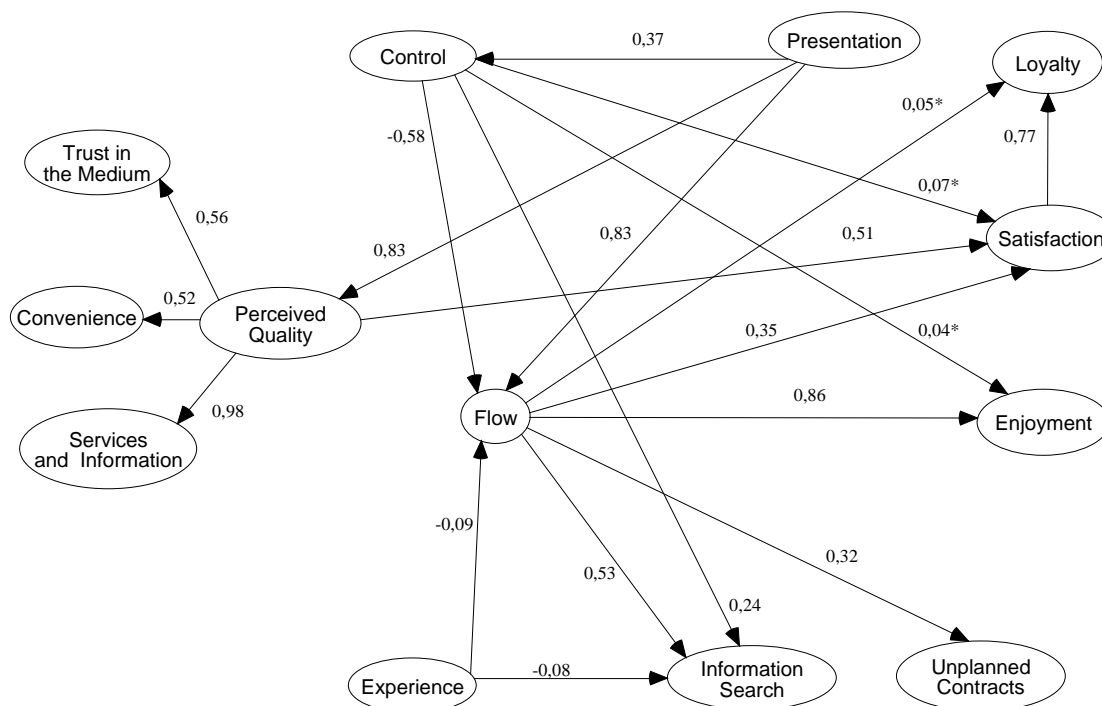
In the course of correlations and exploratory factor analysis, the *perceived quality* construct was redefined, because the *support* construct revealed inconsistency and *trust in the information* showed strong correlations with *products and services*, so they were integrated into the same construct. From confirmatory factor analysis of *perceived quality* we concluded that the constructs fit well ($\chi^2=117.43$; $df=32$; $CFI=0.954$; $RMSEA=0.06$) and are free from multicollinearity (Tolerance= 0.721; VIF=1.387). The overall confirmatory factor analysis revealed good fit measures ($\chi^2=985.34$; $df=419$; $CFI=0.924$; $RMSEA=0.042$; $NFI=0.876$; $GFI=0.924$; $AGFI=0.904$), showing the existence of a causal model. The reliability and validity analysis showed acceptable results. Regarding reliability, the Cronbach *alphas* and reliability index obtained were about 0.6-0.7. The extracted variance of each construct is greater than 0.5 for the vast majority of cases. The convergent validity is guaranteed by *t* tests and standardized factor loading greater than 0.7. The discriminant validity was verified through Fornell & Larcker (1981) and Anderson & Gerbing (1988) tests.

The final causal model, after some depurations, shows a good fit ($\chi^2=907.85$; $df=417$; $CFI=0.929$; $RMSEA=0.040$; $NFI=0.877$; $GFI=0.928$; $AGFI=0.914$) and the standardized direct effects coefficients are shown in Figure 2.

The flow construct exists and demonstrates good reliability, and also reveals significant relations with almost all constructs, indicating that it is an essential dimension for characterizing the user experience in hypermedia contexts. The Novak *et al.* (2000) and Koufaris (2002) research pathway of searching for a significant relationship between flow and exploratory behaviour is finally verified, as a link both to unplanned contract and unplanned information search. Flow has a significant impact on satisfaction, fidelity and enjoyment. Satisfaction and enjoyment have no significant relationship between them, revealing an independence between cognitive and affective evaluation.

The results confirm the customer's double identity as a shopper and as a creative technology user, since *flow* (hedonic component) and *perceived quality* (cognitive utilitarian dimension) have both a significant impact on satisfaction and loyalty. From Figure 2 we conclude that the impact of perceived quality on satisfaction is stronger than the impact from flow. This is not a strange result given the predominant goal-directed and utilitarian nature of the service.

FIGURE 2. Estimated Model (standardized direct effects)



Note: * standardized total effects

There is a twofold impact of presentation on flow (one positive direct and one negative indirect), insinuating that further investigation is needed to discriminate presentation on the complexity/novelty axis.

It is seen that support is not a part of perceived quality (further investigation is also needed).

The hypothesis that experience on the Internet makes activities more routine, less exploratory and with less flow is confirmed by the results.

All hypotheses have been confirmed, except: H3, H5, H8a, H8b, H16, H18c, H18e and H20 (see Figure 1 for hypothesis and Figure 2 for results).

To contrast the hypotheses H4a and H4b, we divided individuals into two groups according to their enjoyment level (above or below median level). Comparing means (*t* and nonparametric tests) we corroborate hypothesis H4a: the level of perceived quality is significantly greater ($p < 0.000$) for the above median level enjoyment. We concluded from the multi-group invariance analysis that the enjoyment level has a moderating effect on the impact of perceived quality on satisfaction: this impact is 0.67 for the below median enjoyment level and 0.86 for the above median level. Using the Lagrange Multiplier procedure, we compared the Chi-squared results and concluded that they are significantly different ($p = 0.047$) among enjoyment groups (supporting H4b).

The relevance of the inclusion of flow in the satisfaction study is complementarily proved by the R^2 (determination coefficient) of satisfaction. On including flow, the R^2 improves from 0.64 to 0.73 (this specific statistic was estimated with LISREL 8).

As to the demographic variables, and after a multi-group invariance analysis of the outcomes of flow, we conclude that males over 32 years of age contract significantly more and the 28-32 year-old group is the group that enjoys the service the most.

The two clusters obtained using flow and enjoyment revealed a discriminant power among all surveyed constructs (perceived quality, satisfaction, loyalty, control, presentation, experience, unplanned contracts and information search) but no significant differences among demographic variables were found. Group 1, which we call “less flow”, comprised 421 individuals, while group 2, “more flow”, included 333 users.

CONCLUSIONS

The model provides a reliable and parsimonious representation of the relations between the user's perceptions of experience online (control, flow, enjoyment), the *interface* features (quality, presentation) and the behavioural outcomes (satisfaction, loyalty, impulsivity- unplanned contracts and information search).

Although the internet banking is a goal-directed activity in nature, flow exists and it is relevant in the explanation of satisfaction, loyalty, emotion and impulsivity.

Emotions (here formalized as enjoyment -a combination of pleasure and activation), determine the perceived quality and moderate its impact on satisfaction.

The utilitarian vector (perceived quality) has no relation with the hedonic one (flow).

Control and presentation are the bank's tools for

formanipulating the flow level. Presentation has the same impact both on perceived quality and flow; in other words, its impact is both utilitarian and hedonic.

The demographic variables seem to be of minor use in classifying the consumers' behaviour and perceptions. Middle-aged men seem to execute more unplanned contracts; however, no other relevant information can be extracted from demographic data.

Enjoyment and flow are useful variables for segmenting the users, but they do not depend in a clear and relevant way on demographic variables. The flow state and the emotional level cannot be accurately measured from the bank's database. A survey is necessary to find out users' perceptions. This feature opens the possibility of biometric data collection.

User satisfaction can be accurately formalized and measured in traditional contexts without using the flow and emotion constructs, but a satisfaction assess in a computer mediated environment, without using experiential components of flow, control and emotions undoubtedly leaves room for improvement.

IMPLICATIONS

Increasing consumers' enjoyment should be one of the bank's marketing objectives. The target-group of a marketing plan could be the group with low levels of enjoyment, because quality perceptions and satisfaction depend on

their emotional state. The total perceived quality could improve without any real change in products and services.

At web design level we know that the direct impact of presentation on flow is stronger than the indirect one (through control), so we can increase complexity without losing satisfaction (regular changes in contents, such as news and proactive recommendations). A possible personalization tool is the suggestion of products and services tailored to the preference profile of each user, such as personalized *newsletters* reminding users of the facilities of the service.

The bank should stimulate the exploration of contents by the user, providing links to his/her personal interest sites, product *cross-selling* based on the user profile (such as technologies, cars, travel offers) or with activities that allow implication and creativity, such as auctions for loans and deposits.

LIMITATIONS AND FUTURE RESEARCH

One of the possible future procedures is to replicate the survey (with some improvements) in order to cross-validate the measure instrument. We have shown the results and discussed them with a major eBank in Spain and at the present time the survey we used in the investigation is being applied in their consumer satisfaction measurement. Another interesting line of research would carry out the survey on web sites with more hedonic behaviour.

The *presentation* construct needs more investigation. A wider item formulation is necessary in order to incorporate specific characteristics of the web site, such as the number of links, presence of music, evaluation of precise recommendations, and the possibility of integrated telephone support on the Web. The Internet is not just an image platform and the eBanks are underestimating the multi-channel possibilities.

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