MIXING BUSINESS AND PLEASURE: EMPIRICAL IMPLICATIONS FOR TRUST IN MOBILE BANKING

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ABSTRACT

Trust is essential for the development of e-commerce and its subcategories, like mobile commerce, online banking, and mobile banking (MB). Through mobile devices, MB enables customers to access their accounts and make transactions at anytime and anywhere, and this technology can contribute to expanding banking services, especially in developing countries. Users can assign utilitarian and hedonic values to mobile devices, and the relationship between these values and trust in MB has motivated the development of this research. Therefore, the purpose of this paper is to analyze the relationship between trust in MB and hedonic/utilitarian perspective values. The sample evaluated in this study was comprised of 1,080 responses from Brazilian undergraduate students. Confirmatory Factor Analysis and Structural Equation Modeling were used to analyze the data collected, and to test the hypotheses. The main results indicated that trust in MB is positively related to the utilitarian value of mobile devices, social influence, gender (male) and personal innovativeness; a negative relationship was observed between age and trust in MB. These results have implications for banks and MB technology developers, once hedonic and utilitarian perspectives are related with mobile devices.

Keywords: Mobile banking; Electronic commerce; Hedonic perspective; Utilitarian perspective; Trust

1. Introduction

The development of mobile phones, together with the growing reach of internet, creates new commercial opportunities [Yu 2012], facilitates business/consumer transactions [Yang & Lee 2009] and enables the emergence of new technologies, which is the case of Mobile Banking (MB). A better understanding of MB adoption process has implications for customers and banks that offer this technology [Al-Jabri & Sohail 2012]. Perceived risk and trust are essential factors related to MB use and adoption.

Customers use MB through mobile devices, which confers ubiquitous characteristics to this technology. People perceive mobile devices as personal possessions [Hong & Tam 2006], so that these products and their mobile applications are present in the users' personal lives [Li et al. 2012]. As information technology (IT) users are also consumers [Holsapple & Wu 2007], mobile device users represent potential MB adopters. Thus, assuming that the values assigned to mobile devices will also play an important role in MB adoption is a natural consideration.

There are two types of value perspectives associated with products: utilitarian and hedonic [Dhar & Wetenbroch 2000; Holbrook & Hirshman 1982; Batra & Ahtola 1990; Chitturi et al. 2007; Chitturi et al. 2008]. The utilitarian perspective refers to an instrumental, functional, task-accomplishment and productivity-oriented value; the hedonic perspective refers to entertainment, fun and pleasure-oriented value [Crowley et al. 1992; Batra & Ahtola 1990; Babin et al. 1994; van der Heijden 2004; Kim & Hwang 2012; Al-Debei & Al-Lozi 2014].

Customers attribute a utilitarian value to some products, and a hedonic value to others [Crowley et al. 1992; Turel et al. 2010; Dhar & Wertenbroch 2000], but these attributes are not necessarily two ends of a unidimensional scale [Okada 2005]. Some products can be more utilitarian, others can be more hedonic, and still others can present both

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dimensions [Batra & Ahtola 1990; Voss et al. 2003]. Toothpaste, for example, may have a utilitarian (tooth decay prevention) and a hedonic value (good taste) [Batra & Ahtola 1990]. It is also important to highlight that customers' value and customers' satisfaction have a positive relationship [El Hedhli et al. 2016].

Technology can present both hedonic (enjoyable) and utilitarian (useful) characteristics [Turel et al. 2010], and so can mobile devices [Hong & Tam 2006]. In this sense, these values are relevant in the study of mobile internet quality, mobile data services, mobile commerce, virtual health advisory services, online communication process, online shopping, and quality of websites [Overby & Lee 2006; Yang & Lee 2009; López & Ruiz 2011; Li et al. 2012; Kim & Han 2011; Kim & Hwang 2012; Al-Debei & Al-Lozi 2014; Etemad-Sajadi & Ghachem 2015; Li & Mao 2015]. Although MB seems to be more task-oriented than focused on applications for hedonic use, this technology can be influenced by both utilitarian and hedonic perspectives [O'Brien 2010; Li et al. 2012]. Furthermore, the results obtained by Botzenhardt et al. [2016], indicate that the components of design (form and function) are positively associated with satisfaction of mobile data services, in the context of mobile banking.

Previous research highlight that customers (and users) can attribute different values to products. These values are relevant to understand the use of such products and to know more details about the interaction between the users and those that offer the products. As presented before, based on hedonic/utilitarian we also can construct a panorama to study the adoption of contemporary technologies, especially because individuals usually need to rely on a device to access these technologies.

Besides the close relationship between trust in MB and utilitarian/hedonic values of mobile devices, to the extent of our knowledge, this relationship has not been empirically studied so far. To fill this gap, the aim of this paper is to analyze the relationship between trust in MB and utilitarian/hedonic values of mobile devices. Trust is an important factor to understand customers' reluctance to use the internet for e-commerce [Palvia 2009], m-commerce [Qingfei et al. 2008], online banking [Al-Somali et al. 2009; Lee 2009], and mobile banking [Lin 2011; Shaikh & Karjaluoto 2015]. The main difference between internet banking and ATM/branch banking services is the data transmission channel [Xu et al. 2009]. Consumers perceive risks in the internet communication channel, so that lack of trust, privacy, and security has been a common obstacle to its adoption [Xu et al. 2009; Al-Jabri & Sohail 2012; Ivaturi & Janczewski 2013]. In this way, trust and technology factors are important to develop and sustain an online relationship [Palvia 2009]. Since MB adoption also requires communication through internet, this technology is subject to concerns with privacy and security; therefore, before using MB, users need to trust in this app, download it and include their personal bank information.

The sample investigated in this study was constituted of undergraduate students from the southeast Brazil. Some banks of this country are among the world's most profitable financial institutions [Diniz et al. 2009]. Brazil has a special position in Latin America [Prado et al. 2009], especially regarding the size of its IT market [Prado et al. 2009], and the complexity of its banking system [Nakane & Weintraub 2005]. Nevertheless, MB use and adoption in Brazil are not widespread [Febraban 2015], and risk perception is one of the most important factors to understand this low adherence [Cruz et al. 2010].

Cultural aspects and differences in the economic and technological development status of countries affect the security of online banking [Lim et al. 2010]. In comparison with developed countries, developing nations are lagging behind in areas such as communication infrastructure, and technical know-how [Khalfan & Alshawaf 2004]. Thus, studying MB in developing countries is important to contribute with the adoption of this technology among these regions. Moreover, the expected increase in the penetration of smartphones in Brazil is in the range of 75-80% in 2024 [Febraban 2015], which reinforces the relevance of studying factors related to MB adoption in this country.

Investments in IT can improve key successful factors in banks, provide new delivery channels and services, increase the variety and differentiation of service, expand the geographical reach, and promote economies of scale [Rotchanakitumnuai & Speece 2004; Swierczek et al. 2005]. Furthermore, IT use in banks can reduce the number of bank branches [Swierczek et al. 2005], especially in the case of internet banking and MB. Among the factors that influence MB, Ketkar et al. [2012] indicate the role of government, business model, cost and marketing promotion. Therefore, the results found in this research can be useful for banks in the development of strategies to improve MB adoption and optimize their investments.

2. Research Model and Hypotheses

Trust represents a catalyst between buyer and seller, which is fundamental to the development of their transactions [Pavlou 2003]. This scenario is more intense in e-commerce transactions [Moorman et al. 1992; McKnight et al. 2002; Ribbink et al. 2004; Ivaturi & Janczewski 2013; Yousafzai et al. 2003], because people are concerned about the transactions with sensitive information [Al-Somali et al. 2009; Schaupp & Carter 2010]. Trusting consumers tend to participate in an online exchange relationship [Palvia 2009].

These arguments indicate that online exchange relationships have an important and crucial requirement: trust [Palvia 2009]. High level of trust smoothes transactions and eliminates perceived risks in e-commerce [Li & Yeh 2010], since privacy and security issues represent a perceived obstacle to e-banking [Khalfan & Alshawaf 2004; Lim et al. 2010].

Building trust in m-commerce is equally important [Li & Yeh 2010]. Before using MB, customers need to trust in this technology; if trust is not present, there is not transactions through MB [Zhou 2012]. Customers' trust is fragile and easily destroyed [Siau & Shen 2003], so it is important to understand factors related with trust, which is the dependent variable in our model.

The two main hypotheses of this study involve utilitarian and hedonic values of mobile devices. Utilitarian tendency is relevant for the development of task-specific use of mobile devices [Kim & Han 2011; Kim & Hwang 2012]. Some examples include online shopping, mobile banking, and obtaining news about economy. On the other hand, hedonic tendency is related with entertainment/sociability [Kim et al. 2005; Kim & Han 2011; Kim & Hwang 2012]. Some examples include gaming, chatting, listening music, activities to kill time, and activities to escape from day-to-day demands [Kim et al. 2005; Holsapple & Wu 2007; Hong & Tam 2006; Turel et al. 2010; Al-Debei & Al-Lozi 2014].

Hedonic is more subjective and affective than utilitarian, which is more rational and instrumental [Batra & Ahtola 1990; Babin et al. 1994; Yang & Lee 2009]. Therefore, people can use mobile devices for escapism (engaging in playful behaviors), and for enjoyment (to obtain pleasure) [Turel et al. 2010].

As we pointed before, hedonic and utilitarian motivations for consumption are not mutually exclusive necessarily [Batra & Ahtola 1990]. The website ambience and how it works could affect customer's motivation and satisfaction with their online shopping experiences [Szymanski & Hise 2000; Childers et al. 2001]. Entertainment has also a potential to improve retailing strategies [Arnold & Reynolds 2003], being a relevant issue to be considered for firms. Furthermore, design elements, such as visual aesthetics, can affect the feeling of trust in m-commerce [Li & Yen 2010]. Website design and convenience, as well as financial security, occupy an important role in customers' e-satisfaction [Szymanski & Hise 2000]. In the same line, function and form also have a positive effect on user satisfaction with mobile data services (in the context of mobile banking) [Botzenhardt et al. 2016].

One product is generally more valued by a consumer when this product is part of his/her endowment [Dhar & Wertenbroch 2000]. In this sense, customers that see mobile devices as utilitarian products should trust more in MB. Utilitarian-perspective users pursue specific information and they use it to increase task performance, while hedonic-perspective users do not have a specific purpose, only enjoying themselves, because interacting with hedonic applications is an end in itself [van der Heijden 2004; Kim et al. 2005]. Utilitarian applications focus on efficiency, while hedonic applications employ animated images and focus on colors, sounds and appealing visual layouts [van der Heijden 2004]. Therefore, we argue that these characteristics: efficiency, seeking for specific information, rational activities using mobile devices, and looking for optimize task performance, can contribute with the use of MB to make banking transactions; in this way, their effect on trust in MB should be positive.

Nevertheless, the driver of online shopping is not only functional attributes, because online buyers, with more experience, are increasingly seeking for hedonic value too [Bridges & Florsheim 2008]; the attitude toward interactive shopping is positively affected by enjoyment [Childers et al. 2001]. According to Overby and Lee [2006, p. 1165], "online shoppers are motivated by multiple types of value, including utilitarian and hedonic value". Even in interactive products (such mobile phones) that can be seen as utilitarian goods, customers seek for hedonic attributes [Diefenbach & Hassenzahl 2011]. Based in these arguments, we state the following hypotheses:

H1: there is a positive relationship between trust in MB and utilitarian-tendency use of mobile devices; and

H2: there is a positive relationship between trust in MB and hedonic-tendency use of mobile devices.

Despite there being a common sense that the utilitarian tendency will present a positive effect on trust in MB, the relationship between these variables was not tested previously in the papers we consulted. Therefore, the analysis we propose in this paper can fulfill a gap regarding additional factors that can affect mobile banking use.

In the same way of Tan et al. [2014], we also included in our model two constructs that refer to psychological variables: personal innovativeness in information technology (PIIT) and social influence. As consumers' paying habits are affected by personal characteristics and environmental influences [Tan et al. 2014], trust in MB can be affected by them too.

Social influence has the power to change the opinion that one has about whether or not to use some product [Al-Debei & Al-Lozi 2014]. This construct is important to understand the adoption of IT [Venkatesh & Morris 2000; Venkatesh et al. 2003]. The perceptions of customers about IT may be unfavorable or favorable because of perceptions of people important to them [Al-Somali et al. 2009]. The sample of our study comprises undergraduate students, and young people generally are more susceptible to influence from their peers [Beldad & Kusumadewi 2015].

Many previous papers studied the relationship between social influence and behavioral intention to use IT, and found a positive correlation [Al-Somali et al. 2009; Zhou et al. 2010; Gholami et al. 2010; Schaupp et al. 2010; Yu 2012; Yang et al. 2012; Tan et al. 2014]. With a sample of 441 respondents from Taiwan, Yu [2012] found that social influence was the most powerful factor to understand intention to use MB. In this way, we included in our model a variable to control the results for social influence. We expect that students who have friends that trust in MB tend to trust in MB too. So, our third hypothesis is:

H3: there is a positive relationship between trust in MB and social influence.

The construct personal innovativeness in information technology (PIIT) helps in identifying individuals that tend to adopt new information technologies earlier than others [Agarwal & Prasad 1998; Agarwal & Karahanna 2000]. This characteristic can also contribute to the reduction of perceived risks in MB [Montezemi & Saremi 2015]. As we are studying a contemporary technology, we include this construct in our model because we expect that innovators in IT will naturally show more levels of trust in MB.

Previous studies have analyzed PIIT and behavioral intention to use IT, and found a positive correlation between these variables [Yiu et al. 2007; Hwang 2011; Hwang 2014; Tan et al. 2014], as well as between PIIT and trust [McKnight et al. 2002]. Grounded in these studies and arguments, our fourth hypothesis is:

H4: there is a positive relationship between trust in MB and PIIT.

We also considered in our model gender and age, because previous studies have explored these demographic characteristics in relation with IT use and adoption [Gholami et al. 2010; Hwang 2010; Al-Gahtani 2011; Tan et al. 2014; Shaikh & Karjaluoto 2015]. These four variables (social influence, PIIT, age and gender) were included in the study because we expect to verify if the two variables of interest (hedonic and utilitarian value) improve the understanding of trust in MB. To do so, we need to consider other factors that also affect IT adoption and verify if their effects are different. It is important to state that our main goal is to analyze the effect of utilitarian/hedonic values on trust in MB, and not to explore the interaction among these values and the other four variables that are available in our research model.

Gender is useful to understand the behavior or people [Venkatesh & Morris 2000], which is extensive to technology adoption. Females tend to be more anxious with technology than men, and men generally have more positive attitudes toward technology than women [Korukonda 2005; Brosnan & Thorpe 2006]. About age, young people generally adopt new technologies more than older people [Cruz et al. 2010]. Furthermore, the largest part of mobile devices users are young people [Beldad & Kusumadewi 2015], so these customers could show higher levels of trust in MB too. In this way, the two hypotheses that we employed as demographics are:

H5: there is a negative relationship between trust in MB and age; and

H6: there is a positive relationship between trust in MB and gender (male).

Figure 1 contains the research model, and summarizes the expected signs for the relationship between each variable and trust in MB.

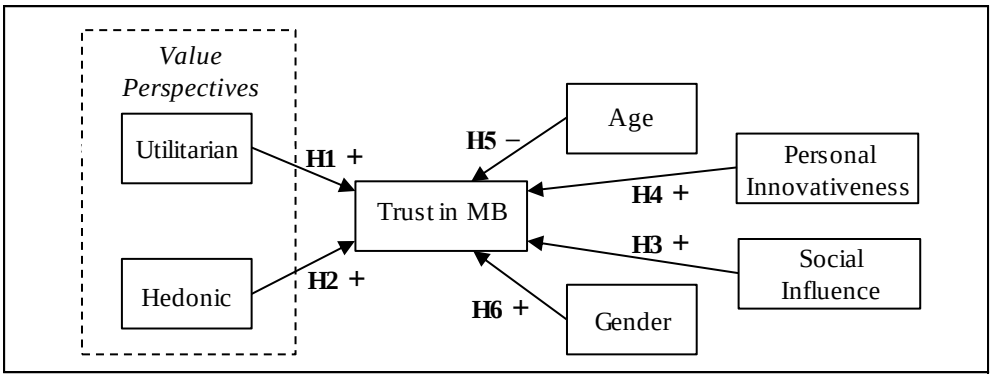


Figure 1: Research Model

3. Sample and Method

We applied the questionnaires to undergraduate students situated in the southeast region of Brazil. Data were collected in loco, and we asked the respondents to answer the questionnaire in the paper-and-pencil basis. During the visits in the classes, we invited the students to participate of the study, and informed them that the participation was voluntary. From 1,176 questionnaires that we distributed, we obtained 1,080 valid responses for this study (a rate of 91.84%). Our sample has students from the following courses: engineering, computing science, information systems, accounting, management and economy.

The questionnaire contains items already used in previous research. The main references are available in Appendix A, as well as the questions that we used. All of them were based in a five-point Likert scale, from (1), strongly disagree, to (5), strongly agree.

The questionnaire used in this research also requested respondents to describe their mobile device use frequency for utilitarian and hedonic activities. The Likert scale labels for both type of activities ranged from (1), low frequency, to (5), high frequency. Therefore, respondents were supposed to indicate how often they have used their mobile device for each activity.

The criterion used to classify the activities performed with mobile devices was based on Kim and Hwang [2012]. Thus, hedonic value was assigned to the following items: downloading/listening to music, downloading/playing games, accessing social networks, taking photos/filming, chatting, and reading news about sports/entertainment. The utilitarian perspective included shopping, making payments, studying, using mobile banking, reading news about economy and checking/sending emails. There could be another criterion to classify the activities between hedonic and utilitarian, and, as presented in the introduction of the paper, some activities can be included in both classes. The list of contents presented by Kim and Hwang [2012] was also based on the study of Sheehan [2002], and their items provide to us an objective measure to estimate these values (hedonic/utilitarian).

Based on the questionnaire responses, two dummy variables were established: one for Hedonic Perspective and another for Utilitarian Perspective. The Hedonic Perspective scored 1 when the use frequency of any hedonic item was 4 or 5; it scored 0 for the other cases. The Utilitarian Perspective scored 1 when the frequency of use of any utilitarian item was 4 or 5; it also scored 0 for the other cases.

In these dummy variables, some respondents were scored 1 in both Hedonic and Utilitarian perspectives. This result indicates that mobile devices have been used to develop task-oriented activities, and for entertainment too; this fact reinforces the consideration that some products have both hedonic and utilitarian values to consumers [Batra & Ahtola 1990; Szymanski & Hise 2000; Okada 2005; Li & Yen 2010].

The phase of pretest involved three steps: i) an analysis of the questionnaire by graduate professors that have large experience with surveys; ii) an analysis of the questionnaire by master degree students; and iii) a pre-application with undergraduate students. In such phase, the respondents proposed little modifications in the questionnaire.

We used the two stages procedure to develop our quantitative analysis, as recommended by Anderson and Gerbing [1998]. In the first stage, through Confirmatory Factor Analysis (CFA), we evaluated the reliability of the constructs of the research model. We also analyzed the discriminant validity [Campbell & Fiske 1959] of the constructs. In the following stage, we used Structural Equation Modeling (SEM) in order to test the hypotheses.

In order to evaluate the robustness of the results, we also tested the hypotheses using multivariate regression analysis. After running the regression analysis, we checked the Variance Inflation Factor (VIF) index, which indicates if multicollinearity is a concern in the quantitative model. This step could be seen as a complement of the CFA.

4. Results

4.1. Confirmatory Factor Analysis

The research model of this paper comprises seven variables: trust in MB, personal innovativeness, social influence, hedonic perspective, utilitarian perspective, age, and gender. From these seven variables, three are subject to the analysis of reliability and internal consistence: trust in MB, personal innovativeness and social influence. Age and gender were measured by one item. For utilitarian/hedonic perspectives, we generated dummy variables, as explained in the methodology section.

As we also presented in the methodology section, the responses were collected through paper-and-pencil questionnaires, with voluntary (and anonymous) participation by undergraduate students. The quantitative tools that we employed to analyze the data include Confirmatory Factor Analysis, with convergent and discriminant analysis, and Structural Equation Modeling. In this context, Structural Equation Modeling was used to test the study hypotheses. Table 1 contains the results for the reliability and internal consistency of the three constructs of the model.

Table 1: Results for convergent validity among the constructs of the research model

Const.	Items	Load. (Std.)	t-value (Loadings)	AVE	CR	CA
TRU	tru1	0.743	37.108	0.563	0.791	0.776
	tru2	0.875	47.570			
	tru3	0.608	26.375			
SOC	soc1	0.914	69.002	0.652	0.840	0.806
	soc2	0.943	72.066			
	soc3	0.482	19.617			
PIN	pin1	0.753	38.330	0.577	0.803	0.798
	pin2	0.688	32.931			
	pin3	0.831	44.848			

Notes: AVE: average variance extracted; CR: composite reliability; CA: Cronbach's Alpha.

We observed that the indexes obtained for the Average Variance Extracted (AVE), Composite Reliability (CR), and Cronbach's Alpha (CA) were all above the thresholds of 0.50, 0.70 and 0.70, respectively. Table 2 complements these findings, because it indicates that these constructs measure different characteristics / dimensions of the respondents, since the root square of AVE was greater than the correlation between the constructs. These results indicated good convergent and discriminant validity between these three constructs.

Table 2: Results for discriminant validity between the constructs

Factor	TRU		SOC		PIN
TRU	**0.750**				
SOC	0.359	***	**0.808**		
PIN	0.253	***	0.129	***	**0.759**

Notes: Diagonal line shows the root square of AVE. Other values represent the correlation between constructs. ***:p< 0.01; **:p< 0.05; *:p< 0.10.

Table 3 shows the indexes for goodness of fit for the model that we used in CFA and for the model that we used for hypotheses testing. We observed adequate adjustments, which enable the analysis of the paths coefficients obtained in the quantitative model.

Table 3: Goodness of fit (for CFA and SEM)

Items	Recom.	CFA	SEM
chi-square		84.804	176.816
d.f.		21	45
chi-square/d.f.	<5.00	4.038	3.929
Standard. RMR	<0.05	0.040	0.037
GFI	>0.80	0.983	0.975
AGFI	>0.80	0.964	0.950
RMSEA	<0.08	0.053	0.052
RMSEA (Low. 90%)		0.042	0.044
RMSEA (Up. 90%)		0.065	0.060
CFI	>0.90	0.984	0.969
NFI	>0.90	0.979	0.959
NNFI	>0.90	0.972	0.946

4.2. Structural Equation Modeling

After observing the goodness of fit of the research model, we performed the hypotheses testing. Table 4 shows the expected signs and the observed signs between the theoretical model and the quantitative analysis of the data.

Figure 2 contains the research model, but with the value of the path coefficients and their respective level of significance. In Figure 2 we also show that our model explains almost 20% of the variation in the dependent variable. With the multivariate regression analysis, we obtained equivalent results, except for the significance level of hedonic value. In this analysis, the coefficient of hedonic value was significant at 10%. As the result for this variable was not consistent in the two models at least at 5% level of significance, we interpret that the effect of hedonic value on trust in MB, in the case of the sample of this study, is not consistently significant. The VIF index indicates that there is no concern related with multicollinearity (all values were lower than 1.15).

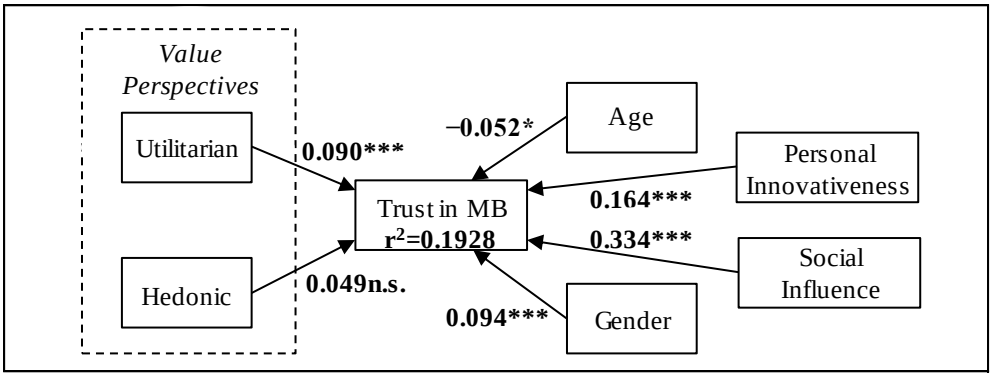
Table 4: Results for hypotheses testing

Hyp.	Relationship	Expected Sign	Observed Sign	Result
H1	Utilitarian ===> Trust	+	+ ***	supported
H2	Hedonic ===> Trust	+	+ n.s.	not supported
H3	Social Influence ===> Trust	+	+ ***	supported
H4	Personal Innovativeness ===> Trust	+	+ ***	supported
H5	Age ===> Trust	–	– *	supported
H6	Gender (male) ===> Trust	+	+ ***	supported

***:p< 0.01; **:p< 0.05; *:p< 0.10; n.s.: not significant.

Five of the six hypotheses were supported (H1, H3, H4, H5, and H6), once their path coefficients were significant and showed the same signal as expected by the research model. Utilitarian perspective users showed higher levels of trust in MB. The use of mobile devices for hedonic activities did not make a significant difference to explain trust in MB. We should note that the large majority of respondents use their mobile devices for hedonic purposes, which may have affected this result. In this way, we argue that if hedonic resources (or applications) were used to introduce some information about MB, these respondents could present higher levels of trust in this technology, since hedonic values are available in their daily activities performed using mobile devices. MB developers could better explore the potential of mobile devices as hedonic products.

In the sample of the study, demographic characteristics of the respondents showed that they are important to understand MB adoption too, once they are correlated with trust in this technology. These results confirm the expectations drawn in the literature review.



***:p< 0.01; **:p< 0.05; *:p< 0.10; n.s.: not significant.

Figure 2: Signs of path coefficients in the research model, using SEM

The external environment of the respondents also influenced their perception about trust, because the construct social influence showed a positive and significant relationship with the dependent variable. This result indicates that friend's perception about trust in MB is important to individuals for building trust in this technology to perform banking transactions. Banks could use this information to develop strategies and reach new customers. It is important to comment that this result is aligned with the result of Yu [2012], since social influence was the most powerful construct to help in understanding MB. Nevertheless, in this study, the dependent variable is trust in MB; in the study of Yu [2012], the dependent variable in this case was intention to use MB.

The relationship between trust in MB and personal innovativeness in information technology was also positive. In this way, innovators students naturally tend to trust in MB at a higher level, in comparison with non-innovators in information technology.

In general, the results of this paper corroborate with previous studies, because we observed the same behavior for:

i) social influence [Al-Somali et al. 2009; Zhou et al. 2010; Gholami et al. 2010; Schaupp et al. 2010; Yu 2012; Yang et al. 2012; Tan et al. 2014];

ii) personal innovativeness in information technology [Agarwal & Prasad 1998; Agarwal & Karahanna 2000; McKnight et al. 2002; Yiu et al. 2007; Hwang 2011; Hwang 2014; Tan et al. 2014]; and

iii) gender and age [Venkatesh & Morris 2000; Korukonda 2005; Brosnan & Thorpe 2006; Cruz et al. 2010; Gholami et al. 2010; Hwang 2010; Al-Gahtani 2011; Tan et al. 2014; Shaikh & Karjaluoto 2015].

It is important to note that these results do not simply confirm what was postulated in the theoretical framework. These results indicate that in Brazil, a developing country with low adoption of banking services and with an enormous potential to MB adoption, some factors are important for understanding the barriers related with the use of this technology.

Regarding the variable age, we should state that the study sample is comprised of younger respondents, since they are undergraduate students. This characteristic of the sample indicate care with generalization of the results. These results may be limited to other environments with equivalent characteristics (shorter age range); however, we need to consider that, even in a sample with undergraduate students, younger respondents tend to trust more in mobile banking than their counterparts do.

Another limitation may exists in this paper. The southeast region in Brazil is the richest and it concentrates the highest number of bank branches in the country. However, Brazil is a country with diversity in cultural and economic factors, and these variables were not available in the tool for data collection (questionnaire). Therefore, the main results may also be restricted to those individuals of equivalent regions of Brazil.

5. Conclusion, Limitations and Further Studies

In mobile banking, the utilitarian value perspective showed a positive relationship with trust. As a consequence, the Brazilian customers that use mobile devices for task-specific purposes tend to have a higher level of trust in MB than those customers that do not necessarily have such needs. Based on previous studies (as [Kim & Hwang 2012]), we developed the argument that users with a utilitarian perspective are supposed to trust MB, because they develop task-specific activities in their mobile devices. The results of our study confirm this argument, reinforce previous findings of another studies (like [Szymanski & Hise 2000, and Li & Yen 2010], and extend their implications to the context of MB.

These results also prove that a product is generally considered more valuable when customers have it as part of their everyday life [Dhar & Wertenbroch 2000]. Customers who already perform utilitarian activities in their mobile devices to increase task performance and efficiency [van der Heijden 2004; Kim et al. 2005] are indirectly willing to trust MB too.

On the other hand, hedonic users of mobile devices (following the criterion used in this study) did not present high levels of trust in MB in comparison with users whose hedonic activities are less frequent, but we have an alternative explanation for this relationship. The literature review presented in this paper [Szymanski & Hise 2000; Li & Yen 2010] pointed out that hedonic elements could affect feelings about trust in e-commerce, and that not only functional attributes drive online shopping [Bridges & Florsheim 2008]. Thus, mobile device use for escapism and pleasure could transfer some kind of trust to banking services. The results observed in this research did not necessarily support these arguments, and a potential reason may be related with the fact that the large majority of respondents use mobile devices for hedonic purposes. This is a quite natural result, especially considering that mobile devices can present both hedonic and utilitarian values to customers. Therefore, a positive effect of hedonic value may be present in the dependent variable (trust in MB), even indirectly, due the level of mobile devices use considering hedonic values. Furthermore, using multivariate regression analysis, the proxy for hedonic value was significant at 10%. In this context, future longitudinal studies can explore how this transference of trust could occur.

Batra and Ahtola [1990] stated that hedonic and utilitarian perspectives are not necessarily mutually exclusive. As technology can have both utilitarian and hedonic characteristics [Hong & Tam 2006; Turel et al. 2010; Diefenbach & Hassenzahl 2011], banks and MB developers could use resources related to hedonic values and applications to introduce information about MB security, convenience, and ease of use. This statement gains relevance when we consider the number of individuals which use mobile devices for hedonic purposes.

The Brazilian potential to expand banking services is enormous, and these results could support banks' actions to reach new clients. Due to the high penetration of smartphones expected for the next years in Brazil, MB seems to be an important alternative to expand banking services. In general, hedonic users of mobile devices already trust in these products to carry on their personal activities. If they are provided with more information about MB, they can use this technology too.

Banks can also reinforce the utility of MB to customers who already use their mobile devices for utilitarian purposes. As social influence is a significant variable to predict trust in MB, banks could stimulate their current MB users to share information about their MB experience with their colleagues and friends. In line with previous studies [Yu 2012], social influence was the main determinant to understand trust in MB in the sample of this study. Personal innovativeness in information technology, age, and gender are variables that presented equivalent behavior in this study, in comparison with previous research, since gender (male) and personal innovativeness tend to contribute positively with trust in MB, and age tends to present a negative effect on this variable.

As we commented before, Brazil is a country with cultural and economic diversity. Therefore, future studies could compare these findings with the results from different regions of Brazil, and also between different developing countries. Furthermore, we recommend future research involving the use of different measurement methods to evaluate hedonic and utilitarian perspective values, and their effect on trust and on the intention of using MB.

REFERENCES

Agarwal, R. and E. Karahanna, "Time Flies When You're Having Fun: Cognitive Absorption and Beliefs about Information Technology Usage," *MIS Quarterly*, Vol. 24, No. 4:665-694, 2000.

Agarwal, R. and J. Prasad, "A Conceptual and Operational Definition of Personal Innovativeness in the Domain of Information Technology," *Information Systems Research*, Vol. 9, No. 2:204-215, 1998.

Al-Jabri, I. M. and M. S. Sohail, "Mobile Banking Adoption: Application of Diffusion of Innovation Theory," *Journal of Electronic Commerce Research*, Vol. 13, No. 4:379-391, 2012.

Arnold, M. J. and K. E. Reynolds, "Hedonic shopping motivations," *Journal of Retailing*, Vol. 79:77-95, 2003.

Al-Debei, M. M. and E. Al-Lozi, "Explaining and predicting the adoption intention of mobile data services: A value-based approach," *Computers in Human Behavior*, Vol. 35:326-338, 2014.

Al-Gahtani, S. S., "Modeling the electronic transactions acceptance using an extended technology acceptance model," *Applied Computing and Informatics*, Vol. 9:47-77, 2011.

Al-Somali, S. A., R. Gholami, and B. Clegg, "An investigation into the acceptance of online banking in Saudi Arabia," *Technovation*, Vol. 19:130-141, 2009.

Anderson, J. C. and D. W. Gerbing, "Structural Equation Modeling in Practice: a review and recommended two-step approach," *Psychological Bulletin*, Vol. 103, No. 3:411-423, 1988.

Babin, B. J., W. R. Darden, and M. Griffin, "Work and/or Fun: Measuring Hedonic and Utilitarian Shopping Value," *Journal of Consumer Research*, Vol. 20, No. 4:644-656, 1994.

Batra, R. and O. T. Ahtola, "Measuring the Hedonic and Utilitarian Souces of Consumer Attitudes," *Marketing Letters*, Vol. 2, No. 2:159-170, 1990.

Beldad, A. and M. C. Kusumadewi, "Here's my location, for your information: The impact of trust, benefits, and social influence on location sharing application use among Indonesian university students," *Computers in Human Behavior*, Vol. 49:102-110, 2015.

Botzenhardt, A., Y. Li, and A. Maedche, "The Roles of Form and Function in Utilitarian Mobile Data Service Design," *Journal of Electronic Commerce Research*, Vol. 17, No. 3:220-238, 2016.

Bridges, E. and R. Florsheim, "Hedonic and utilitarian shopping goals: The online experience," *Journal of Business Research*, Vol. 61:309-314, 2008.

Brosnan, M. J. and S. J. Thorpe, "An evaluation of two clinically-derived treatments for technophobia," *Computers in Human Behavior*, Vol. 22:1080-1095, 2006.

Campbell, D. T. and D. W. Fiske, "Convergent and Discriminant Validation by the Multitrait-Multimethod Matrix," *Psychological Bulletin*, Vol. 56, No. 2:81-105, 1959.

Childers, T. L., C. L. Carr, J. Peck, and S. Carson, "Hedonic and utilitarian motivations for online retail shopping behavior," *Journal of Retailing*, Vol. 77:511-535, 2001.

Chitturi, R., R. Raghunathan, and V. Mahajan, "Form versus Function: How the Intensities of Specific Emotions Evoked in Functional versus Hedonic Trade-Offs Mediate Product Preferences," *Journal of Marketing Research*, Vol. 44, No. 4:702-714, 2007.

Chitturi, R., R. Raghunathan, and V. Mahajan, "Delight by Design: The Role of Hedonic versus Utilitarian Benefits", *Journal of Marketing*, Vol. 72, No. 3:48-63, 2008.

Crowley, A. E., E. R. Spangenberg, and K. R. Hughes, "Measuring the hedonic and utilitarian dimensions of attitudes toward product categories," *Marketing Letters*, Vol. 3, No. 3:239-249, 1992.

Cruz, P., L. B. Filgueiras Neto, P. Muñoz-Gallego, and T. Laukkanen, "Mobile Banking Rollout in Emerging Markets: Evidence from Brazil," *International Journal of Bank Marketing*, Vol. 28, No. 5:342-371, 2010.

Dhar, R. and K. Wetenbroch, "Consumer Choice between Hedonic and Utilitarian Goods," *Journal of Marketing Research*, Vol. 37, No. 1:60-71, 2000.

Diefenbach, S. and M. Hassenzahl, "The dilemma of the hedonic - appreciated, but hard to justify," *Interacting with Computers*, Vol. 23:461-472, 2011.

Diniz, E. H., M. Pozzebon, and M. Jayo, "The Role of ICT in Helping Parallel Paths Converge: Microcredit and Correspondent Banking in Brazil," *Journal of Global Information Technology Management*, Vol. 12, No. 2:80-103, 2009.

El Hedhli, K., H. Zourrig, and J.-C. Chebat, "Shopping well-being: Is it just a matter of pleasure or doing the task? The role of shopper's gender and self-congruity," *Journal of Retailing and Consumer Services*, Vol. 31:1-13, 2016.

Etemad-Sajadi, R. and L. Ghachem, "The impact of hedonic and utilitarian value of online avatars on e-service quality," *Computers in Human Behavior*, Vol. 52:81-86, 2015.

Febraban – Federação Brasileira de Bancos, "Pesquisa FEBRABAN de Tecnologia Bancária 2014 (FEBRABAN Research on Banking Technology 2014)". Available at: <http://www.febraban.org.br> Accessed on Apr, 24 2015.

Gholami, R., A. Ogun, E. Koh, and J. Lim, "Factors Affecting e-Payment Adoption in Nigeria," *Journal of Electronic Commerce in Organizations*, Vol. 8, No. 4:51-67, 2010.

Gu, J.-C., S.-C. Lee, and Y.-L. Suh, "Determinants of behavioral intention to mobile banking," *Expert Systems with Applications*, Vol. 36:11605-11616, 2009.

Holbrook, M. B. and E. C. Hirshman, "The Experiential Aspects of Consumption: Consumer Fantasies, Feelings, and Fun," *Journal of Consumer Research*, Vol. 9, No. 2:132-140, 1982.

Holsapple, C. W. and J. Wu, "Users Acceptance of Virtual Worlds: The Hedonic Framework," *ACM SIGMIS Database: The DATABASE for Advances in Information Systems*, Vol. 38, No. 4:86-89, 2007.

Hong, S.-J. and K. Y. Tam, "Understanding the Adoption of Multipurpose Information Appliances: The Case of Mobile Data Services," *Information Systems Research*, Vol. 17, No. 2:162-179, 2006.

Hwang, Y., "The moderating effects of gender on e-commerce systems adoption factors: An empirical investigation," *Computers in Human Behavior*, Vol. 26:1753-1760, 2010.

Hwang, Y., "Investigating the Influence of Cultural Orientation and Innovativeness on ERP Adoption," *Journal of Global Information Technology Management*, Vol. 14, No. 3:54-74, 2011.

Hwang, Y., "User experience and personal innovativeness: An empirical study on the Enterprise Resource Planning systems," *Computers in Human Behavior*, Vol. 34:227-234, 2014.

Ivaturi, K. and L. Janczewski, "Social Engineering Preparedness of Online Banks: An Asia-Pacific Perspective", *Journal of Global Information Technology Management*, Vol. 16, No. 4:21-46, 2013.

Ketkar, S. P., R. Shankar, and D. K. Banwet, "Structural Modeling and Mapping of M-Banking Influencers in India," *Journal of Electronic Commerce Research*, Vol. 13, No. 1:70-87, 2012.

Khalfan, A. M. and A. Alshawaf, "Adoption and Implementation Problems of E-Banking: A Study of the Managerial Perspective of the Banking Industry in Oman" *Journal of Global Information Technology Management*, Vol. 7, No. 1:47-64, 2004.

Kim, B. and I. Han, "The role of utilitarian and hedonic values and their antecedents in a mobile data service environment," *Expert Systems with Applications*, Vol. 38:2311-2318, 2011.

Kim, D. J. and. Y. Hwang, "A study of mobile internet user's service quality perceptions from a user's utilitarian and hedonic value tendency perspectives," *Information Systems Frontier*, Vol. 14:409-421, 2012.

Kim, H., J. Kim, and Y. Lee, "An Empirical Study of Use Contexts in the Mobile Internet, Focusing on the Usability of Information Architecture," *Information Systems Frontier*, Vol. 7, No. 2:175-186, 2005.

Korukonda, A. R., "Personality, individual characteristics, and predisposition to technophobia: some answers, questions, and points to ponder about," *Information Sciences*, Vol. 170, No. 2-4:309-328, 2005.

Lee, M.-C., "Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit," *Electronic Commerce Research and Applications*, Vol. 8:130-141, 2009.

Li, Y.-M. and Y.-S. Yeh, "Increasing trust in mobile commerce through design aesthetics," *Computers in Human Behavior*, Vol. 26:673-684, 2010.

Li, M., Z. Y. Dong, and X. Chen, "Factors influencing consumption experience of mobile commerce: A study from experiential view," *Internet Research*, Vol. 22, No. 2:120-141, 2012.

Li, M. and J. Mao, "Hedonic or Utilitarian? Exploring the impact of communication style alignment on user's perception of virtual health advisory services," *International Journal of Information Management*, Vol. 35:229-243, 2015.

Lim, N., P. H. P. Yeow, and Y. Y. Yuen, "An Online Banking Security Framework and a Cross-Cultural Comparison," *Journal of Global Information Technology Management*, Vol. 13, No. 3:39-62, 2010.

Lin, H.-F., "An empirical investigation of mobile banking adoption: The effect of innovation attributes and knowledge-based trust," *International Journal of Information Management*, Vol. 31:252-260, 2011.

López, I. and S. Ruiz, "Explaining website effectiveness: The hedonic-utilitarian dual mediation hypothesis," *Electronic Commerce Research and Applications*, Vol. 10:49-58, 2011.

McKnight, D. H., V. Choudhury, and C. Kacmar, "Developing and Validating Trust Measures for e-Commerce: An Integrative Typology," *Information Systems Research*, Vol. 13, No. 3:334-359, 2002.

Montezemi, A. R., and H. Q. Saremi, "Factors Affecting Adoption of Online Banking: A Meta-Analytic Structural Equation Modeling Study," *Information and Management*, Vol. 52:210-226, 2015.

Moorman, C., G. Zaltman, and R. Deshpande, "Relationships Between Providers and Users of Market Research: the dynamics of trust within and between organizations," *Journal of Marketing Research*, Vol. 29:314-328, 1992.

Nakane, M. I. and D. B. Weintraub, "Bank privatization and productivity: Evidence for Brazil," *Journal of Banking & Finance*, Vol. 29:2259-2289, 2005.

O'Brien, H. L., "The influence of hedonic and utilitarian motivations on user engagement: The case of online shopping experiences," *Interacting with Computers*, Vol. 22:344-352, 2010.

Oliveira, T., M. Faria, M. A. Thomas, and A. Popovič, "Extending the understanding of mobile banking adoption: WhenUTAUT meets TTF and ITM," *International Journal of Information Management*, Vol. 34:689-703, 2014.

Okada, E. M., "Justification Effects on Consumer Choice of Hedonic and Utilitarian Goods," *Journal of Marketing Research*, Vol. 42, No. 1:43-53, 2005.

Overby, J. W., and E.-J. Lee, "The effects of utilitarian and hedonic online shopping value on consumer preference and intentions," *Journal of Business Research*, Vol. 59:160-1166, 2006.

Palvia, P., "The role of trust in e-commerce relational exchange: A unified model," *Information & Management*, Vol. 46:213-220, 2009.

Pavlou, P. A., "Consumer Acceptance of Electronic Commerce: Integrating Trust and Risk with the Technology Acceptance Model," *International Journal of Electronic Commerce*, Vol. 7, No. 3:101-134, 2003.

Prado, E. P. V., C. A. Souza, H. Takaoka, and N. Reinhard, "Contracting Outsourced Information Technology Services in Brazil," *Journal of Global Information Technology Management*, Vol. 12, No. 4:52-71, 2009.

Qingfei, M., J. Shaobo, and Q. Gang, "Mobile Commerce User Acceptance Study in China: A Revised UTAUT Model," *Tsinghua Science and Technology*, Vol. 13, No. 3:257-264, 2008.

Ribbink, D., V. L. van-Riel, V. Liljander, and S. Streukens, "Comfort your online customer: quality, trust and loyalty on the internet," *Managing Service Quality: An International Journal*, Vol. 14, No. 6:446-456, 2004.

Rotchanakitumnuai, S. and M. Speece, "Corporate Customer Perspectives on Business Value of Thai Internet Banking," *Journal of Electronic Commerce Research*, Vol. 5, No. 4:270-286, 2004.

Schaupp, L. C. and L. Carter, "The impact of trust, risk and optimism bias on E-file adoption," *Information Systems Frontier*, Vol. 12:299-309, 2010.

Schaupp, L. C., L. Carter, and M. E. McBride, "E-file adoption: A study of U.S. taxpayers' intentions," *Computers in Human Behavior*, Vol. 26:636-644, 2010.

Shaikh, A. A. and H. Karjaluoto, "Mobile banking adoption: A literature review," *Telematics and Informatics*, Vol. 32:129-142, 2015.

Sheehan, K. B., "Of Surfing, Searching, And Newshounds: A Typology of Internet Users' Online Sessions," *Journal of Advertising Research*, Vol. 42, No. 5:62-71, 2002.

Siau, K., and Z. Shen, "Building Customer Trust in Mobile Commerce," *Communications of the ACM*, Vol. 46, No. 4:91-94, 2003.

Swierczek, F. W., P. K. Shrestha, and C. Bechter, "Information Technology, Productivity and Profitability in Asia-Pacific Banks," *Journal of Global Information Technology Management*, Vol. 8, No. 1:6-26, 2005.

Szymanski, D. M. and R. T. Hise, "e-Satisfaction: An Initial Examination," *Journal of Retailing*, Vol. 76, No. 3:309-322, 2000.

Tan, G. W.-H., K.-B. Ooi, S.-C. Chong, and T.-S. Hwe, "NFC mobile credit card: the next frontier of mobile payment?," *Telematics and Informatics*, Vol. 31:292-307, 2014.

Turel, O., A. Serenki, and N. Bontis, "User acceptance of hedonic digital artifacts: a theory of consumption values perspective," *Information and Management*, Vol. 47:53-59, 2010.

van der Heijden, H., "User acceptance of hedonic information systems," *MIS Quarterly*, Vol. 28, No. 4:695-704, 2004.

Venkatesh, V. and M. G. Morris, "Why Don't Men Ever Stop to Ask for Directions? Gender, Social Influence, and Their Role in Technology Acceptance and Usage Behavior," *MIS Quarterly*, Vol. 24, No. 1:115-139, 2000.

Venkatesh, V., M. G. Morris, G. B. Davis, and F. D. Davis, "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly*, Vol. 27, No. 3:425-478, 2003.

Voss, K. E., E. R. Spangenberg, and B. Grohmann, "Measuring the Hedonic and Utilitarian Dimensions of Customer Attitude," *Journal of Marketing Research*, Vol. 40:310-320, 2003.

Xu, B., B. Shao, Z. Lin, and Y. Shi, "Enterprise Adoption of Internet Banking in China," *Journal of Global Information Technology Management*, Vol. 12, No. 3:7-28, 2009.

Yang, K. and H.-J. Lee, "Gender differences in using mobile data services: utilitarian and hedonic value approaches," *Journal of Research in Interactive Marketing*, Vol. 4, No. 2:142-156, 2010.

Yang, S., Y. Lu, S. Gupta, Y. Cao, and R. Zhang, "Mobile payment services adoption across time: an empirical study of the effects of behavioral beliefs, social influences, and personal traits," *Computers in Human Behavior*, Vol. 28:129-142, 2012.

Yiu, C. S., K. Grant, and D. Edgar, "Factors affecting the adoption of Internet Banking in Hong Kong - implications for the banking sector," *International Journal of Information Management*, Vol. 27:336-351, 2007.

Yousafzai, S. Y., J. G. Pallister, and G. R. Foxall, "A proposed model of e-trust for electronic banking," *Technovation*, Vol. 23:847-860, 2003.

Yu, C.-S., "Factors Affecting Individuals to Adopt Mobile Banking: Empirical Evidence from the UTAUT Model," *Journal of Electronic Commerce Research*, Vol. 13, No. 2:104-121, 2012.

Zhou, T., Y. Lu, B. Wang, "Integrating TTF and UTAUT to explain mobile banking user adoption," *Computers in Human Behavior*, Vol. 26:760-767, 2010.

Zhou, T. "The effect of initial trust on user adoption of mobile payment," *Information Development*, Vol. 27, No. 4:290-300, 2011.

Zhou, T. "Understanding users' initial trust in mobile banking: An elaboration likelihood perspective," *Computers in Human Behavior*, Vol. 28:1518-1525, 2012.

Appendix A: Items of the questionnaire, and main references

Personal Innovativeness - adopted from [Agarwal & Karahanna 2000; Zhou 2012; Hwang 2014]
pin1 - If I heard about a new IT, I would look for ways to gain experience with it.
pin2 - Among my peers, I am usually the first to try out new information technologies.
pin3 - I like to experiment with new information technologies.

Social Influence - adopted from [Gu et al. 2009; Zhou et al. 2010; Beldad & Kusumadewi 2015]
People who...
soc1 - ... influence my behavior think that I should use Mobile Banking.
soc2 - ... are important to me think that I should use Mobile Banking.
soc3 - ... I know use Mobile Banking.

Trust - adopted from [Kim et al. 2008; Zhou 2011; Zhou 2012; Oliveira et al. 2014]
I believe that M.B. ...
tru1 - ... is trustworthy.
tru2 - ... keeps its promises.
tru3 - ... keeps users' interests in mind.