

SELF-SERVICE PERSONALISATION – A CROSS-CULTURAL STUDY

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Abstract. The paper considers the personalisation of technology with a focus on Automated Teller Machines (ATMs). The concept of personalisation is explored in terms of users' perceptions of and requirements from modern technology in four countries (India, Australia, the UK and the USA) through a large-scale survey. Our findings show that the evolving cultures such as India show a positive attitude toward ATM personalization. Further, to obtain an understanding of overall user attitude from the four countries toward personalisation, Hofstede's cultural dimensions are also taken into account. It is argued that Hofstede's dimensions do not fully explain Indian users' attitude in comparison with western users' attitude toward technology personalisation. We conclude that Hofstede's model may be used as a useful tool to understand the western cultures but its role in the evolving cultures such as India, China and Africa needs to be further investigated in relation to modern technology adoption.

1. Introduction

Existing research in the personalisation of modern telecommunication, financial and information technology focuses on user requirements from across the globe. User requirements in terms of their perceptions from technology personalisation are generally addressed with respect to their national culture. National cultures are typically investigated across various cultural dimensions as proposed by Hofstede (2001) and Hall (1976). However, relatively little is known about how cultures have evolved with the globalisation of technology such as self-service kiosks and the emergence of China and India as free-market economies. This paper aims to explore the role of Hofstede's cultural dimensions in determining user perceptions of and attitudes towards personalising automated teller machines (ATMs) in different cultures. Hofstede's cultural dimensions were based on user

perceptions as analysed in a particular workplace. Research argues that users' perceptions in a particular workplace may be different from users' perceptions in their private lives (Ogden and Cheng, 2005). In order to address this issue, in our study, user perceptions account for ATM use in their private environments in four cultures, namely Indian, British, American, and Australian.

The paper begins with a brief overview of the existing research in personalisation. Based on the overview, the approach adopted in our study is then briefly reported. This is followed by the research methodology along with the main results of our study. A brief discussion of our findings in terms of Hofstede's cultural dimensions is then presented. The paper concludes with a summary of insights into the user perceptions of and attitude toward ATM personalisation.

2. Background

The purpose of personalisation is to design modern technology more relevant to users whose perceptions of and requirements from technology vary. A number of approaches both in theory and practice can be seen to capture user preferences and requirements from technology. In practice, users may provide a profile of preferences and requirements shaping their attitudes toward a product. Collaborative filtering is another method where users' purchases and tastes can be used to compare profiles of like-minded users, leading to the assumption that similar users will have similar preferences (Bonett, 2001). However, to obtain a collective understanding of user preferences, several theoretical stances have been discussed in research. For example, Hofstede (2001) and Hall (1976) classify cultures to demonstrate an overall understanding of user attitude toward using a product. In our study, we focus on Hofstede's cultural theory to understand its relevance in acquiring an understanding of users' perceptions of modern technology personalisation in the western and emerging markets such as USA and India respectively.

Originally Hofstede's model consisted of four cultural dimensions, power distance index (PDI), uncertainty avoidance index (UAI), individualism index (IDV) and masculinity index (MAS). These dimensions emerged as a result of a survey which was conducted within subsidiaries of IBM within 72 countries. The survey focused on users' values to determine their attitude and behaviour in a specific culture. After a recent study, Hofstede (2001) added another dimension, long-term orientation (LTO) to the model.

Briefly, high power distance (PDI) index indicates use of formal rules and decision structures. Uncertainty avoidance index (UAI) shows a resistance to innovative technology. In high UAI cultures, modern technology is adopted

only if its use has been proven successful in the market. Individualism index (IDV) refers to the relationships between an individual and a group in a culture. Individuals in high IDV culture exhibit independent thinking and make their own decisions. Masculinity index indicates the extent to which a culture has masculine values (such as competitiveness and performance-focused approach). Long-term orientation (LTO) index refers to characteristics such as adaptability and persistence.

Several studies have incorporated Hofstede's cultural dimensions to investigate the potential of technology adoption in various countries (Lynn and Gelb 1996; Png et. al., 2001, Everdingen and Waarts, 2003). These studies use Hofstede's model as a guide to understand the differences and commonalities between cultures. However, little is known about how Hofstede's model explains user attitudes toward modern technology in evolving cultures such as India and China. Also, it is important to note that original Hofstede's study was conducted in a business environment. We adopt an approach which captures user perceptions of potential adoption of personalised automated teller machines (ATMs) in private environments. The findings then attempt to understand how evolving cultures can be analysed in terms of Hofstede's cultural dimensions.

3. Our Approach

Blom (2002) categorized personalisation along four dimensions, namely functionality, interface, information content, and distinctiveness. These dimensions are taken as a guideline in our study to investigate the concept of personalisation of ATMs in the financial domain. For example, we investigate alteration to existing ATM services, introduction and customisation of new services, interface aesthetics and information content.

4. Research methodology

An online survey was initially designed in English using the QuestionPro tool¹. The survey was distributed evenly in India, Australia, the United Kingdom, and the United States of America and the respondents were paid. Out of 3066 total responses, in-depth quantitative analysis was carried out on 2704 valid responses using a statistical software SPSS (version 15.0). Our data provided an effective way of analysing patterns and trends of ATM personalisation across four countries.

¹ <http://www.questionpro.com/>

The descriptive statistics of participants from all four countries are summarised in the following three tables (1, 2 and 3).

TABLE 1. Age distribution.

Age range	India (%)	Australia (%)	UK (%)	USA (%)
18-24	9.44	5.83	6.43	6.47
25-34	20.16	14.39	31.33	19.23
35-44	18.88	20.40	22.57	18.79
45-54	25.92	29.51	25.58	19.24
55-64	14.08	29.69	12.86	26.92
65-74	10.08	0.18	1.23	7.69
75+	1.44	0.00	0.00	1.66

TABLE 2. Gender distribution.

Gender	India (%)	Australia (%)	UK (%)	USA (%)
Female	44.32	55.74	51.30	53.58
Male	55.68	44.26	48.70	46.42

TABLE 3. Education distribution.

Education	India (%)	Australia (%)	UK (%)	USA (%)
High school	5.6	49.18	8.12	40.40
College degree	45.28	24.59	35.8	39.23
Postgraduate	45.60	13.84	52.80	14.00
Vocational	3.52	12.39	3.28	6.37

In order to understand how participants of the survey perceived technology personalisation, the look and feel (display aesthetics), information content and presentation and the actual use of devices such as mobile phones, computers and web-pages were investigated. Users were presented with several options (such as yes/no/not sure) to express their perceptions. These responses were assigned weightings and a percentage was calculated to obtain an overall understanding. For example 100% indicates full acceptance of user perceptions and 0% indicates complete rejection in Table 4. Results showed that the Indian and British participants exhibited a slightly higher interest in personalisation of these devices than American and Australian users. The most prominent factor for personalisation was seen to be the information content. Participants were most interested in customising their

devices with the information they perceived was valuable and relevant to their requirements. The look and feel of devices and functionality were also identified as important factors in determining user preferences for personalising their devices. The look and feel referred to the aesthetics of the devices and functionality was measured in terms of what services devices offered. The least influential factor emerged to be how participants perceived they actually used their devices.

TABLE 4. User preferences of technology personalization.

	India (%)	Australia (%)	UK (%)	USA (%)
Mobile Phones	77.1	61.2	66.6	55.5
Aesthetics	49.5	54.4	65.3	50.32
Functionality	46.4	50.7	46.5	58.77
Information content	61.8	59.8	65.9	70.19
Actual use	44.1	42.6	45.2	42.07
Computers	78.9	73.0	83.1	73.2
Aesthetics	49.1	56.4	80.0	60.35
Functionality	54.9	67.0	71.5	67.66
Information content	68.2	76.6	77.6	78.21
Actual use	52.6	56.4	64.2	58.73
Web pages	70.5	70.9	87.9	83.3
Aesthetics	56.2	67.3	74.8	75.76
Functionality	41.8	51.4	52.7	56.06
Information content	75.3	86.0	92.0	90.61
Actual use	37.0	43.9	41.6	44.24

The results of the survey were further analysed in terms of Hofstede's cultural dimensions in order to obtain an overall understanding of user attitudes toward personalisation from all four countries. Table 5 shows scores on Hofstede's cultural dimensions for the four countries included in our study. The Hofstede' cultural scores show that the western countries (Australia, the UK and the USA) can be characterised as inclined to be individualistic and feminine. These countries also tend to be avoiding uncertainty. However, India seems to be accepting more power and collectivist than these western countries. India also inclined to be focusing on long-term.

TABLE 5. Hofstede's cultural dimensions (<http://www.geert-hofstede.com/>).

	India	Australia	UK	USA	All countries

Power Distance Index (PDI)	77	36	65	40	43
Individualism (IDV)	48	90	75	91	75
Masculinity (MAS)	56	61	54	62	34
Uncertainty Avoidance Index (UAI)	40	51	94	46	59
Long-Term Orientation (LTO)	61	31	38	29	36

In our study, we focus only on one aspect of personalisation, namely ATM functionality. Table 6 shows the partial correlation values between Hofstede's cultural dimensions and users' preferences for additional ATM functionality. Several questions regarding the use of financial and non-financial services were asked. The responses were again assigned weighting and an overall value was calculated and correlated with cultural indices of all countries (as listed in Table 5). Due to the scope of the paper, these transactions are not listed here.

TABLE 6. Correlation values.

	ATM Functionality (p value)
Power Distance Index (PDI)	0.038*
Individualism (IDV)	-0.010*
Masculinity (MAS)	0.869
Uncertainty Avoidance Index (UAI)	-0.600
Long-Term Orientation (LTO)	.052
* significant at 0.05%	

As shown in Table 6, there is a significant positive correlation between user preferences of ATM personalisation in terms of its functionality and power distance index. Similarly, a positive relationship between user perceptions of ATM functionality and long-term orientation can also be seen. However, table shows a significant negative correlation between user preferences of ATM functionality and individualism index. The first two correlations indicate a positive influence of power distance and long-term orientation indices on users' willingness to have more transactions on ATMs. However, the third correlation indicates that cultures with higher long-term orientation index will be less inclined to personalise their ATMs in terms of its functionality. These findings provide an understanding of how users from

western and emerging cultures perceive personalisation of devices and services.

5. Discussion

Our study aimed to obtain an understanding of users from four countries toward ATM personalisation. The results showed the extent to which Hofstede's cultural dimensions helped in explaining the variation of user perceptions of ATM personalisation. For example, research on Hofstede's model argues that countries with high power distance and low individualism index have shown lower rates of adopting new technologies (Zmud, 1982). This may be due to centralised decision structures and hierarchical sharing of information in the society. According to these findings, countries such as India and China may be less likely to adopt technology innovation. However, contrary to these findings, our results indicated that users from India (with high power distance index) showed a positive attitude toward ATM personalisation. This finding is in line with our initial analysis where users expressed their perceptions of personalisation of three distinct devices (mobile phones, computers and web pages).

Similarly, according to Hofstede, high individualism index may be a factor in explaining a positive attitude of western countries toward technology adoption. However, our findings showed that high collectivism index of India which indicated group decisions and conformity to norms, could not explain the positive attitude of Indian users toward device personalisation.

Based on the main findings, we argue that Hofstede's cultural dimensions may provide a general indication of cultural mechanism in technology personalisation. However, human factor issues based on in-depth understanding of evolving cultures is required to model user attitude and predict future adoption of modern technology.

6. Conclusion

This study was the first large-scale online empirical investigation focusing on user perceptions of and attitudes toward ATM personalisation. The study explored in detail the differences and similarities of user requirements from four distinct cultures with respect to Hofstede's model. The study presented significant findings on the role and effects of national cultures on technology personalisation. The study also provides important implications for researchers and designers who wish to introduce modern technology globally. The study contributes to the literature by exploring the role of Hofstede's

model in determining the attitudes of evolving cultures towards adopting modern technology.

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