Understanding the Behavior of the Elderly towards Internet Banking in the UK

Fahad Asmi
Independent Researcher, Pakistan
e-mail: fahadasmi@yahoo.com

Tanko Ishaya
University of Jos, Nigeria
e-mail: ishayat@unijos.edu.ng

***Abstract*—The rapid development and maturity of Electronic Business has stimulated the adoption of Internet Banking in both the developed and developing economies. This adoption is no doubt a result of not just based on the maturity of the Internet, but its ubiquitous nature. As of 2005, about 73% of households have active Internet connection in the UK. At the same time this huge adoption has raised many social and economic issues that should be addressed. This paper presents an investigation into the behavior of elderly people (age segment 55-65) towards Internet banking in the UK. The research constructs were developed based on the 'Decomposed Theory of Planned Behavior' towards providing an understanding of the level of motivations, social influence, perceived usefulness and ease of use for the defined age segment in the UK. Analyzed research output has identified a number of issues that should be addressed in order to increase the involvement of a potential sub-segment of elderly people in e-commerce activities.**

Keywords-Gerontechnology; Digital Divide; Internet Banking and Technology Adoption Model.

I. INTRODUCTION

Technology has changed the whole pattern of life and it is still refining the way we live and do things. Besides its brighter features such as the speed and convenience, Information Technology (IT) has also triggered many complexities requiring research attention. The trend of late adoption of IT related products and services are mostly observed in people who have misconceptions, are techno-phobia and lack IT literacy. The UK is one of the first countries that have adopted electronic mediums for offering government services online. Every institute in UK is using all possible appropriate IT enabled medium of communication for providing their services. Financial institutes are also utilizing different mediums to provide efficient services (such as telephone banking, Automatic Teller Machines (ATM) services and internet banking) for its consumers [34]. This trend is now gaining popularity in most developing economies. However, the opportunities provided by the adoption of the technology also come with a number of new challenges. For example, lack of security [32], loyalty and satisfaction [33]. As a result, a lot of multi-disciplinary research is being undertaken to address these challenges [31].

Existing financial institutes in the UK should address emerging challenges and gaps required for continued improvement of performance and socio-economic growth and development. In the UK, 'healthy life expectancy' is increasing, which creates the need for technological products and services to fulfill the supporting roles for the elder people. Social issues, such as the 'digital divide', are also influencing the society in the UK, where more than 9.2 M are still perceived to be resistant in getting involved in this electronic age. Given the potential use of the Internet in everyday life, there is an urgent need to examine the means to enable older adults to embrace the digital age [9]. Institutes that have plans to formulate their cyber presence should understand the motivation and perception of end-users as key indicators of decision making with respect to product and service development. This paper presents an investigation into the behavior of the elderly (people of an age segment of 55-65) towards Internet banking in the UK.

The remainder of this paper is structured as follows: the next section (Section II), presents an analysis of the related background information required for a justification for the research presented in this paper. It describes the development of the model used. Section III presents a description of the research objectives and the main methodology used and the analysis of the findings presented in Section IV. Section V concludes with ideas for future work.

II. BACKGROUD

The background to this paper is based on three related areas of work - including an evaluation of ICT development in the UK, its potential benefits and issues affecting its full adoption by the elderly in Section IIA. It also presents a generic review of ecommerce in the UK in Section IIB and a study of the behavior of the elderly consumers to ecommerce in Section IIC. Finally, it reviews a number of innovation adoption models that helped in defining a theoretical framework for this research in Section IID.

A. IT/ICT and Gerontechnology in UK

History reveals how Germany and Japan took over leadership in manufacturing industry, which was once UK's identity [1]. Presently, India and China seem to be grabbing it from Germany and Japan [1]. Thus, to re-develop a resilient UK economy, intensive investment in IT and ICT sector has been made. Its objective is to make UK a 'virtual hub' for the globe [1]. The Internet is developing a uniformed global culture and the UK is greatly participating in it, demonstrated by the 19 million out of 25 million people that have Internet connections at home in UK [19]. As a result, Internet economy is the 5th largest part of the whole UK's economy [19].

 ISBN: 978-1-61208-228-8

ICT has opened new ways for elderly people to perform roles and responsibilities at home and work in progressive society as active and independent citizens with the support of developed ICT innovations [38]. For example, improvements in health care procedures while reducing its cost [37]. The adoption of ICT also encourages individuals to maintain their privacy and security [37]. With the increase in age, people experience different types of illnesses - including visual problems, hearing impairments and arthritis [40], and it is clear that ICT innovation can help these people to perform self-care supporting activities. Researchers have realized the heterogeneity of grey market in terms of their age group, interests, skills and abilities that can be useful in the phase of learning and adopting ICT innovation in older people. [39].

The demand of ergonomics and assistive technology for elderly people in 1990's presented research and development opportunities and challenges required to fulfill future needs [41]. It is the output of multi-disciplinary overlapping research, where 'Technology' interacts with 'Gerontology' to work for betterment of the life of elderly people [43]. For example, aging issues decrease the chances for elderly people to continue their routine activities at the same pace. The technology that can help to avoid or decrease such chances for elder people is classified as 'gerontechnology' [14]. Gerontechnology also encourages the involvement of elderly people during the design and development phase of any product and services for their use [42]. Government and educational institutes in UK are contributing in all possible ways to cope with uprising aging issues of society by re-engineering and re-designing operations and management.

B. E-commerce in UK

Electronic use in all business processes has re-shaped all sets of actions and enhanced the business growth to higher levels [18]. Financial firms are using latest technological support to increase transactional security and provide maximum number of mediums for serving consumers [4]. In the framework of e-commerce, Internet banking is defined as a major part of its applications [18], which still has many acceptance issues in consumer's mind [7]. Internet banking can be classified broadly in 3 different forms: (1) To only provide information about services; (2) To be used as communication channel only but can't access bank's internal network; (3) Used to offer complete operational features and services through electronic platform [22]. In electronic banking, first remarkable development is the ATM, which extraordinarily reduced the cost of every transaction [5]. At the same time, the hesitation to use ATM by older people has created high level of attention [29]. The Bank of Scotland is the first financial institute in UK that started providing electronically in 1980's [10]. By the year 2006, about 17 million adult population of the UK adopted Internet banking, which is about one thirds (1/3) of the total population of adults in UK [6]. The rate of adoption in the case of Internet banking can be faster and higher if the crucial factors like privacy, legislation and security are addressed [21].

C. Elderly People in UK

Studying consumer behavior of specific segment of people provides us with useful information about them. It can be used to predict the products and services that they need [9] i.e.; older people usually buy products and services according to their convenience [28]. In the UK, the well off people usually starts to have leisure activities in their older lives [13], and they are concerned more about health and mobility related issues [8]. Due to heterogeneity in terms of attitude and values of mature market, it is important to subdivide them, usually researchers divide them as 55-64, 65-74, 75-85 and older than 85 [13]. In the EU, people of age 45 and above are increasing as compare to the adults of age 45 or less [16]. Still, in this era of technological revolution, people prefer to have face-to-face communication where possible; this behavior can be understandable [20], given that elderly people have phobia of using technological products and services [17].

D. Theoretical Frameworks for Technology Adoption

To understand the behavior of elderly people (age segment 55-65) towards Internet banking in the UK, a technology adoption model is required which can figure out the consumers' perceptions and attitude. As a quick flashback of existing models, 'Innovation Diffusion Theory' (IDT) can be considered as a first proposed model that defined the procedure of accepting or rejecting any new innovation [26]. Afterwards, many social psychological researchers suggested many variables to predict behavior i.e. attitude, social norms, subjective norms and perceived behavioral control. Specifically for technology adoption 'technology acceptance model' (TAM) can be considered as the first model to understand technology adoption in consumers. TAM defines 'perceived ease of use (PEOU) and 'perceived usefulness' (PU) as major predictors of any technology adoption [11]. Similarly, the 'decomposed theory of planned behavior' (DTPB) was developed by modifying the 'theory of planned behavior' (TPB) to understand technology adoption behavior [30]. DTPB describes (1) 'Attitude' as sum of compatibility, perceived ease of use and usefulness, (2) 'Subjective norms' as a composition of peer and superior influences and (3) 'Perceived behavioral control (PBC)' as the output of self-efficacy, resource and technology facilitating conditions [2]. Researchers have already used different variables to make an extension of existing DTPB for research i.e., 'risk' [15] and 'friendliness' [25] as a part of DTPB model.

Based on the analysis of existing models, Figure 1 presents a theoretical model adopted for this research.

 ISBN: 978-1-61208-228-8

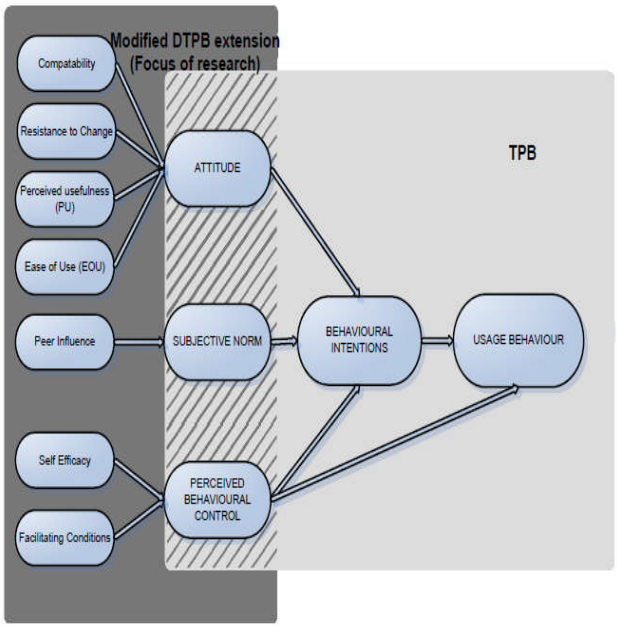

Figure 1: Proposed model for the current research.

In the current research, DTPB model has been adopted and 'resistance to change' added as a part of the variables required for predicting 'attitude' as it has been done in many previous researches [35, 36]. 'Superior influence' will be eliminated from the variable to define 'subjective norms' and only peer influence will be discussed. PBC will be analyzed on the basis of available facilitating conditions and individual's self-efficacy to perform IB related tasks and operations in the current research model. More specifically, only the relationship among variables will be analyzed which are defining 'attitude', 'subjective norms' and PBC of elderly people (age group: 55-65) towards Internet banking in the UK and will not explain the relation of 'intentions' and 'behavior' with 'attitude', 'social nom' and PBC

III. OBJECTIVE OF THE CURRENT RESEARCH

The purpose of the current research is to extract factors that have led to the low adoption Internet banking by the elderly people (with age segment of 55-65) in the UK, in the following dimensions:

- Cross-interaction among 'resistance of change', PEOU, PU and 'Compatibility'.
- Impact of 'social influence' in the case of IB.
- How 'self-efficacy' and 'facilitating conditions' affect the PBC of elder people (age segment: 55-65) towards Internet banking.

A. Methedology

For achieving the goal, philosophical stance has been 'Interpretive' due to the focus on the complex social issues. The research design is 'exploratory' since the aim is to describe and discuss problem that potentially leads to an increase in knowledge. For conducting research, quantitative-qualitative methods have been adopted, by conducting personal, semi structured, face-to-face interviews and surveys in the form of questionnaires. More specifically, a sample size of a population 100 users (70 non-users and 30 uses of Internet Banking) has been collected according to the simplified random sampling method. On the other hand, convenience sampling was used for conducting interviews with 8 participants (5 non-users and 3 users). Inductive-deductive study approach helps to work under a framework and suggests new elements as a part of existing model. Qualitative data was gathered and analyzed by making transcripts of interviews, categorizing according to the variables and identifying relations in the summarized data. The captured quantitative data was analyzed using descriptive statistics to define and challenge existing relationships among variables.

B. Data

The table below presents the data collected from responses of both users and non-users of Internet banking.

TABLE 1: DOMINATING FEATURES COLLECTED AS RESPONSE DURING THE SURVEY FROM USERS AND NON-USERS OF IB.

Questions	**Response types**	**Non-users of IB**	**Users of IB**
IB can make my banking activities easier?	Agree	20%	58%
	Neutral	35%	26%
	Disagree	45%	16%
Banks are providing sufficient information to adopt IB?	Agree	19%	38%
	Neutral	27%	36%
	Disagree	55%	26%
E-transactions are secure?	Agree	27%	42%
	Neutral	38%	38%
	Disagree	35%	20%
Have time to get involve in IB?	Agree	7%	56%
	Neutral	39%	36%
	Disagree	54%	8%
Discuss finance related issues with family and close friends?	Agree	22%	6%
	Neutral	24%	26%
	Disagree	74%	68%
People perceived IB includes complex transactional procedures?	Agree	50%	40%
	Neutral	32%	26%
	Disagree	18%	34%
IB provides personalized facility	Agree	15%	40%
	Neutral	35%	25%
	Disagree	50%	35%

 ISBN: 978-1-61208-228-8

IV. FINDINGS AND ANALYSIS

Demographic profile of IB non-users in the sample is shown in Table 2.

TABLE 2: DOMINANT FEATURES OF COLLECTED NON-IB USERS SAMPLE.

Age Segment	55-60	45%	13% have not specified any option
	60-65	42%	
Gender	Male	48%	4% have not specified any option
	Female	48%	
Occupation	Employed	65%	6% holds other options
	Retired	28%	
Educated	Secondary	48%	Remaining 37% holds other option
	Primary	15%	
Respondents that used computers before	82% of non-users of IB used computers before		
Respondents that used the Internet	More than 65% used Internet		

Major questions used to define each variable are following:

Compatibility
- I interact with technology in routine life.
- IB adoption is possible for me.
- IB can improve my banking activities.

Resistance to Change
- I always look for new developments to make my life easy.
- I always look for new technology or services.
- Banks should adopt new technologies.

Perceived Usefulness
- IB can make my life comfortable.
- IB is valueable service.
- IB is personalized service.
- E-transactions are secure mode of payments.

Perceived Ease of Use
- Learning IB is an easy process
- IB's transaction handling is risky procedure.
- Online transaction procedure is easy.

Facilitating Facilities
- I have computer and Internet facility.
- I am frequent Internet user.
- I have time to involve in IB.
- I have knowledge of IB.

Self-efficacy
- I have confidence to search over the Web.
- I can understand the e-transaction procedures easily.
- I can learn technological interaction easily.

Peer Influence:
- I usually try things what my friends and family suggests.
- Discuss about plans to buy with my family and friends.
- Updates about new technology or services make me happy.

After complete reliability and validity test, logical division of the current area of the paper has focused on identifying aspects of attitude, PBC and social norms of elder people towards Internet banking. A blend of quantitative and qualitative data was used to support the arguments.

Reliability and validity tests are important for verifying relationships between interrelated items. Value of Cronbach Alpha is used for this purpose, which should be higher than .70. If the items are less than 10, inter item correlation can be measured which should be ranged between .2 - .4 [23], as shown in the Table 3.

TABLE 3. RELIABILITY AND VALIDITY TEST

Area of Study	Number of Items (Questions involved)	Cornbach's Alpha	Inter-item correlation (mean)
Compatibility	6	0.761	0.346
Ease of Use	3	0.592	0.340
Perceived Usefulness	6	0.605	0.207
Resistance to Change	5	0.738	0.300
Facilitating Facilities	5	0.713	0.339
Self-efficacy	6	0.730	0.330
Peer and Family Influence	4	0.511	0.303

A. Attitude

The positive correlation is observed among 'Compatibility', PU and PEOU. Whereas negative association of 'resistance to change' is observed with all other 'Attitude' related variables in the case of elder people towards Internet banking, as shown in Figure 2.

 ISBN: 978-1-61208-228-8

Correlations

		useful	easeofuse	compatability	resistance
useful	Pearson Correlation	1	.707**	.432*	-.787**
	Sig. (2-tailed)		.000	.035	.000
	N	35	35	24	35
easeofuse	Pearson Correlation	.707**	1	.757**	-.553**
	Sig. (2-tailed)	.000		.000	.001
	N	35	35	24	35
compatability	Pearson Correlation	.432*	.757**	1	-.346
	Sig. (2-tailed)	.035	.000		.098
	N	24	24	24	24
resistance	Pearson Correlation	-.787**	-.553**	-.346	1
	Sig. (2-tailed)	.000	.001	.098	
	N	35	35	24	35

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 2: Correlation analysis of 'Perceived Ease of Use', 'Perceived usefulness, 'Compatibility' and 'Resistance to Change' in the case of IB for target segment.

1) Compatibility

Compatibility is the degree at which any improvement can stick with existing set of values and needs. Initial quantitative findings from the non-users of IB, related to compatibility are mentioned in Table 4.

TABLE 4: 'COMPATIBILITY' RELATED FEATURES OF NON-USERS OF IB

Having computer literacy	50%
Having internet literacy	45%
Intentionally avoids IB	75%
Having ability to perform tasks of IB	60%

The trend of adopting Internet banking in male's increases with age but this trend is converse in females.

During qualitative analysis, questions asked about involvement of technology in financial activities, responders replied with the least usage of ATM for withdrawing money but more interestingly, people still use Internet for web browsing and emails. Descriptive statistics shows that there is a positive relation of 'usefulness' and 'ease of use' with 'compatibility' in the current case of study. Actions from socially active firms to decrease digital divide, increase in retirement age and higher ratio of males as compare to females in working environment, can be the reason of output of this research. Literature and current research defines that, people having the willingness, better education, need of IT for job roles and it in a values, are adopting better way.

2) Perceived Ease of Use (PEOU)

PEOU defines how easy it is to adopt a technology. Quantitative research have presented a number of observed patterns: (1) 34% of people assume IB is difficult to adopt and 40% have neutral behavior towards IB. (2) 45% of non-users defines IB procedures as complex suite of actions and 40% have never thought about IB. (3) Mostly employed people have neutral behavior about IB and retired people have negative perception of it. Statistical analysis summarized 'PEOU' as having a positive relation with PU and compatibility. Qualitative analysis defined that target segment has knowledge about IB but they usually felt more comfortable in face-to-face communication. Literature supports the findings on the basis of following reasons. (1) Existing measures of quality of e-service highlight the importance of 'enjoyment', 'responsiveness' and 'contact' [24]. (2) A fewer packages of information provided by financial institutes about IB in target segment can be the reason of 'neutral' and negative' behavior towards IB. (3) Existing techno-phobia, myths and a huge communication gap can be the reason of this survey's response.

3) Perceived Usefulness

This explains how any innovation can improve and simplify the tasks. Quantitative survey indicates (1) 35% of non-users have 'neutral' perception about IB. (2) More than 85% of non-users have privacy issues. (3) 50% of non-users defined complexities in online transactional process as a reason to avoid IB. (4) 35% have doubts about IB security. Still more than 37% people have 'neutral' behavior towards IB. Descriptive statistics concludes positive relation of PU with PEOU and Compatibility. While conducting interview with an IB user, he mentioned the security checks provided by his bank for each transaction as a reason of his satisfaction. Similarly, one of the non-users of IB indicated security as one of the main factors that made them to avoid IB. All observations concluded a few elements, which should be address. (1) Implementations of IB at information, communication and transactional level should be re-defined to remove 'lack of trust' and 'critical security issues' to attract consumers [22]. (2) In the case of IB, there can be a chance that people experienced value is less as compare to the perceived value which made them non-users [24].

4) Resistance to Change

Survey concludes that 50% people avoid IB because of complex set of actions for each transaction. The following 2 patterns support the argument that the target segment are potential IB consumers, (1) 55% of non-users are willing to adopt new innovation to improve life support. (2) 28% of non-users are not avoiding IB because of complex transactional process. Descriptive statistical analysis concludes that PEOU and PU have positive relation with resistance of change, but the current research hasn't found any relationship between 'resistance to change' and 'compatibility'. One interviewer indicated that they have not used the Internet for IB purpose and another interviewer rejected IB to adopt at any cost. Literature defined resistance towards IB because of following reasons, (1) Non-users in target segment avoids IB because they di not take risks and challenges, do things only on the basis of 'loss based selection' improve life in restricted dimensions [12]. (2) Everybody avoids testing any new idea where the chances of financial loss are high. To conclude the set of variables that are defining 'Attitude' are Inter-related and have impact on each other.

B. Peer influence (Social norms)

In the current research, only 'peer-influence' will be discussed on how friends and family effects any financial

 ISBN: 978-1-61208-228-8

activity in target segment, statistical analysis can be summarized with the following dominant features. (1) For general shopping, 40% usually attempt the recommended products and services. (2) 60% of the sample hasn't ever been advised to use IB. (3) Educated people have interest in recent technological developments. On the other hand, qualitative survey also showed the same patterns, i.e., an IB user recommended IB to other friends and family and they find it easy and convenient to adopt. Perspective of non-users is different, interviews concludes that people usually avoid discussing financial concerns with friends and family. From literature perspective the following have been observed:

- IB provides less opportunity for trial-ability and observe-ability [26].
- People with 'neutral' opinion can be attracted by proper encouragement and support.
- People only pays attention to the information, which supports their opinion, such biased attitude can be the reason of avoiding IB.

C. *Perceived Behavioral Control*

Research have shown a possitive relationships between all the factors. For example, in the third compnent, the relationship between 'facilitating facilities' and 'self-efficacy' to define PBC towards IB for the target age segment was invetigated using the the Pearson Product-momment correlation coefficient (*r*). From the results in Figure 3, the result *r*=.760 indicates a strong, positive correlation between the two variables.

Correlations

		facilities	self_efficacy
facilities	Pearson Correlation	1	.760**
	Sig. (2-tailed)		.000
	N	24	24
self_efficacy	Pearson Correlation	.760**	1
	Sig. (2-tailed)	.000	
	N	24	24

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 3: Correlation analysis of 'Facilitating facilities' and 'Self efficacy'.

1) *Facilitating Facilities*

It includes the know-how about operation in IB and physical devices, which are needed for IB. From questionnaires, following attributes can be concluded, (1) 60% of non-users have knowledge about IB. (2) Employed and educated people have more knowledge about IB compared to the rest of the sample. Descriptive analysis concludes facilitating facilities have positive relation with self-efficacy. On the other side, qualitative analysis says that more interaction of non-users with technology can reduce myths and techno-phobia. Findings are understandable in the following ways. (1) IB has less 'Tangibility' factor. (2) Learning ability of IB decreases with age [3]. (3) Intensive attention should be paid on each level of IB (Transactional, communication and information).

2) *Self-efficacy*

This is about an individual's ability to do tasks with confidence. In the current target segment, self-efficacy is getting low with increase in age. Similarly, their 'neutral' behavior towards IB is also getting 'negative' with increase in age. As it is previously discussed that presence of facilitating conditions can increase the self-efficacy in target segment towards IB. Quantitative and qualitative survey concludes that PBC is not the major reason to avoid IB. Target segment have self-efficacy and facilitating conditions. Literature defines that elder people only adopt new innovation when they have any problem in existing pattern of work and target segment is quite satisfied with traditional face-to-face banking [27]. Secondly, Most of the people have the ability to do different and unique tasks, they only lacked the proper guidance and instructions to adopt them [3], and this can be the case for the target age segment.

V. CONCLUSION AND FUTURE RESEARCH

During the whole span of quantitative and qualitative research, target segment prefers traditional banking system where they have face-to-face interaction. While studying behavior of elderly people towards Internet banking 'compatibility' is observed the most influencing as compare to PEOU and PU to form attitude. 'Resistance of change' has negative relation with all variables who are composing 'attitude'. In the behavior towards IB, Social norms in the form of 'peer influence' shows less influencing variable as compare to the impact of 'attitude' in defining behavior towards IB in the elderly people in the UK. In the collected quantitative sample, more than 45% of non-users of IB in target segment have most of the facilitating conditions and have enough self-efficacy to perform IB related tasks. The age segment 55-65 with education and employment should be address by financial institutions to increase their motivation, and encourage them to participate in IB services. The ability to learn and observe exists in elder people in the UK but financial institutes haven't ever interacted with them while taking care of their heterogeneity.

The current research used a descriptive statistical approach for analyzing the relationship among variables to define attitude, social norms and PBC. Multiple-regression can be applied to make the research more authentic. In target segment, definitions of 'perceived risks', 'quality' and 'privacy' are different in the case of IB, so it is needed to be re-defined for target segment's needs. A a new scale for measuring the quality in the case of IB can be helpful to predict better adoption rate. Longitudinal in terms of time horizon can enrich the findings of the current research as technology adoption decisions includes behavioral and psychological dimensions

REFERENCES

[1] J. Acklam and C.Chang, "ICT-enabled UK-based Global Virtual Hubs," BCS Management Forum Strategic Panel, 2009, Available

 ISBN: 978-1-61208-228-8

online: www.bsc.org/upload/pdf/global-virtual-hubs-paper.pdf BCS [retrieved: January, 2011]

[2] K.I. Al-Qeisi, "Analyzing the Use of UTAUT Model in Explaining an Online Behaviour: Internet Banking Adoption," PhD Thesis, 2009, Brunel University.

[3] A. Bandura, "SELF EFFICACY: the exercise of control," New York: W.H. Freeman and Company, 1997

[4] E. Bock, "The introduction of e-Commerce systems in the banking industry - an example of the BBBank and some empirical results," Proc. ECIS, 2000

[5] F. Calisir and C.A.Gumussoy, "Internet banking versus other banking channels: Young consumers' view," International Journal of Information Management. 2008, vol.28(3), pp. 215-221.

[6] H. Celik, "What determines Turkish customers' acceptance of internet banking?," International Journal of Bank Marketing. Vol.26(5), 2008, pp. 353-370.

[7] Y.T. Cheng "Dynamics of Internet Banking Adoption," Available online: -- [retrieved: May 2011]

[8] I. Chaston, "Boomer Marketing: Selling to a Recession Resistant Market," London: Routledge, 2009.

[9] B. Clegg, "The invisible customer: strategies for sucessive customer service down the wire. London: Kogan Page, 2000.

[10] E. Daniel, "Provision of electronic banking in the UK and the Republic of Ireland," International Journal of Bank Marketing. vol.17(2), 1999, pp.72-82.

[11] F.D.Davies "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology," MIS Quarterly, vol.13 (3), 1989, pp. 319-340.

[12] P.S. Fry and C.L.M. Keyes, "New Frontiers in Resilient Aging: Life-strengths and well-being in Late Life," Cambridge: Cambridge University Press, 2010.

[13] B. Gunter, "Understanding the older consumer: the grey market," London: Routledge, 1998

[14] T.L. Harrington and M.K. Harrington "Gerontechnology: Why and How," Eindhoven, Netherlands, Shaker Publishing B.V, 2000

[15] E. Huang and M.H.Chuang "Extending the theory of planned behaviour as a model to explain post-merger employee behaviour of IS use," Computers in Human Behavior, vol.23, 2007, pp. 240-257.

[16] D. Jobber, "Principles and Practice of Marketing," McGraw Hill Higher Education, 2006

[17] N.Joseph, and B. Stone "Diagnosis: Interent Phobia [Seniors who shun the web miss out. How to help]," unpublished .

[18] R. Kalakota and A.B. Whinston "Electronic commerce: a manager's guide," 1st ed, Addison-Wesley, 1997

[19] C. Kalapesi, et al, "The connected Kingdom: How the internet is transforming the U.K. economy," Boston, MA: The Boston Consulting Group, 2010

[20] M.Lindstrom and T.F Andersen, "Brand building on the Internet", Cambridge: Kogan Page, 2000

[21] A. Y. Mermod, "Customer's Perspectives and Risk Issues on E-Banking in Turkey; Should We Still be Online?," Journal of Internet Banking and Commerce, vol. 16(1), 2010, pp-1-15

[22] OCC, "Internet Banking: Comptroller's Handbook. Office of the Comptroller of the Currency," unpubshed

[23] J. Pallant, SPSS: Survival Guide, 2007

[24] A. Parasuraman, V.A. Zeithaml, and A. Malhotra, "E-S-QUAL A Multiple-Item Scale for Assessing Electronic Service Quality," Journal of Service Research. Vol.7(10), 2005, pp. 1-21.

[25] P.E. Pedersen, "Adoption of Mobile Internet Services:An Exploratory Study of Mobile Commerce Early Adopters," Journals of Organization computing and electronic commerce, Vol.15(2), 2005, pp. 203-222.

[26] E.M. Rogers, "Diffusion of Innovations," New York: Simon and Schuster, 2003

[27] R. Sandra-Cornett, "Teaching the Elderly," Ohio: The Ohio State University Medical Center, 2001

[28] J.N. Sheth, R.S. Sisodia, et al., "Impact of Demographic Diversity and Information Technology on the Future of Consumer Behavior," Journal of the Academy of Marketing Sciences. MSI/JAMS Special Issue, 1999, pp. 1-28

[29] A. Tarakanov, "Use and non-use of Automatic Teller Machines by older people in Israel," Journal of the International Society for Gerontechnology, vol.3(2), 2004, pp. 107-110.

[30] S. Taylor and P.A.Todd, "Understanding information technology usage: a test of cometing models," Institute of Operations Research and Management Sciences, vol.**6**(2), 1995, pp. 144-176.

[31] M.A. Sarlak and A.A. Hastiani, "E-Banking and Emerging Multidisciplinary Processes: Social, Economical and Organizational Models," Business Science Reference, Hershey, New York, 2010

[32] S. Drimer, S.J. Murdoch, and R. Anderson, "Optimised to Fail: Card Readers for Online Banking," Financial Cryptography and Data Security. Springer-Verlag, 2009, pp.184-200.

[33] A. Floh and H. Treiblmaier, "What Keeps The E-Banking Customer Loyal? A Multigroup Analysis Of The Moderating Role Of Consumer Characteristics On E-Loyalty: In The Financial Service Industry," Journal of Electronic Commerce Research, Vol. 7 (2), 2006

[34] ICT and e-Business Impact in the Banking Industry A Sectoral e-Business Watch: European Commission, Enterprise & Industry, 2008: [Available online: http://ec.europa.eu/enterprise/archives/e-business-watch/studies/sectors/banking/documents/Study_06-2008_Banking.pdf]

[35] V.T. Ragoobur and A. Ayrga, "Is Mauritius Ready to E-bank? From A Customer and Banking Perspective," Journal of Internet Banking and Commerce, vol. 16(1), 2011

[36] M. Sathye, "Adoption of Internet Banking by Australian consumers: An Emperical investigation," International Journal of Bank Marketing, vol. 17(7), 1999, pp. 324-334.

[37] G. Kathrin and C. Michael, "ICT enabled independent living for elderly : A status-quo analysis on products and the research landscape in the field of Ambient Assisted Living (AAL) in EU-27," Institute for Innovation and Technology, 2010.

[38] F. Amaro and G. Henrique "ICT for Elderly People: «Yes, 'They' Can!»," Proc. International Conference on e-Commerce, e-Administration, e-Society, e-Education, and e-Technology, Tokyo, Japan, 2011, pp-3792-3803 URL: http://hdl.handle.net/10400.11/820

[39] S. Sayago, P. Fobers, and J. Balt, "Old people becoming successful ICT learners over time: Challenges andstrategies through an ethnographic lens," Educational Gerontechology, in press

[40] Chronic Conditions A challenge for the 21st century: Chronic And Disabling Conditions Challenges For The 21st . Century. Washington, DC, National Academy On An Aging Society.

[41] J.E.M.H. van Bronswijk, H. Bouma, and J.L. Fozard, "Technology for quality of life: an enriched taxonomy," Gerontechnology, vol.2 (2), 2002, pp-169-172

[42] J.A.M. Graafmans, J.L. Fozard, J. Rietsema, A. van Berlo, and H Bouma,"Gerontechnology: Matching the technological environment to the needs and capacities of the elderly," In Brookhuis, K. A. (Ed. The European Chapter of the HFES Tenth Anniversary Meeting. Soesterberg, 1996, pp-19-31

[43] B. Dara-Abrams, "Toward a Model for Collaborative Gerontechnology: Connecting Elders and their Caregivers," Proc. Sixth International Conference on Creating, Connecting and Collaborating through Computing, 2008, pp-109-114 : DOI: 10.1109/C5.2008

 ISBN: 978-1-61208-228-8