

Silver Surfers Adoption, Use and Diffusion of Smartphones: An SME Perspective

Sutee Pheeraphuttharangkoon and Jyoti Choudrie

System Management Research Unit (SyMRU)

University of Hertfordshire Business School Working Paper (2012)

The Working Paper Series is intended for rapid dissemination of research results, work-in-progress, and innovative teaching methods, at the pre-publication stage. Comments are welcomed and should be addressed to the individual author(s). It should be noted that papers in this series are often provisional and comments and/or citations should take account of this.

University of Hertfordshire Business School Working Papers are available for download from <https://uhra.herts.ac.uk/dspace/handle/2299/5549> and also from the British Library: www.mbsportal.bl.uk

Copyright and all rights therein are retained by the authors. All persons copying this information are expected to adhere to the terms and conditions invoked by each author's copyright. These works may not be re-posted without the explicit permission of the copyright holders.

The Business School at the University of Hertfordshire (UH) employs approximately 150 academic staff in a state-of-the-art environment located in Hatfield Business Park. It offers 17 undergraduate degree programmes and 21 postgraduate programmes; there are about 80 research students, mostly working at doctoral level.

The University of Hertfordshire is the UK's leading business-facing university and an exemplar in the sector. It is one of the region's largest employers with over 2,300 staff and a turnover of £231million. In the 2008 UK Research Assessment Exercise it was given the highest rank for research quality among the post-1992 universities. It has a student community of over 27,000 including more than 2,900 international students. The University of Hertfordshire was awarded 'Entrepreneurial University of the Year 2010' by the Times Higher Education (THE) and ranks in the top 4% of all universities in the world according to the latest THE World University Rankings.

Silver Surfers Adoption, Use and Diffusion of Smartphones: An SME Perspective

Sutee Pheeraphuttharangkoon,
University of Hertfordshire.
Business School. System Management Research Unit (SyMRU).
E-mail: supibee@gmail.com

Jyoti Choudrie,
University of Hertfordshire.
Business School. System Management Research Unit (SyMRU).
E-mail: J.choudrie@herts.ac.uk;jyoti.choudrie@btopenworld.com

Abstract

In a global and knowledge-rich economy, Information and Communication Technologies (ICTs) have become critical for organisations. Smartphones have impacted society and organisations alike with varying adoption and use across age groups. Due to recent legislation in many countries, older adults are now working to a higher age, but appear to lag behind younger users in terms of adoption and use of novel technologies. Smartphones are also important for older adults with extended working lives - they will need to keep abreast with the times. In this research-in-progress paper, *we aim to examine, identify and explain how silver surfers owned micro enterprises diffuse, adopt and use smartphones in United Kingdom (UK)*. For this, a conceptual model based upon the Decomposed Theory of Planned Behaviour (DTPB) and Roger Everett's Diffusion of Innovations (DOI) theory will be used. A combined qualitative and quantitative approach involving surveys and interviews will be employed. A unique contribution of this research is to examine the research aim within the context of SMEs owned by silver surfers, thereby providing a conceptual framework exclusive to older business owners. For industry, it will also provide an identification of factors specific to older users.

Keywords

Silver-Surfer, Smartphone, innovation adoption, SMEs

Silver Surfers Adoption, Use and Diffusion of Smartphones: An SME Perspective

1. Introduction

Novel technologies in the form of smartphones, such as Apple iPhone, RIM BlackBerry or Samsung Galaxy have grown exponentially in society and widely integrated in daily life activities (mobileSQUARED, 2010). In United Kingdom (UK), 27% of adults and 47% of teenagers are using smartphones and 59% of those in the past year have begun to use smartphones (Ofcom, 2011). Smartphones have not only affected our personal lives, but our work and organisational lives as well. Smartphones, practical and versatile devices, offer user friendly and expedited communication channel that allow organisation to provide and efficient and time saving services to their clients and suppliers (Gupta, 2011 ; is4profit, 2010).

Examples of benefits of smartphones for an organisation are: Currently, smartphones provide internet connectivity that allows organisational users access to information such as news, weather reports, and traffic situations. Further, the provision of a Global Positioning System (GPS) allows smartphones to provide features such as satellite navigation that allows logistics management to be better provided than without this service (Murray, 2011). An additional benefit of smartphones is that they enable users to connect and share information using an Electronic (e)-mail or web-based technology service. Smartphones can also assist organisation's proprietors to organise themselves as smartphones offer a personal organizer service that contains contact lists, calendars and reminders, which can assist the owners to rapidly identify contacts and attend meetings on a timely basis (is4profit, 2010). Finally, smartphones offer the potential of a high-quality camera and video recording service that could allow owners and workers to capture images when and if required: thereby eliminating incurred costs for instance, for seeking professionals to capture images (is4profit, 2010). Hence, from these descriptions it can be learnt that smartphones provide numerous products and services that can facilitate business owners in providing an effective, professional and efficient service from their organisations(Gupta, 2011 ; is4profit, 2010).

Whilst smartphones are impacting society, not all age groups are accepting and using them. For example, there are 4.7 million smartphones used by 45-64 year old group users, compared with 7.6 million used by the 25-44 year old group. Moreover, of the 55 year old and above age group users there are only 10% who employ mobile internet services and 45-55 year old users consume 11 % of mobile internet compared with 23 % from 35-44 year old group and 26% from 25-34 year old group (Ofcom, 2009). This older adult age group also has unique characteristics. They are an economy's wealth holders, wealth creators and as ageing occurs, display diverse learning methods to younger groups (Fidishun, 2000 ; Libe, 1991).

For this research, Silver-surfers, 50 year old or older users (Netlingo, 2010), are the demographic age group of emphasis. This is attributed to a global ageing population that is emerging due to advances in health and lifestyle conditions. In UK currently, approximately one fifth of the over-50s working population is self-employed and, in the next decade, more of the UK population will reach 50 years old (Prime Initiative, 2009). Alongside these changes, governments are recognising that policies relating to retirement ages are also

required to cope with these changes in society. For instance, UK has increased the retirement age of individuals from 65 to 66 (Directgov, 2011).

Small to Medium Sized Enterprises, organisations with less than 50 employees and less than €10 million annual turnover are considered to be a significant sector that contributes to a country's economy (European Commission, 2005). There are 4.8 million registered organisations in the UK, of which approximately 99.3% are small enterprises (Department for Business Innovation and Skills, 2010). An Intel report on SMEs found that SMEs in UK still slow adapt to new technology such as tablets and cloud computing. Moreover, UK SMEs are using Fax machines more than smartphones (IntelUKNewsroom, 2011). The report also shows that proprietors who have a n important role for making decisions when investing and implementing ICTs in their organisations, fall behind and advancing technology trend.

Building upon the aforementioned reasoning, this research aims to examine, identify and explain how silver surfers owned micro enterprises diffuse, adopt and use smartphones in UK. For this research, to adopt smartphones is defined as to own smartphones (Cambridge University Press, 2011).

By fulfilling the aim the anticipated contributions are: For academia, more novel theory focused on the adoption and usage of smart phones, but within an under-researched age group, the silver-surfers will be produced. Added contributions will also be acquired from the novel conceptual model developed in this research. For organisations, knowledge will be provided on identifying factors of consideration when adopting and using smart phones. Moreover, this research will also benefit smartphone providers and manufacturers as they will understand the needs and requirements of silver-surfers in a better manner. For government, the findings can be used as a policy guideline to support and help UK SMEs particularly owned by silver-surfers.

Having introduced the research context and problem, the next section identifies and explains the theoretical understanding, required for this research. This is followed by a discussion of the novel conceptual framework. A research method section that is then followed by the limitations and conclusions to this research concludes this paper.

2. Literature review

This research is based on **Decomposed Theory of Planned Behaviour (DTPB)** that has foundations in the Theory of Planned Behaviour (TPB) that considers individual behaviour and social influence. Further, DTPB can integrate innovation characteristics that can help understanding user intentions.

DTPB has been used in several research studies related to SMEs and ICTs. For instance, DTPB has been used in evaluating the adoption of Open Source Software (OSS) in UK's SMEs sector. In that case DTPB was modified by applying Diffusion of Innovations (DOI) Theory's attributes: Relative Advantage (RA), Complexity (Compl) and Compatibility (Comp) to an attitude structure (Macredie & Mijinyawa, 2011). DTPB was also used to predict internet banking in Taiwan (Shih & Kwoting, 2004).

Since smartphones also contain OSS elements, Macredie & Mijinywa (2011) study's DOI was also employed to this research. Innovation is defined as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption", in addition "newness in an

innovation may be expressed in terms of knowledge, persuasion or a decision to adopt” (Rogers, 2003: 12). Diffusion is “The process by which an innovation is communicated through certain channels over time among the members of a social system.” The theory helps to increase understand innovation and innovative decision making in the adoption context and how an innovation is perceived by individuals. DOI consists of 5 attributes, of which 3 are utilized in this research: RA, Compa and Compl. Within the SME context, DOI and related theories were employed to research ICT adoption in Malaysia that resulted in RA Compl, Compa, security, confidentiality, ICT Costs, Benefits and Barriers being identified as important (Tan *et al.*, 2009).

Within this research study, both DTPB and DOI have been employed because, first, smartphones are considered as a recently introduced device within UK and SMEs, which then identifies it as an innovation. Second, DTPB allows integration of attributes from DOI that increase the exploratory and explanatory capabilities, which is what we are aiming to do.

3. Proposed framework

This research’s conceptual model is adapted from DTPB and three main structures have been applied. DTPB consists of the original attitude structure and 3 innovative characteristics that this research applied (Taylor & Todd, 1995). These are: Subjective Norm (SN), Peer Influence (PI) and Superior Influence (SI) that includes, media influences such as, advertisements in newspapers, or online technology reviews. Self-efficacy, resources facility control and technology facility control from DTPB are implemented in Perceived behavioural control group. Since a demographic group is an added variable age is included in the demographic factors.

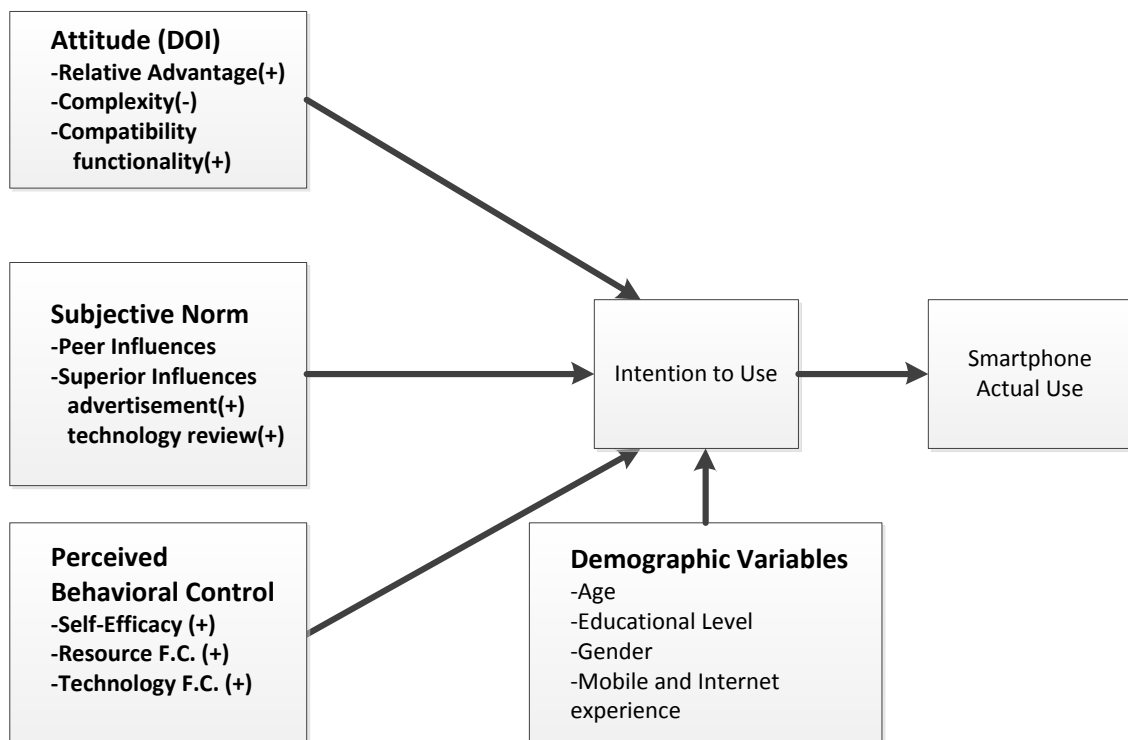


Figure 1 Proposed Framework.

4. Method

To pursue this research a deductive approach is being applied as it is appropriate with a positivistic philosophy. To collect the data an open-end, closed-end, likert scale, survey questionnaire will be applied. For this, an online facility, SurveyMonkey will be used. To acquire explanations to the understanding, email and face-to-face interviews will also be used, which aligns with the interpretivist school of thought.

The target population of this study are silver-surfers who own or operate SMEs in UK that will be self-selected. For the final phase of the research, approximately, 1000 self-administered questionnaires are expected to be distributed. For the interviews, an estimated 30 silver-surfers are anticipated to be targeted. For the sampling approach, snowball sampling will be employed (Sanuders *et al.*, 2009). This approach will be used on the basis that individuals belonging to this sector normally know one another; there by 'passing the word' can assist in increasing the response rates.

For the analytical part, Cronbach's coefficient alpha will be used to reveal the internal consistency of the expected results (Mitchell, 1996). The software application to be employed for this research is SPSS version 16.

5. Limitation

The foreseen limitations to this research are the numbers of published, peer reviewed articles emphasising smartphones research being limited. This is due to smartphones still not being widely adopted; therefore, lesser research being available. This limitation will be overcome by considering more appropriate, comparable technology related published journals. Further, smartphones information may be continuously updated as more knowledge and information are acquired. This will be obtained by referring to most recent trade magazines and newspaper articles. Second, this research study intends to utilise a snowball approach that will inhibit providing a multiple representation since the sample population could be from one area of the country. This will reduce generalisations but provide examples. Third, there is a subjective bias to contend with. For early adopters, there might be positive attitude displayed towards smartphone and reply favourable to the intended survey. Contrarily, participants with a negative bias may not pay much attention to questionnaire; hence affecting the validity and reliability of this research. This we intend to overcome by verifying validation and providing rigour using interviews.

6. Conclusion

This research-in-progress study attempted to explain using classic IS theories how an examination, identification and explanation of how silver surfers owned micro enterprises diffuse, adopt and use smartphones in United Kingdom (UK) will be provided. The classic theories to be employed to form the understanding and conceptual framework are: DTPB and DOI. To determine suitability of the framework, surveys and interviews that will be fulfilled using a snowball sampling approach will be pursued. The quantitative results will be analysed using descriptive statistics and factor analysis.

References

- Cambridge University Press. (2011) *Cambridge Dictionaries Online* [Online]. Available at: http://dictionary.cambridge.org/dictionary/british/adoption_3 [Accessed: 22 Feb 2012].
- Department for Business Innovation and Skills (2010) *Statistical Press Release*.
- Directgov. (2011) *Calculating your State Pension age* [Online]. Available at: http://www.direct.gov.uk/en/Pensionsandretirementplanning/StatePension/DG_4017919 [Accessed: 12 Dec 2011].
- European Commission (2005) *The new SME definition: User guide and model declaration*.
- Fidishun, D. (2000) *Andragogy and Technology: Integrating Adult Learning Theory As We Teach With Technology* [Online]. Available at: <http://frank.mtsu.edu/~itconf/proceed00/fidishun.htm> [Accessed: 27 May 2011].
- Gupta, S. (2011) *Smartphone allows SMEs to grow: Goel* [Online]. Available at: <http://smetimes.tradeindia.com/smetimes/face-to-face/2011/May/24/smartphone-allows-smes-to-grow-goel625455.html> [Accessed: 10 Nov 2011].
- IntelUKNewsroom. (2011) *UK small business at risk of getting stuck in technology dark ages* [Online]. Available at: <http://newsroom.intel.com/docs/DOC-2451> [Accessed: 10 Nov 2011].
- is4profit. (2010) *Smartphones: The Benefits of Smartphones* [Online]. Available at: <http://www.is4profit.com/business-advice/it-telecoms/smartphones/the-benefits-of-smartphones.html> [Accessed: 31 Oct 2010].
- Libe, S. (1991) *Principles of Adult Learning* [Online]. Available at: <http://honolulu.hawaii.edu/intranet/committees/FacDevCom/guidebk/teachtip/adults-2.htm> [Accessed: 27 May 2011].
- Macredie, D. R. and Mijinyawa, K. (2011) "A theory-grounded framework of Open Source Software adoption in SMEs". *European Journal of Information Systems*, (20) pp. 237-250.
- Mitchell, V. (1996) "Assessing the reliability and validity of questionnaires: an empirical example". *Journal of Applied Management Studies*, (5)2 pp. 199-207.
- mobileSQUARED 2010. Mobile social networking and the rise of the smart machines - 2015AD: innovating consumer services, optimizing delivery. airwide solutions.
- Murray, M. (2011) *Smartphones And The Supply Chain* [Online]. Available at: <http://logistics.about.com/od/supplychainsoftware/a/Smartphones-And-The-Supply-Chain.htm> [Accessed: 12 Dec 2011].
- Netlingo. (2010) *Silver surfer* [Online]. Available at: <http://www.netlingo.com/word/silver-surfer.php> [Accessed: 2 Nov 2010].
- Ofcom. (2009) *The Communications Market Report*.
- Ofcom (2011) *Communications Market Report: UK*.
- Prime Initiative. (2009) *Self-employment and the ageing of the UK* [Online]. Available at: <http://www.primeinitiative.co.uk/2009/04/17/self-employment-and-the-ageing-of-the-uk/> [Accessed: 3 Nov 2010].
- Rogers, E. M. (2003) *Diffusion of Innovations*., New York, Free Press.
- Sanuders, M., Lewis, P. and Thornhill, A. (2009) *Research Methods for Business Student*., Harlow, Pearson Education Limited.
- Shih, Y.-Y. and Kwoting, F. (2004) "The use of a decomposed theory of planned behavior to study Internet banking in Taiwan". *Internet Research*, (14)3 pp. 213-223.
- Tan, K. S., Chong, S. C., Lin, B. and Eze, U. C. (2009) "Internet-based ICT adoption among SMEs". *Journal of Enterprise Information Management*, (23)1 pp. 28.
- Taylor, S. and Todd, A. P. (1995) "Understanding information technology usage: A test of computer models.". *Information System Research*, (6)2 pp. 44-176.