M-tailing Among the Young: Exploring Their Intentions to Shop by Mobile Phone

Arthur Sweeney and Tino Fenech
Department of Marketing Griffith Business School, Griffith University
Gold Coast, Queensland Australia

Abstract

These days we can do many things with mobile phones, which probably explains why consumers have adopted mobile devices faster than any other consumer product. In Australia, most households have a mobile phone and it is the young who own and use them most. In a year or two, there will be more mobiles than PCs and they will be as common as TV sets. But what might they be used for?

Will m-commerce revolutionise retailing or be a failure? Such speculation led us to investigate intentions to use mobile phones for shopping among university students using a web-based survey. We tested a series of hypotheses based on the literature on non-store purchase environments and data were analysed using stepwise discriminant analysis.

We found that owners of mobile phones, who have a high intention to use them for shopping, are more experienced with other non-store purchase environments and have a low concern for online fraud and privacy risk than those with a low intention to m-shop. Limitations, implications, and further research are discussed.

Keywords: m-tailing, mobile phone shopping

Introduction

We live in a wonderland of technological convergence that enables us to shop, communicate, get information, and be entertained through a single connection, the wireless 3G mobile phone (Robins, 2003). Particularly, new mobile phone technology offers always-on wireless General Packet Radio Services (GPRS) / third generation (3G) technology similar to a broadband Internet connection. GPRS / 3G promises the mobile phone user access to the Internet almost 12 times faster than the current WAP (Fenech, 2002b).

In Australia, about three out of every four households have a mobile phone and it is the young (20-29 year olds) who own them most, and particularly, it is our teenagers who are the leading users in the world (Dudley, 2004). Looking beyond our shores, it is forecast that there could be 1.6 billion mobile phones by 2005 (Charny, 2003), many more than PCs and as common as TV sets (Robins 2003); indeed, consumers have adopted mobile devices faster than any other consumer product (Clarke, 2001). We might well ask, 'How in the world might they be used?'

This market penetration of mobile phone adoption may have significant m-commerce potential, where we define m-commerce as communicating and transacting through public and private networks by handheld mobile devices (Balasubramanian and Peterson, 2002), with wireless Internet connections (Anckar and Utncau, 2002). For example, by the end of this decade, one forecast has most e-commerce on wireless devices (Clarke, 2001). Specifically, some assert that m-commerce will revolutionise retailing through service differentiation, while others argue retail will be the biggest failure in mobile experiments

(Anckar and Utncau, 2002), because consumers will use such wireless technology mainly for information acquisition not retailing (Stone, 2001).

It is this lack of consensus about the future of m-retailing that led us to investigate intentions to shop by mobile phone to determine if we could be more definitive about m-commerce in the future. We elected to measure intentions rather than adoption because the opportunity to engage in wireless shopping is still in its infancy and adoption rates are low, and secondly, investigating factors affecting the formation of intention may provide insights into how best to encourage use or prevent abandonment of technology (Chang and Cheung, 2001).

This paper has four other parts. Research issues arising from the literature are discussed next; then we describe the methodology, analyse the results and end with a discussion and conclusion.

Research issues

Experienced e-shoppers

The consumer's move from bricks to clicks shopping is a continuous innovation (Dholakia and Uusitalo, 2002). That is, users of electronic (i.e., Internet) shopping are more likely to be experienced with other non-store purchase environments including TV shopping (Eastlick and Lotz, 1999; Fenech, 2002b; Henderson, Rickwood and Roberts, 1998; Shim and Drake, 1990), and perceive Internet shopping to be no more risky than other shopping alternatives (Fenech and O'Cass, 2001). Thus we hypothesise that:

H1a: Heavy television shoppers will have high intentions to shop by mobile phone.
H1b: Experienced Internet shoppers will have high intentions to shop by mobile phone.

Time poverty

For most consumers time is important in search and shopping functions (Berné et al., 2001), and ease of use and time poverty are important reasons for e-shopping (Karayanni, 2003; Merrilees and Miller, 1999; Swinyard and Smith 2003). However, the evidence seems inconclusive. Studies of consumers showed that their convenience orientation did not distinguish between Internet shoppers and non-shoppers Sim and Koi, (2002), and that there is an inconsistent association between convenience and the adoption of non-store shopping (Stell and Paden, 1999). These studies suggest the need for further research on the subject, and as a guide to our thinking, because consumers with a higher perception of time poverty do less price searching before purchasing (Berné et al., 2001), we hypothesise that:

H2:   Time starved mobile phone users will have high intentions to shop by mobile phone.

Frequency of Internet shopping

Familiarity with technology over time often leads to use of associated applications of the original technology. For example, TV viewers that buy from infomercials also watch more television than viewers that do not buy (Donthu and Gilliland, 1996). Similarly, adopters of

Internet banking who are more PC proficient find it to be more compatible with their life style than others (Gerrard and Cunningham, 2003). Also, as electronic shopping evolved through the Internet, Citrin et al., (2000) found a positive association between Internet usage and level of Internet shopping. Applying this literature to m-commerce, we hypothesise that:

H3:   Frequent Web shoppers will have high intentions to shop by mobile phone.

High SMS users

Communication technologies such as Internet chat and mobile phone short message service (SMS) are indicators of general Internet usage (Atkin, Jeffres, and Neuendorf, 1998), and Internet messaging and e-retailing are associated (Teo, 2001). Accordingly, and since wireless access to the Internet is still in its infancy, we hypothesise that:

H4:   Heavy SMS users will have high intentions to shop by mobile phone.

E-shopping risk

Risk was first noted as a significant barrier to e-commerce in 1998 (GVU, 1998; Salam, Rao. and Pegels, 1998), and still remains an obstacle for e-retailers (Swinyard and Smith 2003). Risk is a multidimensional construct (Fenech, 2002a; Simpson and Lakner, 1993) including economic risk (poor purchase decision), social risk (incurring societal disapproval), performance risk (product or services performing less than expected), personal risk (fraudulent use of credit card), and privacy risk (compromising personal information) (Vijayasarathy and Jones, 2000). Specifically, the two main risks for Internet shoppers are personal and privacy (Liebermann and Stashevsky, 2002), and on the basis of this literature we hypothesise for m-commerce that:

H5a: Web shoppers with low concern for online fraud (financial) risk will have high intentions to shop by mobile phone.

H5b: Web shoppers with low concern for privacy risk will have high intentions to shop by mobile phone.

Method

This study used a convenience sample of students from a multi-campus Queensland university. The survey was posted on the Web, its URL advertised around the campuses, and student numbers and passwords protected access. While the sample respondents do not reflect the broader community demographically, mobile phone use is skewed towards young people perhaps triggered by a critical incident in life that moves them up and on to a new stage, such as going to high school (Dudley, 2004), or even to university. About half the sample were males and the other females and most were 18-24 years old. Thus we think that the students are relevant and appropriate for this exploratory study.

Multi-item scales for time poverty, financial and privacy risk were adapted respectively from Berne et al., (2001) and Eastlick and Lotz (1999). Cronbach alphas ranged from 0.75 to 0.85. All the variables were measured on a 7-point scale, ranging from 1, 'strongly disagree', to 7, 'strongly agree', and 'very unconcerned', to 'very concerned' respectively.

The remaining scales were single item. Intention to use mobile phones for shopping was measured on a 7-point scale, ranging from 1, 'very unlikely', to 7, 'very likely', and adapted from Shim and Drake (1990). Frequency of web purchases and TV shopping in the last year were measured on a 6-point scale, from zero to over 12 times, adapted from Fenech and O'Cass (2001). Frequency of TV shopping and the number of SMS messages sent were developed by the authors; the former were measured on a 6-point scale, from zero to over 12 times in the last year, and the latter was a measure from zero to 10 or more in an average week.

Principles of good design were applied to the questionnaire (Salant and Dillman 1994; Zikmund 1997), and a pilot tested in early 2003. In the end, 161 completed questionnaires were considered valid for analysis. Respondents who indicated "1, 2 or 3" were classified as low intention (n = 124), and respondents with "5, 6 or 7" were classified as high intention (n = 21) while those responding with a "4" were not included in the analysis (n = 16).

Data were analysed using discriminant analysis, which is appropriate for classifying individuals into groups on the basis of a set of independent variables. These IVs are metrically scaled while the dependent variable is categorical (Hair et al., 1998). In this study we converted the dependent variable to categorical as is required (Malhotra et al., 1996).

Results

The independent variables are reasonably normal and there is no multicollinearity among them. Wilks' Lambda was used to assess whether the discriminant function is statistically significant, and the null hypothesis of no difference between the high and low intention groups is rejected. (Wilks' Lambda = 0807, χ^2 = 30.343, df = 3, p < .05). However, because the level of significance can be a poor indication of the discriminant function's ability to discriminate between the two groups, it is customary to develop classification matrices to provide a more accurate assessment of the discriminating power of the function to predict group membership (Hair et al., 1998). We did this and the discriminating function correctly classified 85% of the two groups and was able to cross-validate 81% of the group members. Given these figures were greater than the calculated Proportional Chance Criterion (C-Pro = 75.2%), we have confidence in the results provided by the discrimination function.

Interpretation of the findings involves examining the discriminant functions to determine the relative importance of each independent variable in discriminating between the groups. We use the method of partial F values for this testing equality of group means, which are shown in Table 1. Six of the seven variables discriminated between low and high intentioned mobile phone shoppers. Time poverty is the only variable not to discriminate; thus hypothesis two is not supported.

Discussion and conclusion

Speculation about m-retailing led us to investigate intentions to use mobile phone shopping among the young. It is unknown whether m-commerce will revolutionise retailing or fail, thus we tested a series of hypotheses based on the literature on non-store purchase environments.

Table 1: Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.	p < α (0.05) Reject null
H1a: Shop @ TV	.924	11.8	1	143	.001	Reject
H1b: Shop @ Internet / Web	.939	9.3	1	143	.003	Reject
H2: Time Poverty	1.00	.02	1	143	.895	Failure to reject
H3: Freq. of Web purchases	.898	16.2	1	143	.000	Reject
H4: Number of SMS sent in average week	.970	4.4	1	143	.038	Reject
H5a: Concern for Online Financial Risk	.967	4.9	1	143	.029	Reject
H5b: Concern for Online Privacy Risk	.971	4.2	1	143	.042	Reject

The findings confirmed all of our hypotheses, with the exception of time poverty. Thus, this research supports the literature that owners of mobile phones who have a high intention to use them for shopping are more likely to be experienced with other non-store purchase environments including TV shopping (Fenech, 2002b; Shim and Drake, 1990), and Internet shopping (Fenech and O'Cass, 2001), are more likely to be frequent Web shoppers (Citrin et al., 2000), are more likely to be heavy SMS users (Atkin, Jeffres, and Neuendorf, 1998; Teo 2001), and have a low concern for online fraud and privacy risk (Fenech, 2002a, Liebermann and Stashevsky, 2002; Vijayasarathy and Jones, 2000).

However, we found no link between time poverty and intention to use mobile phones for shopping. Thus, this study confirms the lack of clear consensus in the literature that for most shoppers time-saving devices are important (Merrilees and Miller, 1999; Sim and Koi, 2002).

The student sample does not reflect the community demographically, however because of the bias of mobile phone use towards the young then the sample is suitable for such an exploratory study. Our future research will sample young people more demographically representative of mobile phone users, and investigate actual consumer behaviour rather than intentions.

Discriminant analysis is sensitive to the relative size of each group, which may impact the estimation of the discriminant function and the classification of observations (Hair et al., 1998). While our groups exceeded the recommended minimums, the variation in group size may bias estimates of the discriminant function, and future research using this method should ensure a balance between high and low intention groups.

Also, because this study confirms the lack of consensus about time poverty and use of timesaving devices for shopping, further research on the subject seems needed. In brief, this exploratory study advances our understanding of m-retailing. We think that it can be successful if marketers and retailers target mobile phones users who are already experienced with other non-store purchase environments including TV and Internet shopping, and have a low concern for the risks associated with online exchanges.

References

Anckar, B., and Utncau, D. 2002. Value Creation in Mobile Commerce: Findings from a Consumer Survey, The Journal of Information Technology Theory and Application. 4 (1), 43-64.

Atkin, D. J., Jeffres, L. W. and Neuendorf, K. A. 1998.Understanding Internet adoption as telecommunications behavior, Journal of Broadcasting & Electronic Media. 42(4), 475-490.

Balasubramanian, S. and Peterson, R. A. 2002. Exploring the Implications of M-Commerce for Markets and Marketing, Journal of the Academy of Marketing Science. 30(4), 348-361.

Berné, C., Múgica, J. M., Pedraja, M. and Rivera, P. 2001. Factors involved in price information-seeking behaviour, Journal of Retailing and Consumer Services. 8(2), 71-84.

Chang, M. K. and Cheung, W. 2001. Determinants of the intention to use Internet/WWW at work: a confirmatory study, Information & Management, 39(1), 1-14.

Charny, B. 2003. Study: Global mobile phone use to double. Available from http://web.zdnet.com.au/techcentre/wireless/trends/story/0,2000050979,20276926,00.htm, accessed 23 September 2003.

Citrin, A. V., Sprott, D. E., Silverman, S. N. and Stem, D.E. 2000. Adoption of Internet shopping: the role of consumer innovativeness, Industrial Management & Data Systems. 100(7), 294-300.

Clarke, I. 2001. Emerging Value Propositions For M-Commerce, Journal of Business Strategies. 18(2), 133-148.

Dholakia, R. R. and Uusitalo, O. 2002. Switching to electronic stores: Consumer characteristics and the perception of shopping benefits, International Journal of Retail & Distribution Management. 30(10), 459-470.

Donthu, N. and Gilliland, D. 1996. Observations: The Infomercial Shopper, Journal of Advertising Research. 36(2), 69-76.

Dudley, J. 2004. Aussie teen phone users top world. Available from http://www.news.com.au, accessed 21 June 2004.

Eastlick, M. A. and Lotz, S. 1999. Profiling potential adopters and non-adopters of an interactive electronic shopping medium, International Journal of Retail & Distribution Management. 27(6), 209-223.

Fenech, T. 2002a. Antecedents to Web Cart Abandonment. Proceedings of Australian & New Zealand Marketing Academy Conference (ANZMAC 2002). Gold Coast, Queensland Australia.

Fenech, T. 2002b. Exploratory study into WAP (Wireless Application Protocol) Shopping, International Journal of Retail and Distribution Management. 30(10), 482-497.

Fenech, T. and O'Cass, A. 2001. Internet users' adoption of Web retailing: user and product dimensions, Journal of Product and Brand Management. 10(6), 361-381.

Gerrard, P. and Cunningham, J. B. 2003. The diffusion of Internet banking among Singapore consumers, The International Journal of Bank Marketing. 21(1), 16-28.

GVU 1998. 8th WWW User Survey, Graphic, Visualization, & Usability Center. Available http://www.gvu.gatech.edu/user_surveys/survey-1998-04/graphs/shopping/q4.htm accessed 07/10/1998.

Hair, J. F., Anderson, R.E., Tatham, R. L. and Black, W.C. 1998. Multivariate Data Analysis, fifth edition. Upper Saddle River: Prentice-Hall International.

Henderson, R., Rickwood, D. and Roberts, P. 1998. The beta test of an electronic supermarket, Interacting with Computers. 10, 385-399.

Karayanni, D.A. 2003. Web-shoppers and non-shoppers: compatibility, relative advantage and demographics, European Business Review. 15(3), 141-152 .

Liebermann, Y. and Stashevsky, S. 2002. Perceived risks as barriers to Internet and e-commerce usage, Qualitative Market Research: An International Journal. 5(4), 291-300.

Malhotra, N. K., Hall, J., Shaw, M. and Crisp, M. 1996. Marketing Research: An Applied Orientation, Sydney: Prentice-Hall Australia.

Merrilees, B. and Miller, D. 1999. Direct Selling in the West and East, The Relative Roles of Product and Relationship (Guanxi) Drivers, Journal of Business Research. 45(3), 267-273.

Robins, F. 2003. The marketing of 3G, Marketing Intelligence & Planning, 21(6), 370-378.

Salam, A. F., Rao, H. R. and Pegels, C. C. 1998. An investigation of consumer-perceived risk on electronic commerce transactions: The role of institutional trust and economic incentive in a social exchange framework. Proceedings of Conference for the Association of Information Systems (AIS) 1998. Baltimore, Maryland.

Salant, P. and. Dillman, D.A. 1994. How to Conduct Your Own Survey, New York: John Wiley and Sons.

Shim, S. and Drake, M. F. 1990. Consumer Intention to Utilize Electronic Shopping, Journal of Direct Marketing. 4(3), 22-52.

Sim, L. L. and Koi, S. M. 2002. Singapore's Internet shoppers and their impact on traditional shopping patterns, Journal of Retailing and Consumer Services. 9, 115-124.

Simpson, L. and Lakner, H. B. 1993. Perceived risk and mail order shopping for apparel, Journal of Consumer Studies and Home Economics. 17(4), 377-389.

Stell, R. and Paden, N. 1999. Vicarious exploration and catalog shopping: a preliminary investigation, Journal of Consumer Marketing. 16(4), 332-344.

Stone, A. 2001. Don't believe the hype. IDC. Available http://www.mcommercetimes.com/Industry/136, accessed 30/11/2001.

Swinyard, W. R. and Smith, S. M. 2003. Why People (Don't) Shop Online: A Lifestyle Study of the Internet Consumer, Psychology & Marketing, 20(7), 567-597.

Teo, T. S. H. 2001. Demographic and motivation variables associated with Internet usage activities, Internet Research: Electronic Networking Applications and Policy. 11(2), 125-137.

Vijayasarathy, L. R. and Jones, J. M. 2000. Print and Internet catalog shopping: assessing attitudes and intentions, Internet Research. 10(3), 191-202.

Zikmund, W. G. 1997. Exploring Marketing Research, sixth edition. The Dryden Press, Fort Worth: Harcourt Brace College Publishers.