
Exploring Consumer Attitudes towards Mobile Music Services

by Pavlos Vlachos, Dr. Adam P. Vrechopoulos, Georgios Doukidis,
Athens University of Economics and Business, Greece

direct managerial implications to the key-market players (i.e., mobile operators and content providers). More specifically, this paper aims to (a) measure the importance given from music consumers to specific mobile music application features (e.g., search facilities, recommendations, etc.) and selection criteria/mobile e-service quality dimen-

Introduction

Consumer behavior research is critical towards accelerating the diffusion and consumer adoption of m-commerce services (Green et al. 2001; Nohria & Leetsma 2001; Barnes 2002; Koivumaki 2002; Vrechopoulos et al. 2002). However, 'rigorous theoretical and empirical research on the marketing implications of m-commerce is lacking' (Balasubramanian, Peterson & Jarvenpaa 2002, p.359) and consumer behavior in m-commerce has not yet been the subject of much research (Green et al. 2001; Ramsay 2001; Barnes 2002).

While there is much discussion on the emerging business models of the mobile entertainment industry as a promising market of m-commerce (Tsalgatiidou & Pitoura 2001; Maciness et al. 2002, Panis et al. 2002), there is still little evidence indicating what influences consumers in their decision to adopt mobile entertainment services and what specific features they would like a mobile entertainment application to offer (Balasubramanian, Peterson & Jarvenpaa 2002).

Elaborating on these challenges, this paper investigates consumer attitudes and behavioral intentions towards mobile music services through an exploratory consumer survey run in Finland, United Kingdom and Greece, within the context of the 'User Requirements Capturing' task of the MUSICAL1 project. The core objective of this study is to explore the emerging marketing challenges in the field of mobile music and provide

Abstract

The emerging capabilities of mobile telephony provide a promising alternative commerce channel, contributing to the configuration of the appropriate conditions for the forthcoming communication industry convergence. Elaborating on the rapid evolutions in the mobile commerce landscape, this paper investigates consumer attitudes towards mobile music services through an exploratory research approach conducted in Finland, UK and Greece. The objective of this study is to support content providers and mobile operators to capitalize on the unexplored marketing challenges existing in the virgin territory of mobile music. The findings indicate that content-centric criteria (i.e., sound/image quality and content variety) are the most critical success factors for mobile music diffusion and consumer adoption, while content personalization capabilities, ubiquity, and easy-to-use interfaces constitute for the consumers the most desired features of a mobile music application. Significant differences were observed between consumers willing to adopt mobile music services and those that are not, in terms of the importance they assign to specific mobile music application selection criteria and features. Finally, significant differences were observed between the investigated countries in terms of consumers' willingness to adopt mobile music services.

Pavlos Vlachos

(pvlachos@eltrun.gr)

is Research Officer at the ELTRUN E-Business Center of the Athens University of Economics and Business. His research focuses on mobile commerce in the services industry and on Consumer Behavior research implications for land-line and mobile e-commerce.

Adam P. Vrechopoulos

(avrehop@aueb.gr)

is Visiting Lecturer at the Athens University of Economics and Business and Scientific Coordinator of the Digital Marketing Research Area at the ELTRUN E-Business Research Center. His research focuses on Electronic Marketing implications for e- and m-commerce.

Georgios Doukidis

(gjd@aueb.gr)

is Professor of Information Systems at the Department of Management Science and Technology at the Athens University of Economics & Business (AUEB) and Visiting Professor at Brunel University. His research and teaching areas are information systems management, electronic commerce, decision-support systems, and simulation, and he has published a total of 12 books and 90 research papers. He has acted as guest editor for the Journal of the Operational Research Society, the European Journal of Information Systems, the Journal of Information Technology, and the International Journal of Electronic Commerce. He is Director of the ELTRUN eBusiness Center and member of the executive board of GeM (GlobaleManagement MBA).

sions (e.g., low prices, sound quality, ease of use, etc.), (b) investigate whether there are significant differences between consumers that intent to use mobile music services and those that do not, in terms of a series of critical behavioral dimensions, and (c) test whether there are significant differences between consumers from different countries in terms of their willingness to pay and adopt mobile music services.

The paper is organized as follows. Section 2 includes a short description of the MUSICAL project. The mobile entertainment dynamics are discussed in section 3. The next section (i.e., section 4) includes the research methodology and theory background, while section 5 deals with the analysis of the results. Section 6 discusses the key research findings and provides direct managerial implications. Finally, section 7 deals with the conclusions, limitations and future research directions of this study.

Description of the MUSICAL Project

The MUSICAL project aims to develop a mobile music application with value-added components in order to fully exploit the capabilities of 2.5 and 3G networks. MUSICAL application will enable consumers (business or leisure) to compose their Personal Radio Station Program (PRSP) or Personal Video-Clips Program (PVCP) and receive targeted multimedia content as well as personalized music information (e.g., awareness on special events that match their music interests) through intelligent mobile devices (Palmtops, PDAs, Mobile Phones, etc).

Mobile Entertainment Dynamics

Mobile music is included in the mobile entertainment services mix along with mobile gaming, mobile sports and betting, icon downloads, etc. (Macinnes et

al. 2002). Macinnes et al. state (2002, p.218) that 'mobile entertainment is an example of a new pure e-commerce service that can create substantial value'. Despite the fact that m-commerce penetration in Europe is still on its infancy (Vrechopoulos et al. 2002), European Commission and Andersen Consulting (2002, p.5) forecast that on 2006 mobile music market in Europe will worth roughly € 3 billion, while ARC Group (2002, p.1) predicts that worldwide mobile entertainment users will reach 780 million until 2005. Thus, the emerging mobile entertainment market promises to provide '*...amusing and enjoyable services via wireless technology to mobile devices*' quite soon (Baldi & Thaung 2002, p.6). Baldi & Thaung (2002) underline, however, that mobile music services should try to take advantage of the unique characteristics of mobile network technology such as ubiquity (everywhere), accessibility (anytime and immediately), reachability (users can be reached wherever they are and anytime), localization (content customized to the user's location), and personalization.

Consumer adoption of mobile phone services is expanding rapidly. On September of 2002, global wireless subscribers were 1.08 billion (EMC 2002), while 10 billion SMS, on average, are currently exchanged in Europe per month (Wacklin 2002). It is widely accepted, however, that the mobile voice market is fast reaching saturation. According to a Durlacher (2001a, p.18) report, at the end of 2001 in Europe, 76% of the population had used a mobile phone. Wireless network operators in their effort to diminish their revenue dependence on mobile voice services on one hand, and to recoup the huge investments made on third generation networks on the other, try to develop new services (e.g., mobile data services) and business models (Durlacher 2001a; 2001b). To that end, they are fully supported by the global upward trend in wireless data traffic, and the emerging mobile internet applications (Jonason & Eliason 2001). On the other hand, it

seems that business as usual in the music industry (i.e., traditional music value chain) is over, and market players are trying to find new ways to deliver music content and promote artists securely and at a profit (Meisel & Sullivan 2002). To that end, following the success of the ringing tones business, music industry is working towards the mobile music challenge trying to establish an alternative distribution channel so as to deliver more advanced music services in terms of technology innovation and value added services.

Currently, there are lots of ventures trying to develop and market a mobile music service. UK-based mobile group MMO2 has announced that it is to trial the world's first '*music over mobile*' service using existing mobile data networks. The O2 music service will enable customers to select, retrieve and store music songs via their GPRS-enabled mobile handset onto a specially designed '*digital music player*' – and start listening in around 12 seconds. The customer selects a track and chooses either to hear a free 30-second clip or purchase the entire track. Once the track has downloaded – which can take around 90 seconds for a full track – the digital music player can be unclipped from the mobile handset and used as a regular personal music device. Furthermore, on 2002 Elisa Communications and Nokia have together developed a mobile music service for Emma.fm, Elisa's on-line store for digital music, to pilot the commercial distribution of music to mobile devices. The service allows customers in Finland to pay for purchased tracks via their mobile phone bill. Other methods of payment include Internet banking and credit cards. The music bought from the online music store is downloaded to the user's computer and then transferred to the device. Another major player in the European mobile music market is Musiwave. Musiwave is a mobile music application service provider who enables mobile operators to embed on their mobile portals mobile music ser-

vices such as music listening through IVR (Interactive Voice Response) and/or streaming, monophonic and polyphonic ringtones, real ringtones, music events database and images. The music content that Musiwave provides to mobile operators through Europe is fully legal since it is licensed with major publishing and record labels.

The mobile music service that it is to be commercialized from MMO2 is based on the "download" mobile music business model, which leads to a different definition of mobile music. In our case we define mobile music as the provision of an on demand personalized streaming music service over mobile devices that include music audio, music video clips and music related content (music news, artists' biographies e.t.c.).

Research Methodology and Background

Taking into account the exploratory nature of this study, the most used web survey method – that is voluntary online surveys using third party web sites (Fenech 2002) – was employed. On-line consumer behavior research is a sampling technique (Miller & Dickson 2001) in line with the requirements of convenience sampling which can adequately serve the objectives of exploratory research designs like the present one (Kinnear & Taylor 1996; Churchill 1999).

Data Collection Instrument Development Process

The data collection instrument was a questionnaire, which was first developed in English and then translated into Finnish and into Greek. Hair, Bush and Ortinau (2000) questionnaire design methodology was followed. A short description of the MUSICAL mobile music service and two screenshots of the service's probable interface were included in the questionnaire, in order to effectively inform consumers about

the features and capabilities of a mobile music application (Burke 2002).

For the development of the questionnaires three methods were used: (a) extensive literature review of the mobile entertainment industry, (b) insights from mobile and music industry specialists (2 music content providers and 2 mobile operators) and (c) qualitative in-depth interviews with 25 music consumers from Greece and the U.K.

The questionnaires were uploaded for one month (October 2002) in the form of a pop-up window onto three Web sites:

- (a) www.emma.fm, a major online digital music store, subsidiary of Elisa Communications-Finland's leading telecommunication service provider (The Emma.fm service was designed in cooperation with ÄKT ry – The Finnish National Group of IFPI – international record companies such as BMG, EMI and edel, and the largest domestic record companies,
- (b) www.mad.gr which is the online presence of MAD TV, the leading Greek music TV channel and
- (c) www.musicindie.org which is the web site of the new media arm of UK's association of independent music (AIM) which members represent 25% of UK's music market.

These three web sites were selected due to cost and convenience reasons and due to ownership relationships of the three partners of the MUSICAL consortium with the specific sites. However, all three web sites constitute major online visiting points for Greek, Finnish and British online music consumers, respectively, that match the target group of this study- that is technology savvy young adult music consumers and professionals.

Finally, 494 valid questionnaires were collected (Finland: 301 respondents – 61%; Greece: 94 respondents – 19%; UK: 99 respondents – 20%). The respondents' allocation in the sample can be

interpreted by the fact that Finland possesses one of the highest internet penetration rates in Europe (Vrechopoulos et al. 2002).

Theoretical Background and Research Hypotheses

In the previous years many researchers have started working on what consumers want out of e-commerce applications. More specifically, there is a growing research stream regarding specific e-service quality dimensions (Table 1) that marketers and developers should properly handle so as to deliver superior value to consumers. Delivering superior service quality is a well-established strategy for achieving high levels of consumer satisfaction, loyalty, increased spending and profitability (Zeithaml, Parasuraman & Malhotra 2002; Zeithaml 1996). According to Zeithaml, Parasuraman and Malhotra (2002 p. 363) '*academic research has identified a number of criteria that customers use in evaluating web sites in general and service quality delivery through web sites in particular. These include (1) information availability and content, (2) ease of use or usability, (3) privacy/security, (4) graphic style and (5) fulfillment*'. Table 1 summarizes academic research regarding e-service quality dimensions. From the literature review it is apparent that research has mainly focused on a land-line /fixed internet context with regard to e-service quality, involving, however, only physical goods delivery and not pure e-commerce services (such as music). Thus, in this research we try to identify and primarily explore what are the dimensions that consumers use while evaluating a pure mobile e-tail service involving music content. Furthermore, Zeithaml (2002, p.138) argues that "*...we also know nothing about the demographic, behavioral and experience correlates of e-SQ [Service Quality]*". To this end, this study also tries to partially investigate possible correlations between demographic (e.g. gender and nationality) and behavioral intention variables on the one hand (e.g. willingness to pay for a mobile music service)

and between demographic and mobile music service evaluative criteria and functionalities on the other hand.

Combining the results included in Table 1 with the findings provided through the in-depth interviews with 25 music consumers, we develop a framework including a series of the most critical mobile music service evaluation criteria/dimensions (Table 2) that are applicable in the context of this

study. In other words, Table 1 served the purpose of effectively administrating the personal interviews by discussing with consumers all the dimensions included in this table and selecting the most important ones. To this end, Malhotra's and Birks's (2000) qualitative research methodology was employed. It should be noted, however, that it is out of the scope of the present study to discuss the qualitative research methodology followed rather to focus

on the quantitative results provided by testing the framework. On the other hand, elaborating on the capabilities of an innovative mobile music application with advanced personalization capabilities (i.e. the MUSICAL application) we develop a corresponding framework including all the major features/ functionalities of a mobile music service (Table 3). Both these frameworks support the formulation of the research hypotheses discussed below.

Table 1: Relevant Research Findings on e-Service Quality Dimensions

Authors	e-Service Quality Dimensions	Research Setting
Wu (2003)	Effectiveness, purchase convenience, information abundance, delivery speed, homepage design, company name familiarity, product selection	Web Site
Zeithaml, Parasuraman & Malhotra (2002)	Efficiency, reliability, fulfilment, privacy, responsiveness, compensation, contact	Web Site
Cox & Dale (2002)	Ease of use, customer confidence, on-line resources, relationship services	Web Site
Janda, Trocchia & Gwinner (2002)	Performance, access, security, sensation, information	Web Site
Wolfenbarger & Gilly (2002)	Web site design, reliability, privacy/ security, customer service	Web Site
Reibstein (2002)	Ease of ordering, product selection and information, product representation, navigation, on time delivery, customer service, privacy policy, shipping & handling	Web Site
Liljander, Riel & Pura (2002)	Site design, content, trust, empathy, security	Web Site
Vrechopoulos, Constantiou, Mylonopoulos, Sideris, Doukidis (2002)	Ease of use, security, inconvenience of mobile device, personalization	Mobile Services
Koivumaki (2002)	Security, privacy, ease of use	Mobile Services
Condos, James, Every & Simpson (2002)	Careful use of graphics, avoidance of long lists, provision of clear error messages, presentation of content, consistency in navigation, avoidance of dead ends, minimization of user input, good structure of tasks	WAP
Ramsay (2001)	Expectations management, connectivity & download time, quality of error messages, labelling of menu options, going backward, offering bookmarks, easiness of reading data	WAP
Yang, Peterson & Huang (2001)	Ease of use, content, accuracy, timeliness of response, security/privacy, aesthetics	Web Site
O'Neil, Wright & Fitz (2001)	Contact, responsiveness, reliability, tangibles	Web Site
Jun & Cai (2001)	Contents, accuracy, ease of use, timeliness, aesthetics, security	Web Site
Yoo & Donthu (2001)	Ease of use, aesthetic design, processing speed, security	Web Site
Kayanama & Black (2000)	Content, access, navigation, design, response, background, personalization	Web Site
Liu & Arnett (2000)	Information and service quality, system use, playfulness, design of the web site	Web Site
Lociacono, Watson & Goodhue (2000)	Informational fit to task, interaction, trust, response time, design, intuitiveness, visual appeal, innovativeness, emotional appeal (flow), integrated communications, business processes, substitutability	Web Site
Szymanski & Hise (2000)	Online convenience, merchandising, site design, financial security	Web Site
Woo & Fock (1999)	Transmission quality and network coverage, pricing policy, staff competence, customer service	Mobile Voice Service
Day (1997)	Purpose, content, structure, aesthetics usability/action, promises delivered	Web Site

Additionally the present study elaborates on the “willingness to pay for mobile music services” dimension as an indicator for potential adoption of such kind of services. According to Dubas, Dubas and Atwong (1999) the most common form for measuring the purchase intention and consumer adoption of a particular product or service is the four-point scale where 1 implies “definitely would pay”, and 4 “definitely would not pay”.

The research hypotheses, packed-up with indicative references, are therefore formulated as follows:

According to Vrechopoulos et al. (2002), low prices of m-commerce services constitute one of the most critical factors for the diffusion and consumer adoption of m-commerce services.

H1: Consumers that are not willing to pay for mobile music services assign more importance to low prices of such kind of services than those willing to pay for buying these services.

Fenech (2002) states that the variety of content is one of the most basic drivers for consumers to adopt mobile entertainment services.

H2: Consumers willing to pay for mobile music services assign more importance to the variety of music content offered through these services than those not willing to pay for such kind of services.

According to Bellman, Lohse and Johnson (1999), the most important information for predicting online shopping habits and behaviors are measures of past online behavior (H3, H4, H7 and H8), while Li, Kuo and Russel (1999) report that demographic characteristics constitute one of the basic influencing factors of consumer buying behavior (H5 and H6).

H3: Consumers willing to pay for mobile music services assign more importance (i.e. rate them higher) to mobile

music service features than those not willing to pay for such kind of services.

H4: Consumers willing to pay for mobile music services spend more money on current mobile services (e.g. voice, short message service, etc.) than those not willing to pay for such kind of services.

H5: Consumers willing to pay for mobile music services belong in younger age groups than those not willing to pay for such kind of services.

H6: Consumers willing to pay for mobile music services have higher incomes than those not willing to pay for such kind of services.

H7: Consumers willing to pay for mobile music services use their mobile phone for entertainment purposes more than those not willing to pay for such kind of services.

H8: There are significant differences between consumers that select different payment methods for buying mobile music services (i.e., (a) “subscription with a flat rate per month” group, (b) “per case” group, and (c) “ads based” group) in terms of the importance each group assign to the (i) “variety of music content”, and (ii) “low prices”.

For example we expect that those that prefer the ads based model assign greater importance than the other two groups on the “low prices” dimension.

Analysis of the Results

The majority of the respondents belong in the 18-35 age group (62%), they are mostly male (70%) and single (61%) and they earn less than € 1.000 per month. Almost one-third of the respondents hold high school and post-graduate degrees (32% and 29%, respectively), while half of them spend ten to twelve hours out of home. While there is a great diversity in the respondents’ occupation, 37% of them are students.

Mobile Music Service Selection Criteria

Respondents evaluated almost all the mobile music services selection/ evaluative criteria as very important (Table 2). However, they assign more importance to the “quality of the content” being delivered (in terms of sound and image/ video clip quality) and to the “variety of the music content”. It is interesting to note that while respondents believe that “low prices” are important, they are not so price-sensitive towards mobile music services since they assign more importance to content-centric criteria (content quality and content variety). The “ease of use” criterion is ranked fourth, though interface design and navigability issues are considered to be of great importance when evaluating the quality of m-commerce services (Condos, James & Simpson 2002). “Customer Service” and the provision of “Flexible Payment Systems” criteria were considered as less important than content-centric, price and interface-centric buying criteria. Finally, consumers reported that the “additional personalized services” are not so important for them. This could be explained by the fact that since they are internet users, they are suspicious about “personalization features” due to privacy issues concerns (Rust, Kannan & Peng 2002)

Mobile Music Service Functionalities Evaluation

Respondents were asked to evaluate the importance of specific features of the MUSICAL mobile music application (Table 3). It should be noted that since MUSICAL’s features were designed based on the state-of-the-art technology and business insights (i.e., they cover all the basic and popular consumer services that can be offered though such kind of applications today) they can well serve the research objective of measuring consumer attitudes towards mobile music services, in general.

Table 2: Consumers' Evaluation on Mobile Music Services Selection Criteria

Mobile Music Services Selection Criteria	Mean*	Standard Deviation
Good sound/image quality	4,35	0,95
Variety of music songs/video clips	4,14	1,04
Low prices	3,96	1,16
Ease of use	3,83	1,18
Customer service	3,68	1,23
Flexible payment systems	3,51	1,29
Additional personalized services (news, discounts, events, schedules, new releases, charts etc.)	2,35	1,22

*(1 = Not at all Important – 5 = Very important)

Table 3: Consumers' Evaluation on Mobile Music Services Specific Features

Mobile Music Services Specific Features	Mean*	Standard Deviation
Ability to have music songs mixed for me (i.e., recommended) according to my preferences	3,81	1,20
Listen songs /View video clips anywhere and anytime	3,77	1,20
Have a music song and music news full search facility	3,74	1,16
Could instantly listen and find out more about a song that I've listened to a nightclub	3,52	1,26
Ability to create my own Personal Radio station/ Video Clips Program	3,15	1,30
The ability to listen to my Personal Radio Station Program / Personal Video Clips Program with my friends	3,14	1,41
Ability to participate in virtual communities and exchange music play lists and news	2,66	1,26

*(1 = Not good at all – 5 = Very good)

Music consumers rated all the mobile music service features with above the average scores. The 'ability to have music songs mixed for me (recommended) according to my preferences', the 'ability to listen to songs / view video clips anywhere and anytime' and the 'ability to have a music song and music news full search facility' were found to be the most desired features. The least desired feature is the 'ability to participate in virtual communities and exchange music play list and news'. This finding is interesting if one takes into account the need of consumers to communicate with peers (Hammond 2002; Wacklin 2002) and the P2P (music file sharing) experience.

Willingness to Pay for Mobile Music Services and Preferred Payment Methods

More than half of the respondents (53%) are willing to pay for enjoying mobile

music services, while 44% of them are willing to change mobile device in order to consume such kind of services. Furthermore, the most desired payment method was found to be the "view ads to cover the cost of the service" alternative (41%) despite the fact that this revenue model has not been proved successful, till so far, on the fixed internet context. The "subscription with a flat rate per month" and the "pay per case/track" alternative payment methods scored the same (29% both), while only 1% of the respondents selected another payment method.

Hypotheses Testing

To test hypotheses H1 – H7, it is necessary to classify the survey participants into those "willing to pay" and those "not willing to pay". According to Dubas, Dubas and Atwong (1999), marketers utilize the combined scores of the top

two boxes (i.e., "definitely would pay and probably would pay") for predicting product trial. The same approach was followed in the present study. More specifically, those answered "definitely yes" and "probably yes" in the "willing to pay for mobile music services" question, were classified in the "willing to pay" group (n=258), and those answered "definitely no" and "probably no" in the same question were classified in the "not willing to pay" group (n=225). To compare the means of these two broad categories, t-Tests were performed.

The null hypotheses for H1 – H4 are rejected, while the null hypotheses for H5 – H7 cannot be rejected (Table 4). More specifically, consumers not willing to pay for mobile music services assign significantly more importance to the "low prices" (H1) and significantly less importance to the "variety" (H2), and to all the "mobile music service features" included in Table 3 (H3), than those consumers willing to pay for such kind of services. Furthermore, consumers willing to pay for mobile music services spend significantly more money on current mobile services (H4) than those not willing to pay for such kind of services. As far as H5 – H7 are concerned, there is no statistically significant difference observed between the two groups under study in terms of income (H5), age (H6) and usage of mobile phone for entertainment purposes (H7).

It should be noted, however, that consumers not willing to pay for mobile music services, use their mobile phones significantly more for communication purposes (p<0,05), and significantly less for job related issues (p<0,05), than those consumers willing to pay for such kind of services.

For testing hypothesis H8, the following three consumer groups were formulated using as classification criterion the selected alternative payment method:

- (a) "subscription with a flat rate per month" group (n=136),

- (b) “view advertisements to cover the cost of the service” group (n=189), and
(c) “pay per track/case” group (n=133).

One-way ANOVA between groups with post-hoc comparisons were performed for testing the hypothesis. The null hypothesis of H8 is rejected both for the “variety” and for the “low price” dimensions (Table 5). This implies that there are significant differences between consumers that select different payment methods for buying mobile music services in terms of the importance

each of these groups assign to the “variety of music content”, and to the “low price” dimensions. As far as the “variety” dimension is concerned, the only significant difference lies between the “subscription with a flat rate per month” and the “per case/track” groups, since the former assigns significantly more importance than the latter to that particular dimension. On the other hand, the “ads based” group assigns significantly more importance to the “low price” dimension than both the other two groups do.

Finally, it was found that those consumers willing to pay for mobile music services belonging in the “ads based” group were significantly less in number than those not willing to pay for such kind of services (Pearson chi-squares less than 0,001). Furthermore those willing to pay belonging in the “subscription with a flat rate per month” were significantly more than those not willing to pay. On the other hand, there was not any significant difference observed regarding this particular dimension within the “per case” group.

Table 4: t-Test Results for Hypotheses 1-7

Hypotheses	Criterion*	Willing to pay for mobile music services**		t-value	Sign. (2-tail.)
		(Yes=258/No=225)	Mean (1-5)		
H1	Low prices (I)	Yes	3,89	-2,150	p<0,05
		No	4,11		
H2	Variety (I)	Yes	4,31	3,427	p<0,01
		No	4,00		
H3a	Music songs mixed (recommended) according to preferences (II)	Yes	4,05	3,686	p<0,001
		No	3,66		
H3b	Listen songs /View video clips anywhere and anytime (II)	Yes	4,01	3,999	p<0,001
		No	3,59		
H3c	Search facility (II)	Yes	4,01	4,849	p<0,001
		No	3,53		
H3d	Instantly listen to a song just heard of (II)	Yes	3,67	2,015	p<0,05
		No	3,44		
H3e	Create Personal Radio Station Program (II)	Yes	3,36	3,278	p<0,01
		No	2,98		
H3f	Listen with friends (II)	Yes	3,50	5,545	p<0,001
		No	2,81		
H3g	Virtual Communities (II)	Yes	2,77	1,681	p<0,1
		No	2,58		
H4	Mobile phone spending (III)	Yes	2,60	3,234	p<0,01
		No	2,13		
H5	Income (IV)	Yes	2,48	0,448	Not Significant
		No	2,41		
H6	Age (V)	Yes	2,73	0,160	Not Significant
		No	2,71		
H7	Mobile phone for entertainment purposes (VI)	Yes	1,63	1,440	Not Significant
		No	1,51		

* (I): 1 = not at all important – 5 = very important (II): 1 = not good – 5 = very Good (III): 1 = less than € 15 – 6 = over € 75
(IV): 1 = less than € 1000 – 5 = over € 2,500 (V): 1 = less than 17 – 6 = over 54 (VI): 1 = light usage – 4 = heavy usage

** (italics indicate groups with statistically significant larger mean value)

Table 5: One-Way ANOVA Tests with Post-Hoc Comparisons for Hypotheses 8

Hypotheses	Criterion*	Preferred Payment Methods			F	Sig.	Tukey HSD Post-Hoc Comparisons*
		Subscription (n=361)	Per Case (n=133)	Ads Based (n=189)			
H8a	Variety	4,36	4,08	4,17	2,569	,054	Subscription>>Ads Based Per case>Ads based Subscription>Per Case
H8b	Low Price	3,86	4,24	3,76	5,859	,001	Ads based>>Subscription Ads based >>Per Case Subscription > Per Case

*(1: not at all important – 5: very important) ***>>: Significant >: Not Significant

Other Findings

It was attempted to investigate whether there are statistically significant differences between consumers from the three countries under study regarding “willingness to pay for mobile music services”. It was found (chi-square statistic) that in the UK and in Greece those willing to pay are statistically more in number than those not willing to pay (asymptotic significance < 0,1 and <0,05, respectively), while in Finland there was not any significant difference observed between these groups.

Investigating whether gender affects consumers’ evaluation for the mobile music service selection criteria (those included in Table 2), it was found (t-Test) that females assign significantly more importance to “customer service” (p<0,05), “flexible payment methods” (p<0,1) and “additional personalized services” (p<0,05), and significantly less importance to “low prices” (p<0,05) than males.

Finally, the majority of the respondents believe that online music should be free and unprotected (65%). In addition, there is no significant difference observed between those willing to pay and those not willing to pay regarding this belief, which confirms and enhances the evidences of the existence of a “music for free” mentality in Europe (IFPI 2002a, 2002b)

Managerial Implications

The aforementioned findings can be utilized by marketers when making

promises and creating expectations about mobile music services. They should correspondingly manipulate the promotion element of the marketing mix towards communicating in a personalized manner the special characteristics and features of mobile music applications (Ratliff 2002). Marketers should focus on pricing issues, though low prices proved to be less important than content-centric buying criteria. However, focusing on price is important since those consumers not willing to pay assign significantly more importance to low prices than those willing to pay. This implies that marketers could convince the “no willing to pay” group through the manipulation of the pricing element of the marketing mix and the provision of innovative pricing mechanisms (Jonason 2002). Furthermore, the importance assigned to the “ease of use” as well as to the “content-centric” (i.e., quality and variety) dimensions, dictates that great emphasis should be placed on the manipulation of the product and distribution element of the marketing mix towards ensuring high sound/image quality and wide content variety. On the other hand, consumers’ assigned ratings to the mobile music service features/functionalities strongly indicate their search for convenience and effortless use of the mobile music service application. Respondents have rated first the features that allow them to find the music content they want without putting too much effort (“ability to have music songs mixed for me according to my preferences” and “full music songs and news search facility”).

It was also found that consumers intending to adopt mobile music services have significantly different preferences from those consumers that do not, in terms of several critical dimensions. According to the diffusion of innovation typology, innovators are those consumers who first adopt a new product or the innovation (Gatignon & Robertson 1991; Ram & Jung 1994; Schiffman & Kanuk, 2000). Consumers belonging to the same category have some common characteristics and, therefore, marketers develop specific strategies to target each consumer category separately (Rogers 1983; Brown 1992). Thus, marketers should design their strategic marketing planning, targeting the most attractive customer segment, which in the case of the mobile music industry are the innovators, and position their offerings correspondingly. To that end, they can use the findings of the present study (discussed in section 5) in their marketing planning towards developing tailored marketing mix strategies to meet the needs of this specific customer segment (Siomkos & Vrechopoulos 2002) and accelerate the diffusion and consumer adoption of mobile music services.

Conclusions, Limitations and Future Research Directions

This study tries to investigate the “what happens” dimension in a highly innovative case setting that is the mobile music services industry. Employing online quantitative research techniques and qualitative in depth interviews, we in-

investigated the preferences of music and mobile services consumers regarding a personalized streaming mobile music service. Content characteristics (quality and variety) and specific features of the service that would make it convenient to use (search facility, recommended personalized music play lists) were found to be extremely important. Marketers and developers can use these findings for developing user-friendly applications and designing effective promotional strategies.

An inherent limitation of this study is its sampling methodology and collection mechanism. Pop-up questionnaires is a sampling technique that on the one hand is inexpensive and convenient but

on the other is quite uncertain regarding the representativeness of the sample population, which in our case is “*music consumers using a mobile phone and who at the same time are internet users*”. However, online questionnaires using third party web sites constitute a methodology quite suitable for exploratory research like the present one and common research practice in the area of e- and m-commerce academic research (Fenech 2002).

Further research should elaborate more on each of the dimensions discussed in the present study using more formal sampling methodologies and qualitative research techniques. Furthermore, cultural differences regarding consumer attitudes towards mobile

music services should be investigated. Future research should also elaborate on the “why happens” dimension employing conclusive research designs and investigating cause-and-effects relationships through laboratory or field experiments. Laboratory and field experiments should be also employed towards testing and further improving mobile music services. This will be done in the context of MUSICALproject in 2003.

Endnote

¹ MUSICAL (Multimedia Streaming of Interactive Content Across Mobile Networks – eContent Program/European Commission – Contract No.: 22131Y2C2DMAL2 – Duration: 2002-2004.

References

- ARC Group 2002, 'Mobile Entertainment: Opportunities, Challenges and The Path Forward,' [Online] Available http://www.arcgroup.com/homepage.nsf/gvi/ment_mentBro.pdf [Accessed: 15 Jan. 2003].
- Balasubramanian, S., Peterson, A. R. & Jarvenpaa, L.S. 2002, 'Exploring the Implications of M-commerce for Markets and Marketing,' *Journal of the Academy of Marketing Science*, vol. 30, no. 4, pp. 348-361.
- Baldi, S. & Thaung, P. H. 2002, 'The Entertaining Way to M-commerce: Japan's Approach to the Mobile Internet-A Model for Europe?,' *Electronic Markets*, vol. 12, no.1, pp. 6-13.
- Barnes, S. 2002, 'The mobile commerce value chain: analysis and future developments,' *International Journal of Information Management*, vol. 22, no.2, pp. 91-108.
- Bellman, S., Lohse, G.L. & Johnson, E.J. 1999, 'Predictors of Online Buying Behavior,' *Communications of the ACM*, vol.12, no.42, pp. 32-37.
- Brown, R. 1992, 'Managing the “S” curves of innovation,' *Journal of Consumer Marketing*, vol. 9, no.1, pp. 61-72.
- Brett, M. and Singer, M. 2001, 'Unchained Melody,' *The McKinsey Quarterly*, no.1, Available: <http://www.mckinseyquarterly.com> [Accessed: January 2003].
- Burke, R.R. 2002, 'Technology and the Customer Interface: What consumers want in the Physical and Virtual Store,' *Journal of the Academy of Marketing Science*, vol. 30, no.4, pp. 411-432.
- Churchill, A.G.Jr. 1999, *Marketing Research: Methodological Foundation*, 7th edition, The Dryden Press.
- Condos, C., James, A., Every, P. & Simpson, T. 2002, 'Ten usability principles for the development of effective WAP and m-commerce service,' *Aslib Proceedings*, vol. 54, no. 6, pp. 345-355.
- Cox, J. & Dale B.G. 2002, 'Key Quality factors in Web Site design and use: an examination,' *International Journal of Quality & Reliability Management*, vol. 19, no. 7, pp. 862-888.
- Dubas, M.K., Dubas, M.S. & Atwong, C. 1999, 'Some Difficulties in predicting new product trial using concept test scores,' *Journal of Product and Brand Management*, vol. 8, no.1, pp. 50-60.
- Durlacher Research 2001a, 'UMTS Report, an Investment Perspective' [Online] Available: <http://www.durlacher.com> [Accessed: 30 Jul 2002].
- Durlacher Research 2001b, 'Impacts of digital distribution to the music industry' [Online] Available: <http://www.durlacher.com> [Accessed: 30 Jul. 2002].

- EMC (Database) [Online] Available: <http://www.ems-database.com> [Accessed: 30 Sep 2002].
- Durlacher Research 2001b, 'Impacts of digital distribution to the music industry' [Online] Available: <http://www.durlacher.com> [Accessed: 30 Jul. 2002].
- European Commission Directorate General for Information Society and Andersen 2002, *Digital Content for Global Mobile Service*, [Online] Available: www.cordis.lu/econtent/studies/stud_mobile.htm [Accessed 11 Oct. 2002].
- Fenech, T. 2002, 'Exploratory study into wireless application protocol shopping,' *International Journal of Retail and Distribution Management*, vol. 30, no.10, pp.482-497.
- Gatignon, H. and Robertson, T.S. 1991, 'Innovative Decision Processes,' in Robertson, T.S. and Kassirjian, H.H. (Eds.), *Handbook of Consumer Behaviour*, Prentice Hall, Englewood Cliffs, NJ, pp. 316-348.
- Green, N., Harper, R.H.R., Murtagh, G. & Cooper, G. 2001, 'Configuring the mobile user: Sociological and Industry views,' *Personal & Ubiquitous Computing*, vol. 5, no. 2, pp.146-156.
- Hair, J. F. Jr., Bush, R.P., & Ortinau, D.J. 2000, *Marketing Research: A Practical Approach for the New Millennium*, Irwin McGraw-Hill.
- Hammond, K. 2002, 'The power of C2C Relationships,' [Online] Available: www.lbs.ac.uk/marketing/Future/Future_Media_Events/FM_Presentations/crm_fmjan02.pdf [Accessed: 1 Nov. 2002].
- IFPI, 2002a, 'A music for free mentality is challenging the future of the European Recording Industry' 2002. [Online] Available: <http://www.ifpi.org> [Accessed: 16 April 2002].
- IFPI, 2002b, 'Global music sales down 5% in 2001' [Online] Available: <http://www.ifpi.org> [Accessed: 16 April 2002].
- Jonason, A. 2002, 'Innovative pricing effects: theory and practice in mobile internet networks,' *European Journal of Innovation Management*, vol. 5, no. 4, pp. 183-195.
- Jonason, A. & Eliasson, G. 2001, 'Mobile Internet revenues: an empirical study of the i-mode portal,' *Internet Research: Networking Applications and Policy*, vol. 11, no. 4, pp.341-348.
- Kinncar, T.C. & Taylor, J.R. 1996, *Marketing Research: An Applied Approach*, 5th edition, McGraw-Hill, Inc.
- Koivumaki, T. 2002, 'Consumer Attitudes and Mobile Travel Portal', *Electronic Markets*, vol.12, no.1, pp. 47-57.
- Li, H. K., C. & Russel, M.G. 1999, 'The impact of perceived channel utilities, shopping orientations, and demographics on the consumer's online buying behaviour,' *Journal of Computer-mediated Communication*, 5, 2.
- Liu, C. & Arnett, P.K. 2000, 'Exploring the factors associated with Web site Success in the content of electronic commerce', *Information & Management*, vol. 38, no. 1 pp. 23-34.
- Maciness, I., Moneta, J., Carabalo, J. & Sarni, D. 2002, 'Business Models for Mobile Content: The Case of m-Games,' *Electronic Markets*, vol.12, no. 4, pp. 218-227.
- Malhotra, N.K. & Birks, D.F. (2000) *Marketing Research: An Applied Approach*, European Edition, Financial Times, Prentice Hall.
- Meisel, B. J. & Sullivan, S. T. 2002, 'The impact of the Internet on the law and economics of the music industry', *Info*, vol.4, no.2, pp.16-22.
- Miller, T.W. & Dickson, P.R. 2001, 'On-line Market Research,' *International Journal of Electronic Commerce*, vol. 5, no.3, pp.139.
- Nohria, N. & Leetsma, M. 2001, 'A moving target: The mobile commerce customer,' *MIT Sloan Management Review*, vol. 42, no.4, pp.104.
- O'Neil, M., Wright, C. & Fitz, F. 2001, 'Quality evaluation in on-line service environments: an application of the importance-performance measurement technique', *Managing Service Quality*, vol. 11, no. 6, pp. 402-417.
- Panis, P., Morphis, N., Felt, E., Reufenheuser, B., Bohm, A., Nitz, J. & Saarlo, P. 2002, 'Mobile Commerce Service Scenarios and Related Business Models', *Proceedings of the 1st International Conference on Mobile Business*, Athens-Greece, 8-9 July.
- Ram, S. & Jung, H.S. 1994, 'Innovativeness in product usage: a comparison of early adopters and early majority,' *Psychology and Marketing*, vol. 11, pp. 57-67.
- Ramsay, M. 2001, 'Mildly irritating: a WAP usability study,' *Aslib Proceedings*, vol.53, no.4, pp.141-158.

- Ratliff, J.F. 2002, 'NTT DoCoMo and its i-mode success: origins and implications', *California Management Review*, vol. 44, no. 3, pp. 55-71.
- Reibstein, D.J. 2002, 'What Attracts Customers to Online Stores, and What Keeps them Coming Back?' *Journal of the Academy of Marketing Science*, vol. 30, no. 4, pp. 465-473.
- Rogers, E.M. 1983, *Diffusion of Innovations*, 3rd edition, The Free Press, New York.
- Rust, R.T., Kannan, P. & Peng, N. 2002, 'The Customer Economics of Internet Privacy', *Journal of the Academy of Marketing Science*, vol. 30, no.4, pp. 455-464.
- Schiffman, L. & Kanuk, L.L. 2000, *Consumer Behaviour*, 7th edition, Prentice Hall International, Inc., Englewood Cliffs, NJ.
- Siomkos, G.J. & Vrechopoulos, A.P. 2002, 'Strategic Marketing Planning for Competitive Advantage in e-commerce', *International Journal of Services Technology Management*, vol. 3, no.1, pp. 22-38.
- Swinder, J. , Trocchia J. P. & Gwinner P. K. 2002, 'Consumer Perceptions of Internet Retail Service Quality', *International Journal of Service Industry Management*, vol. 13, no. 5, pp. 412-431.
- Tsalgatidou, A. and Pitoura, E. 2001, 'Business models and transactions in mobile electronic commerce: requirements and properties', *Computer Networks*, vol. 37, no. 2, pp. 221-236.
- Vrechopoulos, A.P., Constantiou, I.D., Mylonopoulos, N., Sideris, I. & Doukidis, G.I. 2002, 'The Critical Role of Consumer Behaviour Research in Mobile Commerce', *International Journal of Mobile Communications*, vol.1, no.1, forthcoming.
- Wacklin, J. 2002, 'Maximizing growth of the content download business, [Online], Available: http://www.nokia.com/nmic2002/downloads/pdf/NMIC_Jussi_Wacklin.pdf [Accessed: 29 Nov. 2002].
- Woo, Ka-Shing & Fock, K. Y. H. 1999, *Customer Satisfaction in the Hong Kong Mobile Phone Industry*, *The Service Industries Journal*, vol. 19, no. 3, pp. 162-174.
- Yang, Z., Peterson, R.T. & Huang L. 2001, 'Taking the Pulse of Internet Pharmacies', *Marketing Health Services*, Summer, pp. 5-10.
- Zeithaml, V. A., Parasuraman, A. & Malhotra, A. 2002, 'Service Quality Delivery Through Web Sites: A Critical Review of Extant Knowledge', *Journal of the Academy of Marketing Science*, vol. 30, no. 4, pp.362-375.
- Zeithaml, V. A. 2000, 'Service Quality, Profitability and the Economic Worth of Customers: What We Know and What We Need to Learn', *Journal of the Academy of Marketing Science*, vol. 28, no. 1, pp.67-85.
- Zeithaml, V. A., Berry, L. L. & Parasuraman, A. 1996, 'The Behavioral Consequences of Service Quality', *Journal of Marketing*, vol. 60, April pp. 31-46.