Review

Mobile marketing research: The-state-of-the-art

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ABSTRACT

Rapid proliferation in the business potential of mobile marketing attracts researchers from various fields to contribute to the growing body of knowledge on the phenomena. Although the literature on mobile marketing is accumulating, the stream of research is still in the development stage, hence is highly inconsistent and fragmented. This paper aims to organize and classify the literature on mobile marketing and assess the-state-of-the-art in order to facilitate future research. The review covers 255 peer-reviewed journal articles from 82 journals published between 2000 and 2008. The resulting framework summarizes the progress in mobile marketing research and provides future research directions.

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1. Introduction

Due to recent developments in the mobile technology, increased penetration rates and inherent characteristics of the mobile devices, the mobile channel has morphed into an ultimate marketing vehicle, which enables business entities to establish a pervasive electronic presence alongside their customers anytime, anywhere. As soon as global companies realized the business potential, mobile services have infiltrated virtually every aspect of people's lives. Leaving aside the unprecedented opportunities provided by mobile services in building and fostering customer relationships, mobile advertising itself became a huge revenue generator. In fact, mobile advertising revenue in 2007 was totaled to US$ 2773 million and is predicted to increase by 79% to US$ 4957 million in 2008, and is projected to exceed US$ 16 billion within the next 3–4 years (eMarketer, 2007).

These developments in the consumer environment have made mobile marketing an attractive area for research for the last couple of years. Although the academic literature on mobile marketing is accumulating, the topic is still under development and the research is in its early stages (Barnes & Scornavacca, 2004; Carroll, Barnes, Scornavacca, & Fletcher, 2007), hence is highly inconsistent and fragmented. The purpose of this article is to classify and organize the accumulated knowledge on mobile marketing, and assess

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Table 1
Journals with more than three articles on m-marketing.

Journal	# of articles published
International Journal of Mobile Communications	47
International Journal of Mobile Marketing	41
Association for Computing Machinery. Communications of the ACM	9
Journal of Electronic Commerce Research	7
Electronic Markets	6
International Journal of Advertising	5
Journal of Business Research	5
Journal of Targeting, Measurement and Analysis for Marketing	5
Communications of the Association for Information Systems	4
International Journal of Electronic Business	4
JITTA: Journal of Information Technology Theory and Application	4
MIT Sloan Management Review	4
Computer	3
Decision Support Systems	3
Information & Management	3
International Journal of Electronic Commerce	3
International Journal of Services Technology and Management	3
Journal of Academy of Marketing Science	3
Journal of Advertising Research	3
Journal of Financial Services Marketing	3
Journal of Interactive Marketing	3
Mobile Networks and Applications	3
Personal and Ubiquitous Computing	3

the-state-of-the-art. The review covers 255 peer-reviewed journal articles from 82 journals published between 2000 and 2008. The resulting framework summarizes the progress in mobile marketing research and provides future research directions.

2. Research methodology

Mobile marketing articles are scattered across various journals in many disciplines such as management, marketing, business, engineering, information technology, information systems, finance, and operations research. Consequently, the following online databases were selected and searched to provide a comprehensive bibliography of the academic literature on mobile marketing: ABI/INFORM, EBSCOhost, Emerald, IEEE Xplore, Inderscience Publishers, Science Direct and Wiley InterScience. The literature search was limited to peer-reviewed journals and was based on keywords: "mobile commerce", "mobile marketing", "m-commerce", "m-marketing", "mobile advertising", "m-advertising", "mobile consumer", "m-consumer", "mobile business", "m-business", "mobile services", "m-services", "SMS marketing", and "Short Message Service Marketing".

The full text of each article was reviewed to eliminate those that were not actually related to mobile marketing. Eliminated articles either focused on technical aspects of wireless network infrastructure, underlying technologies or engineering aspects of developing mobile applications. The reviewing process yielded 255 mobile marketing articles from 82 journals. The list of Journals that
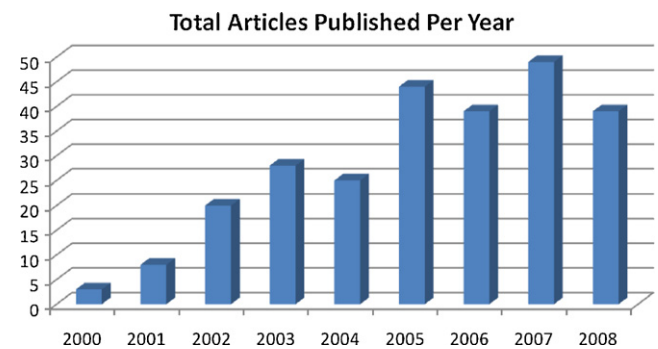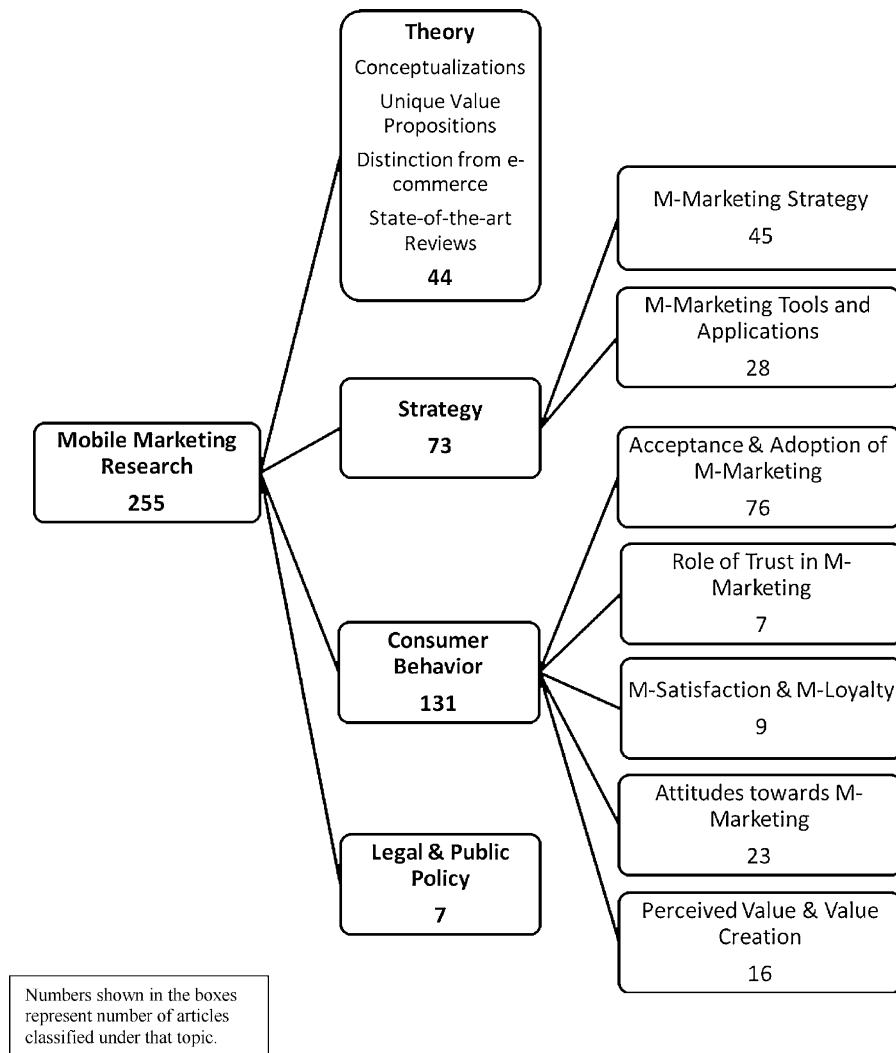

Fig. 1. Distribution of articles by year.

published more than three articles on mobile marketing is shown in Table 1. The distribution of articles by year is shown in Fig. 1, and by focus and year is shown in Table 2. The number of articles published on mobile marketing have increased significantly until 2005, and then stabilized at approximately 42 articles per year.

The review showed that articles on mobile marketing have appeared in various business and IS journals. Furthermore, major e-commerce journals and several business journals have published special issues on the topic. The distribution of articles by journals revealed that two journals, namely the International Journal of Mobile Communications and the International Journal of Mobile

Table 2
Distribution of articles by focus and year.

Year	# of articles published	Consumer behavior	Strategy	Theory	Ethics
2000	3	1	0	2	0
2001	8	1	3	4	0
2002	20	5	7	6	2
2003	28	8	8	9	3
2004	25	12	6	7	0
2005	44	24	14	6	0
2006	39	24	10	5	0
2007	49	30	17	1	1
2008	39	26	8	4	1
	255	131	73	44	7

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7

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Numbers shown in the boxes represent number of articles classified under that topic.

Fig. 2. Classification framework for mobile marketing research.

Marketing had published more than one third of all mobile marketing articles. The International Journal of Mobile Marketing is the first journal that is exclusively dedicated to the field of mobile marketing. It is expected that soon more of such journals will be available which will consequently increase the depth of mobile marketing literature. Besides these two journals many high quality journals such as the Journal of Advertising Research, the Journal of Business Research, the International Journal of Information Management, the Journal of the Academy of Marketing Science, the MIT Sloan Management Review, the Information Systems Journal and the International Journal of Electronic Commerce have published articles focusing on mobile marketing.

The next step was the classification of articles according to their central focus, aim and perspective. Although the subjective nature of the classification process might give rise to validity concerns, it does not pose a threat to the sufficiency of the content provided in the literature review. The purpose of the classification is to provide an organized conceptual framework of mobile marketing literature to be able to assess the level of researcher attention on each sub-domain. Such an analysis has the potential to highlight under-researched areas and provide directions to future research. The classification of 255 articles is shown in Fig. 2. The rest of the paper is organized to present the findings of the review in accordance with the logic of classification.

3. Framework

3.1. Theory

The articles that are classified under this category attempt to lay the foundations of mobile marketing and are mostly visionary works of art. These articles are mainly conceptual or exploratory in nature and belong to the discovery stage of science. The topics of the articles include conceptualizations of mobile marketing and mobile commerce, differences between e-commerce and m-commerce, the dimensions of mobile market place, key features and unique value propositions of the mobile medium (e.g., ubiquity, convenience, personalization, localization, flexibility, spontaneity, immediacy, accessibility, time-criticality and instant connectivity), the driving and impeding forces of m-commerce, current penetration of m-commerce and future forecasts regarding mobile marketing (Anckar & D'Incau, 2002; Balasubramanian, Peterson, & Jarvenpaa, 2002; Barnes, 2002a; Clarke, 2001; Denk & Hackl, 2004; Dholakia & Dholakia, 2004; Fouskas et al., 2005; Frolick & Chen, 2004; Jarvenpaa, Lang, Takeda, & Tuunainen, 2003; Kumar & Zahn, 2003; Leong, 2005; Maamar, 2003; Mort & Drennan, 2002; Nerger, 2008; Nohria & Leestma, 2001; Oliva, 2003; Senn, 2000; Shugan, 2004; Siau, Lim, & Shen, 2001; Stafford & Gillenson, 2003; Steinbock, 2006; Sultan & Rohm, 2005; Swilley & Hofacker,

2006; Varshney & Vetter, 2002; Watson, Pitt, Berthon, & Zinkhan, 2002; Wu & Hisa, 2008; Zeng, Yen, Hwang, & Huang, 2003). Several literature reviews are also classified under this category (Leppäniemi, Sinisalo, & Karjaluoto, 2006; Min & Ji, 2008; Ngai & Gunasekaran, 2007; Okazaki, 2005b; Scornavacca, Barnes, & Huff, 2006).

3.2. Strategy

3.2.1. Strategy

The articles that are classified under this category adopt a strategic perspective and mostly focus on design issues in mobile business models, identification of the extended structure of the mobile value chain, revenue increasing models for mobile marketing, firm-level adoption of mobile technologies, effectiveness of cross-media integration, and critical success factors and effectiveness of mobile marketing campaigns in stimulating consumer response and as a brand vehicle. Some examples from the selected articles are as follows: Haaker, Faber, and Bouwman (2006) investigated critical design issues in business models for mobile services and developed a causal framework which links these critical design issues to expected customer value and expected network value, and finally to business model viability. Scharl, Dickinger, and Murphy (2005) and Scornavacca and McKenzie (2007) explored the critical success factors of SMS based campaigns from a managerial perspective. Vatanparast and Asil (2007) suggested a conceptual model of effective mobile advertisement. Wang (2007) examined the effect of cross-media integration of an advertiser's SMS messages and website, and found significant evidence for the cross-media effect of mobile and Internet advertising. Nysveen, Pedersen, and Thorbjørnsen (2005) studied the effects of mobile channel additions on consumer–brand relationship dimensions and found that SMS channel additions are perceived as complements to the brands' main channel, whereas MMS channel additions today primarily are perceived as supplementary channels. Merisavo, Vesanen, Arponen, and Kajalo (2006) examined the effectiveness of mobile advertising in sales of mobile services and found that there is a significant increase in sales to customers who were exposed to mobile advertising compared to those who were not exposed. Hairong and Stoller (2007) examined the effectiveness of mobile web advertising through a field experiment and found that exposure to mobile advertising increases brand recall, brand association, and purchase intent. Several studies focused on firm-level adoption of mobile marketing practices and mobile technologies for a variety of business functions in different industries (Doolin & Ali, 2008; Komulainen, Mainela, Tähtinen, & Ulkuniemi, 2007; Lee, Cheng, & Cheng, 2007; Okazaki, 2005a; Okazaki & Taylor, 2008). A comprehensive review of the articles classified under the strategy category resulted in six important strategic best practices: (1) mobile marketing messages need to be permission-based, highly relevant, highly targeted, attention grabbing, to the point, personalized and of value-added content; (2) the benefit/incentive provided by the mobile marketing should be instant and recognizable (3) security/privacy concerns of the mobile users should be well addressed (4) mobile applications must be innovative, user-friendly despite technological limitations of mobile devices, and be able to provide solutions for needs related with exclusive value propositions of the mobile medium; (5) mobile technologies are suitable for various industries and task-types, and successful implementation is likely to enhance efficiency and effectiveness of management and integration of the value chain; and (6) players of the mobile value chain should collaborate and co-operate to create synergy, and be ultimately consumer centric.

3.2.2. Applications

The articles that are classified under this category focus on design issues and unique features of specific types of mobile marketing applications, and speculate on their business potential. Various authors have concentrated on diverse mobile applications and suggested value-added uses and success factors to increase consumer acceptance for them. These kinds of publications do not only contribute to the development of a richer knowledge base but they also expand the horizon for the mobile marketing research stream by offering innovative consumer-centric solutions packaged as mobile marketing tools. Topics of selected articles include examination of current and future applications of wireless technology and their commercial potentials (Aungst & Wilson, 2005; Malladi & Agrawal, 2002; Wen & Mahatanankoon, 2004), comparison of mobile payment solutions with other payment instruments (Ondrus & Pigneur, 2006), value propositions of location-based services and commercialization of them (Barnes, 2003a, 2003b; Hosbond & Skov, 2007; Kumar & Stokkeland, 2003; Rao & Minakakis, 2003), adoption of mobile gaming (Kleijnen, Ruyter, & Wetzels, 2004), review of mobile games research to assess the potential of mobile games as an advertising medium (MacInnes, Moneta, Caraballo, & Sarni, 2002; Salo & Karjaluoto, 2007), measuring the effectiveness of mobile direct mail coupons (Kondo & Nakahara, 2007), laying the foundations of text-message advertising (Rettie, Grandcolas, & Deakins, 2005), mobile multimedia services (Pagani, 2004), mobile multimedia advertising (Heller, 2006), text-to-screen mobile marketing (Dolian, 2008), image recognition as an opt-in method (Ramkumar, 2007), text messaging method for television voting (Becker, 2007), vehicular mobile commerce applications (Varshney, 2005), mobile TV (Bayartsaikhan et al., 2007), mobile banking (Laukkanen, 2005; Luarn & Lin, 2005; Ratten, 2008), mobile payments (Chen, 2008), mobile ticketing (Bauer, Reichardt, Exler, & Tranka, 2007) and wireless application protocol (Barnes, 2002b; Bertelè, Rangone, & Renga, 2002).

3.3. Consumer behavior

The articles that are categorized under this category aim to develop models incorporating individual-level characteristics, such as demographics, motivations, traits and perceptions, social and cultural influences, and other consumer-based constructs to explain the adoption of mobile marketing and prediction of mobile consumer behavior. Building on Theory of Reasoned Action (Fishbein & Ajzen, 1975), Theory of Planned Behavior (Ajzen, 1985), Technology Acceptance Model (Davis, 1989; Venkatesh & Davis, 2000), Innovation Diffusion Theory (Rogers, 1983) and uses and gratifications theories of marketing literature, researchers focusing in the mobile consumer behavior have investigated various constructs independently or in relation with each other in order to validate existing models in the mobile context. A thorough investigation of the articles on mobile consumer behavior enables further classification of the mobile consumer behavior literature based on the constructs the articles prominently focus on. These constructs include consumer-based variables that influence the acceptance of mobile marketing, perceived value, attitudes, trust, satisfaction, loyalty. Such a classification allows identification of the level of researcher attention on major constructs of consumer behavior within the mobile marketing research stream.

3.3.1. Perceived consumer value in the mobile context

Since customer value is what every business entity ultimately seeks, there is a need to understand which elements and unique features of the mobile medium provides value from the consumers' perspective. Articles that are categorized under this factor focus prominently on the perceived value construct and investigate the

relationship between perceived value and its antecedents and consequents in the mobile context. Mobile values are based on distinctive features of mobile devices, such as "always with the user" and "always on" and "always connected". It is found that usefulness is not the top concern for mobile consumers; instead mobile services are used primarily for convenience (Kim, Chan, & Gupta, 2007; Magura, 2003; Mahatanankoon, Wen, & Lim, 2005).

Empirical studies suggest that both utilitarian value (Bauer et al., 2007; Kleijnen, Ruyter, & Wetzels, 2007) and hedonic value contribute to consumer adoption of mobile marketing. It is found that the influence of hedonic value is stronger when compared to utilitarian value in building attitudes towards mobile technology in general (Bruner & Kumar, 2005), and especially among mobile users with low trust of mobile technology and low internet experience (Park & SuJin, 2006). The hedonic value of the mobile internet is found to correlate negatively with the importance of service cost, and positively with use convenience and information quality, while the utilitarian value is found to positively correlate with the importance of service cost and connection stability (Park, 2006). In another study, Kim and Hwang (2006) identified socio-economic status and maturity (measured by age and education) as antecedents to consumers' value tendency, and examined the relationships between mobile consumers' value tendency and their perceptions on service quality. Results of the study showed that mobile users of lower maturity level are more likely to have hedonic tendencies than those of a higher maturity level, who in contrast exhibit more utilitarian tendencies. Mobile users' hedonic tendency is found to be positively associated with perceptions on service quality. More importantly, the mobile users who have a higher level of utilitarian tendency are found to have more negative perceptions on service quality. The importance and co-existence of emotional and functional values were also validated in mobile internet (Kim et al., 2007), mobile data services (Yang & Jolly, 2006), mobile multimedia services (Pihlström, 2007) and location-based mobile services (Pura, 2005).

3.3.2. M-marketing adoption and acceptance

The articles that are classified under this category generally focus on determinants of mobile marketing acceptance. It has been argued that the acceptance of a mobile marketing message is likely to be influenced by consumers' personal predispositions, tendencies, attitudes and individual-level perceptions (Bhatti, 2007; Hsu, Lu, & Hsu, 2008; Junglas, Johnson, & Spitzmüller, 2008; Khalifa & Shen, 2008; Luarn & Lin, 2005; Mahatanankoon, 2007; Marez, Vyncke, Berte, Schuurman, & Moor, 2007; Pagani, 2004; Pedersen, 2005; Wang, Lin, & Luarn, 2006; Wu & Wang, 2005; Yang, 2005), demographics (Bigne, Ruiz, & Sanz, 2005; DeBaillon & Rockwell, 2005; Hanley, Becker, & Martinsen, 2006; Karjaluoto, Lehto, Leppäniemi, & Jayawardhena, 2008; Suoranta & Mattila, 2004), social/peer influence (Kim, Lee, & Kim, 2008; Lee & Murphy, 2006; Newell & Meier, 2007; Rohm & Sultan, 2006), cultural dimensions (Gressgard & Stensaker, 2006; Harris, Rettie, & Kwan, 2005; Lee, Kim, Lee, & Kim, 2002; Muk, 2007; Sultan & Rohm, 2008; Sundqvist, Frank, & Puumalainen, 2005; Weitenberner et al., 2006), acceptance of the mobile medium itself (Bigné, Ruiz, & Sanz, 2007; Heinonen & Strandvik, 2007), the relevance and the credibility of the content (Choi, Seol, Lee, Cho, & Park, 2008; Haghirian & Inoue, 2007; Karjaluoto, Standing, Becker, & Leppaniemi, 2008; Okazaki, 2004; Wang et al., 2006), the level of trust towards the message sender/wireless service provider (Lee, 2005; Lin & Wang, 2006; Lu, Yu, Liu, & Ku, 2004; Luarn & Lin, 2005; Okazaki, Katsukura, & Nishiyama, 2007; Zhang & Mao, 2008), the context of the marketing message (Barnes & Scornavacca, 2004; Chae, Kim, Kim, & Ryu, 2002; Karjaluoto & Alatalo, 2007; Knutsen, 2005; Lee, 2005), user permission, and user control over content, delivery timing and frequency of the marketing message (Carroll et al., 2007; Kleijnen

et al., 2007; Maneesoonthorn & Fortin, 2006; Tsang, Ho, & Liang, 2004). The level of research attention on this category is abundant, yet discrepancies still exist. Relative importance of adoption determinants and the significance of moderating power of consumer demographics, especially gender and income, are among the most controversial issues, which certainly require further investigations. Additionally, cross-cultural studies in the domain of mobile marketing are still quite scarce. Those who have conducted cross-cultural studies found significant differences in adoption and usage of mobile services between different countries; hence the search for a single, global mobile marketing strategy may be imprudent. Further research is necessary for better understanding of the cultural dimensions that may have influence on the acceptance of mobile marketing.

3.3.3. Attitude towards mobile marketing

Although attitude towards mobile advertising is included among the determinants of mobile marketing adoption, it is found that several articles entirely focused on the attitude construct and aimed to investigate its antecedents and consequents in the mobile context. Therefore, it seemed appropriate to classify these articles in a distinct category. Several examples from this category are as follows: Bauer, Reichardt, Barnes, and Neumann (2005) identified entertainment value and information value as the strongest drivers of the attitude toward mobile advertising, whereas the effects of prior knowledge and general attitude toward advertising were found as very low. Haghirian and Inoue (2007) investigated antecedents of Japanese consumer attitudes toward mobile advertising and found that informativeness and credibility of the advertising message have the greatest impact on consumers' attitude towards advertising on the mobile internet. Contradicting with them, several authors found the influence of entertainment and informativeness on attitude to be insignificant (Chowdhury, Parvin, Weitenberner, & Becker, 2006; Lee & Jun, 2007). Barutçu (2007) found that price-conscious and more involved customers have more positive attitudes towards mobile advertising, discount coupons, banking and mobile marketing tools overall, and respondents without fixed-line internet access differ considerably in terms of their attitude towards mobile advertising, entertainment and shopping. Wais and Clemons (2008) found that people prefer to receive promotional messaging from another person rather than a company, and would be more likely to perceive promotional messaging positively if it came from another person than if it came from a company. Xu (2006/2007) and Okazaki (2004) found strong evidence for the relationship between consumer attitudes and consumer intentions within the mobile context.

3.3.4. Role of trust

Despite the unique benefits of mobile services, overcoming trust issues is a major obstacle in the adoption of mobile services and development of m-loyalty. Many consumers feel uncomfortable with the idea of conducting commerce and sharing personal information over wireless, hand-held devices. The significance of trust motivated several researchers to focus entirely on the role and antecedents of trust in the mobile context. Karjaluoto, Lehto, et al. (2008) found empirical support for the positive influence of trust in the marketer on both the attitude toward mobile advertising and the intention to receive messages. Zhang and Mao (2008) examined antecedents and consequents of trust in the SMS advertising context, and found that (1) trust in advertising is significantly predicted by perceived ease of use and psychological disposition to trust; and (2) trust strongly increases behavioral intention to accept SMS advertising both directly and indirectly through increasing perceived usefulness of SMS advertising. Lee (2005) found that perceived components of interactivity, namely user control, responsiveness, connectedness, ubiquitous connec-

tivity and perceived contextual offer have strong and significant effect on consumer trust with perceived contextual offer having the strongest effect.

3.3.5. M-satisfaction and M-loyalty

Despite excessive attention on consumers' initial adoption process of mobile services, customer satisfaction and loyalty in mobile context has rarely been studied. Only nine articles were identified as having an exclusive focus on post-purchase constructs in the mobile context. However, those few studies made significant contributions in terms of exploration of the mobile consumer behavior patterns; thus deserve to be classified under a distinct category. Several examples from this category are as follows: Pura (2005) suggested that commitment can be enhanced through building emotional value and conditional value by focusing on offering fun service experiences in the right context. Pihlström (2007) focused on the relationships between value perceptions, commitment and intentions to use mobile multimedia services and found that intentions to use the same service provider repetitively were directly influenced by commitment to use the same provider, and indirectly by emotional and social value perceptions of MMS content. Chae et al. (2002) found evidence suggesting that the dimensions of information quality (connection quality, content quality, interaction quality and contextual quality) have significant impact on user satisfaction, which, in turn, was shown to be related to customer loyalty.

It is surprising that very few researchers focused on the impact of design aesthetics of the mobile user interface on consumer satisfaction or consumer loyalty, given the fact that many researchers found significant relationships between aesthetic beauty of websites and various consumer perceptions, and behavioral intentions within the domain of e-commerce. Only two articles were identified on this subject and their findings contradict with each other. Cyr, Head, and Ivanov (2006) found that design aesthetics do have a significant impact on perceived usefulness, ease of use, and enjoyment, all of which ultimately influenced consumers' loyalty intentions towards a mobile service. On the other hand, Magura (2003) found that site design is as of little relevance for mobile commerce acceptance. Certainly, the level of researcher interest on the influence of design and aesthetics of the mobile user interface on behavioral intentions is insufficient and further research would be of great value.

3.4. Legal issues and public policy

The articles that specifically concentrate on consumer policy issues in the mobile context and the relevant legal framework are classified under this category (Chen, Ross, & Huang, 2008; Coursaris, Hassanein, & Head, 2003; Karp, 2007; Lembke, 2002; Milne & Rohm, 2003; Petty, 2003; Worthy & Graham, 2002). Mobile marketing is an important consumer policy issue due to two inherent characteristics of mobile communication technology: (1) it is device/technology dependent which allows identification of individual users and poses threats to privacy and security of personal information, (2) it has high penetration rates, especially among minors. Development of regulations for mobile consumer policy lags behind the pace of technological development in mobile context. Therefore, academic research shedding light on specific consumer policy issues in the domain of mobile marketing would be of great value in aiding both industry self-regulation, and establishment of a comprehensive body of law governing these issues. However, the amount of academic interest in the domain of mobile consumer policy is surprisingly low and future studies are very much needed.

4. Conclusion

The literature review revealed that there is no commonly accepted classification framework for mobile marketing (Leppäniemi et al., 2006; Ngai & Gunasekaran, 2007; Varshney & Vetter, 2002). The main reason for that is mostly due to the fact that a common conceptualization of the phenomenon is still lacking. There is no agreement on an explicit definition of mobile marketing that captures the true nature of the phenomenon. Therefore, the scope of mobile marketing is still vague. The review presented in this article may help researchers in this respect by providing insight into the-state-of-the-art in mobile marketing research. The findings are presented in a scheme that allows for assessment of the level of researcher interest in each sub-domain of mobile marketing research. Although the categories of classificatory framework may not be completely mutually exclusive, it sufficiently organizes the body of literature in terms of both the perspective adopted by each article and the constructs they focus on.

The preceding discussion identified several areas requiring future research. Specifically, researcher attention is relatively low in the domains of trust, m-satisfaction, m-loyalty and public policy. On the other hand, research in the domain of m-acceptance is abundant, yet discrepancies regarding relative importance of adoption determinants still exist. The domains of strategy and applications require continual attention due to the rapidly changing nature of the underlying technologies and the business environment. Existing applications and business models can quickly become obsolete due to introduction of novel technologies or consumer trends. Finally, cross-cultural studies in the domain of mobile marketing are still quite scarce. Therefore, it can be concluded that although there is substantial progress in the field of mobile marketing, academic research is still in its infancy and offers fruitful research avenues.

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