Torsten J. Gerpott/Sandra E. Thomas/Michael Weichert

Personal characteristics and mobile Internet use intensity of consumers with computer-centric communication devices

An exploratory empirical study of iPad and laptop users in Germany

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Abstract

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Prior research on adopters of ubiquitous Internet access via cellular radio infrastructures of mobile network operators (MNO) has primarily focused on consumers equipped with enhanced web-enabled phones. In contrast, this work investigates personal characteristics and mobile Internet (MI) use behaviors of consumers who chose computer-centric appliance types for MI access. Two variants of tablet PCs (*Apple*'s iPad1 and iPad2) and laptops are distinguished as computer-centric communication device categories. Data on two demographic variables, three MNO relationship characteristics and actual MI use intensity (average monthly volume of mobile IP traffic generated by a subscriber in May and June 2011) of 2,001 consumers with a flat MI pricing scheme were extracted from customer files of the German subsidiary of a large international MNO. 1,371, 367 and 263 of the sample members used an iPad1, an iPad2 and a laptop respectively for MI access. Compared to the adult population in Germany, persons aged between 17 and 35 years and males are overrepresented among MI adopters with the three studied device types. MI use intensity is highly positively skewed: In each of the three appliance groups, a small number of users disproportionately contributes to the total MI traffic generated by the subjects. MI use intensity is the main variable discriminating between *Apple* tablet versus laptop MI subscribers. On average, laptop users generate three times more MI traffic than iPad customers. MI use intensity does not differ significantly between iPad1 and iPad2 customers. Age and length of business relationship with the collaborating MNO are the two only studied personal characteristics, which consistently display a significant (negative) association with MI use intensity across the three appliance groups. Conclusions are drawn for MNO on aligning marketing measures to the peculiarities of users with different types of computer-centric MI devices and for scholarly research seeking to enhance the understanding of the influence of various appliance categories on MI adoption and use behaviors.

Univ.-Prof. Dr.
Torsten J. Gerpott

Leiter des Lehrstuhls Unternehmens- und Technologieplanung, Mercator School of Management, Universität Duisburg-Essen, Lotharstr. 65, D-47057 Duisburg.

Dipl.-Kff. Sandra E. Thomas

Senior Business Consultant, BearingPoint GmbH, Gladbecker Str. 5, D-40472 Düsseldorf.

Dr. Michael Weichert

Leiter Business Management Marketing Internet, Vodafone D2 GmbH, Am Seestern 1, D-40547 Düsseldorf.

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1. Introduction

Many mobile network operators (MNO) in highly developed countries have experienced flat or even shrinking revenues from voice calls over the past years. According to BITKOM (2011: 8), mobile voice call revenues in the European Union (EU) and the USA decreased by 3.8% and 3.5% respectively in 2011 compared to the previous year. One avenue MNO take to counter this development is to exploit and intensify the trend that more and more consumers want ubiquitous access to the Internet and Internet Protocol (IP)-based data services through third- or fourth-generation (3G or 4G) nationwide cellular networks even while being on the move. This trend towards *mobile Internet* (*MI*) access and use is reflected in a significant growth rate of the revenues MNO generate from mobile data offerings. In 2011 this rate amounted to 9.8% in the EU and to 17.8% in the USA respectively (BITKOM, 2011: 5).

Against this background it should not come as a strong surprise that a plethora of recent scholarly studies has been published on consumer attitudes and behaviors concerning the MI. A few examples are Choi, Kim, & Kim (2011), Kim & Oh (2011), Pousttchi & Goeke (2011) and Verkasalo, López-Nicoás, Molina-Castillo, & Bouwman (2010). Regrettably, most of this work suffers from three severe limitations. First, the overwhelming majority of earlier research focused on stated behavioral intentions to use or to continue to use MI in the future captured through questionnaires filled in by convenience samples of consumers (frequently students). However, there is ample evidence revealing that MI use *intention* claims or subjective frequency reports overlap only very moderately with measures of *actual* adoption and use intensities (cf., Szajna, 1996; Kim & Malhotra, 2005; Verkasalo, 2008a; Choi et al., 2011; Gerpott, 2011a). Hence, the validity of many MI adoption and use measures of most purely survey-based research is likely to be low (cf. Legris, Ingham, & Collerette, 2003: 202).

Second, most investigations on MI acceptance among MNO customers have relied on the Technology Acceptance Model (TAM) of Davis, Bagozzi, & Warshaw (1989) as a conceptual framework. They emphasized consumer perceptions of MI "usefulness" and "ease of use" as critical antecedents of MI acceptance. Unfortunately, correlations between questionnaire items capturing MI usefulness or ease of use assessments on the one hand and use intention or frequency/intensity claims on the other are trivial, tautological (due to domain overlaps between explanatory and criteria measures) and to a large extent caused by common method bias (Straub & Burton-Jones, 2007; Sharma, Yetton, & Crawford, 2009; Verkasalo et al., 2010; Gerpott, 2011a). In addition, a focus on consumer assessments of MI usefulness or ease of use is not very helpful for MNO which face the challenge of aligning marketing actions to specific customer segments defined *ex ante* because they simply do not have data on such perceptions among their potential or actual MI service subscribers at hand. Rather, in practice MNO have to rely on less ambiguous, objectively measureable personal characteristics of their (potential) MI customers such as gender, age or length of business relationship in order to derive profiles of their (prospective) MI users as a starting point for targeting marketing programs.

Third, most extant work on initial MI adoption and subsequent use intensity is "customer premise equipment agnostic" in the sense that it does not at all consider potential differences in personal characteristics and use intensity of MI customers as a function of the device category chosen by the consumer to obtain MI access. This is unsatisfactory because quite a number of authors have pointed out that consumers can not only access MI via web-enabled ("smart") phones, but also through more computer-centric appliances. Personal characteristics and use intensity of MI subscribers with different computer-centric device categories may diverge due to variations in the functions primarily covered by their appliance type (Serif & Ghinea, 2008; Verkasalo, 2008a; Bekkering, Johnston, Warkentin, & Schmidt, 2009; Gerpott, 2011b; Peslak, Shannon, & Ceccucci, 2011). Prior investigations have implicitly or explicitly assumed that consumers obtain MI access only via phone-centric devices (e.g., Hong & Tham, 2006; Verkasalo, 2011). However, there is evidence indicating that a swiftly increasing number of consumers buy devices which are more akin to personal computers than to phones for cellular network-based MI access (Smura, Kivi, & Töyli, 2011). At least since the launch of *Apple*'s first iPad generation in 2010 computer-centric MI access appliances are no longer a homogenous category but need to be subdivided further into (regular) laptops and tablets with connectivity to cellular data networks (Bekkering et al., 2009; Smura, Kivi, & Töyli, 2009; Ghose, Goldfarb, & Han, 2011). In light of the recent global sales increase of tablets capable to communicate over cellular mobile data networks it is hard to understand that to the best of our knowledge not a single scholarly investigation is available that compares personal characteristics and use behaviors of MI subscribers equipped with different categories of computer-centric MI access devices (i.e., laptops versus tablets).

The purpose of the present study is to overcome some of the weaknesses of the literature on characteristics of MI adopters, MI use intensity and factors explaining interindividual MI use intensity variance: We empirically explore how MI consumer groups with different categories of computer-centric MI access appliances other than advanced web-enabled cellular phones diverge in terms of (1) objectively measureable personal demographic and MNO relationship characteristics as well as (2) their MI use intensity and some of its antecedents.

The remainder of this paper is structured into four parts. The next section outlines MI access related features of as well as differences between conventional laptops and the currently market-leading tablet model, i.e. *Apple*'s iPad product line. In addition, it develops the research hypotheses and questions. Section 3 describes the empirical procedures pursued to obtain measures of the study variables in a large sample of MI consumers of a global MNO's German subsidiary. The empirical results are then presented. Section 5 discusses practical and research implications of our work.