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Characteristics and mobile Internet use intensity of consumers with different types of advanced handsets

An exploratory empirical study of iPhone, Android and other web-enabled mobile users in Germany

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Abstract

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This work explores personal characteristics and mobile Internet (MI) use behaviors of consumers equipped with four distinct types of advanced handsets for accessing the Internet via cellular radio infrastructures of mobile network operators (MNO). Furthermore, it investigates the extent to which personal and mobile appliance characteristics explain variance in actual MI use intensity. 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 9,321 adult consumers with a flat MI pricing scheme are extracted from customer files of the German subsidiary of a large international MNO. 959, 2,213, 2,410 and 3,739 of the sample members use an Apple iPhone 3, an Apple iPhone 4, a model running with Google's Android operating system (OS) and other MI-enabled mobile OS/phone types, respectively. Compared to the adult population in Germany, persons at least 50 years of age are clearly underrepresented among MI adopters with the four studied device types. Differences between the four phone type groups with regard to gender, age, time from enrollment and MI use experience emerge as statistically significant, but they achieve only minor substantial relevance. MI use intensity is highly positively skewed: In each of the four appliance groups, a small number of users disproportionately add to the total MI traffic generated by the subjects. Consumers' advanced OS/handset type strongly contributes towards explaining MI use intensity variance. iPhone subscribers generate more traffic than Android customers who in turn show a higher MI activity level than individuals running other web-enabled mobile models. Age is the only studied personal characteristic consistently showing a (negative) association with MI usage, which both is statistically and materially significant. Conclusions are drawn for MNO on MI marketing issues. Implications of study limitations for research on MI adoption and use behaviors on the MI are also outlined.

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Contents

1. Introduction

In the recent past the number of consumers owning sophisticated mobile handheld devices, so-called "advanced" or "smart" phones, has rapidly increased. Such communication appliances enable people not only to make voice calls or to use "Short Message Service" (SMS) while being on the move but also deliver "a convincing approximation of the familiar wired Internet" (West & Mace, 2010: 282) with "a myriad of Internet-based services including email, geo-location, streaming video, and social networking" (Kenney & Pon, 2011: 240). Furthermore, advanced mobile handsets are typically capable of running various consumer and business software applications which can be installed on the device after purchase (Verkasalo, López-Nicolás, Molina-Castillo, & Bouwman, 2010; Verkasalo, 2011). According to market researchers, the worldwide sales of advanced mobile phones more than quadrupled from 119.7 million in 2007 to 481.3 million in 2011 and is expected to grow even further to a sales volume of almost one billion devices by 2016 (Strategy Analytics, 2011).

This development in the mobile communications market has triggered a substantial number of scholarly investigations on consumers' willingness to adopt advanced multipurpose phones for obtaining mobile Internet (MI) access over the infrastructures of mobile network operators (MNO) and on consumers' (stated or objectively observed) use behaviors concerning mobile data/Internet services beyond SMS. A few examples of this strand of research are Kim (2012), Choi, Kim, & Kim (2011), Kim & Oh (2011), Pousttchi & Goeke (2011), Tojib & Tsarenko (2011), Tseng & Lo (2011), Verkasalo et al. (2010) and Okazaki & Hirose (2009). Overall, this work has shown that consumers' initial propensity to adopt advanced mobile handsets and their continued intensity of utilizing such appliances for mobile access to Internet-based/-like services increase as consumers perceive the new data devices and services as more "useful" and "easier to use". Unfortunately, this insight is neither intriguing nor particularly helpful for MNO managers who develop marketing measures to promote MI device adoption and use among existing and newly acquired customers: Practitioners simply do not have the necessary information on MI usefulness or ease of use perceptions among potential or actual advanced device owners and data service subscribers at hand. Rather, in real life MNO managers 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.

In addition, most earlier research captured stated behavioral intentions to use or to continue to use MI in the future through questionnaires filled in by convenience samples of consumers (frequently college students). However, there is ample evidence revealing that MI use *intention* claims or subjective frequency reports correlate only very moderately with measures of *actual* adoption and use intensity (cf., Szajna, 1996; Kim & Malhotra, 2005; Verkasalo, 2008a; Choi et al., 2011; Gerpott, 2011). Hence, the validity of many MI adoption and use measures of most purely survey-based research is suspect (cf., Legris, Ingham, & Collerette, 2003: 202).

Finally, the overwhelming majority of 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 across distinct device types chosen by consumers to obtain MI access. This is unsatisfactory because in the past business journalists and scholars conveyed the impression that at least the characteristics and use behaviors of "devoted" consumers equipped with *Apple's* iPhone do diverge from those of "ordinary" MI adopters relying on other handheld appliances in getting MI access (Arruda-Filho, Cabusas, & Dholakia, 2010; Spehr, 2010).

The purpose of this research is to address some of the omissions and limitations of the literature on characteristics of MI adopters, MI use intensity and factors explaining interindividual MI use intensity variance. We therefore empirically explore how MI consumer groups with different types of advanced MI-enabled phones diverge in terms of plain personal demographic and MNO relationship characteristics as well as with regard to an objective measure of their MI use intensity. Besides we investigate how MI use intensity is affected by consumers' mobile phone type, selected other device features beyond its basis type and a set of personal characteristics of MNO customers. The study's focus has practical relevance. It helps MNO managers to better understand the background profiles and MI use intensity of MI adopters with different device types as well as selected drivers of MI use intensity at the level of the individual consumer. Such an understanding is a prerequisite for developing marketing programs, which account for differences and similarities between subscribers with a specific MI appliance category.

The remainder of this paper is organized into five parts. The subsequent section differentiates basic types of advanced

mobile handsets. In addition, it explains the research 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. The article concludes in sections 5 and 6 with a discussion of the practical and research implications of our work.