

# SMS Use Intensity Changes in the Age of Ubiquitous Mobile Internet Access: A Two-Level Investigation of Residential Mobile Communications Customers in Germany

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## INTRODUCTION

Since the first trials in 1992 the Short Message Service (SMS) provided by MNO has changed the way people communicate. Market researchers estimate that in 2014 the number of SMS delivered globally per day amounted to about 21 billion (Deloitte, 2014). However, in the recent past the massive proliferation of so-called smartphones with browsers, which enable consumers to conveniently access Internet services via data networks of MNO and with the capability to run software applications downloaded with the help of telecommunication networks has drastically changed the demand prospects for SMS. In particular, downloadable over-the-top (OTT) messaging applications, such as WhatsApp or Facebook-Messenger in Europe and the US, WeChat in China or KakaoTalk in South Korea are portrayed as better surrogates of the old-fashioned SMS (Mäkinen, Luukkainen, & Karikoski, 2014; Nikou, Bouwman, & Reuver, 2012; Ogara, Koh, & Prybutok, 2014).

Rio & Malik (2013, p. 7) estimate that the worldwide loss in revenues of MNO in 2014 due to the substitution of SMS by various MI services amounted to 21 billion USD. Against this background, it is suggested that SMS and MI services in general and mobile instant messaging applications in particular are close substitutes (Mäkinen *et al.*, 2014). Many analysts conclude that the SMS era will irretrievably end in the short- to mid-term future (Rio & Malik, 2013). For MNO this view implies that hardly any further resources ought to be invested in the development of SMS pricing concepts and SMS sales strategies.

However, this conclusion could be too superficial because aggregate statistics may mask SMS and MI use change patterns, which are distinct in various customer groups. Observed overall decreases in SMS volume may largely stem from a small number of customers who were very heavy SMS users in the past and who exchanged SMS for MI services. This means that the SMS volume of a considerable number of customers has remained fairly constant or even increased in spite of the diffusion of smartphone-based Internet access. Empirical evidence testing this alternative position is scarce. Therefore, the first purpose of the present investigation is to examine the extent to which changes in MI use intensity explain variance in SMS volume shifts over a longer time period at the level of the individual MNO subscriber. Second, it seeks to explore whether customer characteristics (e.g., gender, contract tenure with current MNO) moderate the relationship between MI and SMS use intensity changes.

## CONCEPTUAL BACKGROUND AND RESEARCH QUESTIONS

The limited literature on demand interdependencies between various types of (mobile) communication services contains three lines of argumentation.

First, authors highlight that customers have a limited amount of money and time to spend on communication services. Given these resource constraints it is proposed that the allocation of additional outlays to one service category is compensated by a reduction in spending for other services with similar functionalities (Ghose & Han, 2011; Xu, Forman, Kim, & Ittersum, 2014). Consumers are especially incentivized to switch from SMS to MI (messenger) services if the marginal cost of MI use is zero due to the subscription to a MI flat price scheme and if SMS charges are based on metered rate plans (Gerpott, Thomas, & Weichert, 2014; Rio & Malik, 2013). Similarly, in case that the overall time budget of consumers for telecommunication activities is, on the whole, largely fixed and if consumers perceive the functionalities of innovative MI services to resemble or outperform those of the established SMS, increasing MI use should substitute earlier demand for SMS. The “service selection under resource constraints” view suggests that rising MI usage leads to shrinking SMS activity.

A second perspective – the uses and gratifications (U&G) framework – emphasizes different types of “gratifications” MNO customer seek through specific mobile services. The U&G lens proposes that customer decisions on which service is applied for which purpose are strongly influenced by comparisons of the extent of fulfillment of social and task-related communication needs achieved through various MNO service categories (Grellhesl & Punyanunt-Carter, 2012; Reid & Reid, 2007). MI services and SMS are both capable of covering person-to-person exchange needs. Stated in U&G parlance, MI services however are suited to provide a broad array of instrumental and hedonic gratifications resulting from content generation (uploading) and consumption (downloading). SMS-related functionalities are much narrower.

Even for OTT messaging several studies indicate that user needs fulfilled by such apps differ significantly from gratifications MNO customers obtain from SMS: Relative to OTT instant messengers, users experience SMS as better suited for more formal, official, task-oriented interpersonal exchange situations in which the possibility to reliably reach any other MNO customer regardless of whether she has also activated a specific software client of an OTT supplier on her smartphone in combination with privacy preservation are pivotal (Church & Oliveira, 2013; Deloitte, 2014; Lauricella & Kay, 2013; Nikou *et al.*, 2012; Ogara *et al.*, 2014; Reid & Reid, 2007). The second theoretical lens implies that MI usage intensity does not affect SMS activity.

A third stream of literature identifies an “activation effect” (Wei, 2008, p. 39) or a “positive.. spillover” (Xu *et al.*, 2014, p. 109) of the amount of use of one category of cellular services on a person’s demand for other telecommunication offerings. According to social exchange considerations, personal benefits of SMS can be amplified when supplemented by mobile downloading of Internet content from other web sites or persons and by mobile uploading of self-generated content. Reversely, the value of MI use can be strengthened through exchanges of SMS-based clarifications (Ghose & Han, 2011; Wei, 2008; Xu *et al.*, 2014). The third view implies that changes in MI usage intensity are positively associated with SMS use frequency adaptations.

The few studies empirically addressing the three lines of reasoning can be grouped into two streams. The first cluster of investigations is based on surveys of (frequently small opportunity) samples of MNO customers. The work relies on self-assessments of SMS and MI usage intensities and often directly asks participants to estimate the extent to which their use of a specific mobile instant messaging app has replaced traditional SMS (Bouwman & Reuver, 2014; Church & Oliveira, 2013; Hsiao & Chen,

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