

Adopter segments, adoption determinants and mobile marketing

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Abstract Today's mobile ICT environment is an environment in which technology is evolving at a dazzling speed, in which consumers are overwhelmed with an ever-increasing amount of innovations at the device as well as the service level, and in which the supply-side's development and marketing departments are confronted with new challenges. In this environment, the success of innovations has become highly unpredictable and increasingly dependent on at least equally unpredictable attitudes towards the technology. One of the major challenges in today's highly competitive mobile ICT environment, coping with shortening product lifecycles and an increasing number of failing innovations, is the quest for more efficient introduction strategies in terms of more accurate segment targeting. In order to achieve this, the acquisition of a more accurate insight into adoption determinants has become an absolute prerequisite. To date, however, the literature and research on those determinants remain too fragmented to be a solid foundation for such research. Starting from a new comprehensive determinant model, we developed an item battery to measure the totality of possible determinants, and illustrate its application in two case studies on mobile innovations about to be introduced in Flanders: mobile news (n: 269) and mobile television (n: 405). Crossing such accurate attitudinal determinant insights with intention-based segmentation forecasts might provide mobile marketers with valuable input to set up more efficient mobile marketing and targeting campaigns in today's mobile ICT environment.

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INTRODUCTION: TODAY'S ICT ENVIRONMENT

'In this era of diminishing product life cycles and rapid technological advancements, it is critical for firms to identify and target innovation-prone consumers effectively. A clear understanding of the factors affecting consumers' adoption processes is crucial to the development of an effective marketing strategy.'¹

Today's ICT environment — and certainly the major mobile part of it — is a rapidly evolving market. Suppliers are confronted with diminishing product lifecycles²⁻⁴ and consumers are overwhelmed with an ever-increasing number of innovations.⁵⁻⁸ After the so-called 'digital revolution' initiating convergence between traditionally separated technologies,^{9,10} we are currently experiencing some kind of 'mobile revolution'¹¹ in which all ICT and media usage seems to be going mobile. The wave of mobile telephony is largely behind us, but has created an environment in which every single person suddenly owns a personal 'mobile device' and everyone is always 'on' and reachable. Meanwhile, mobile technology converged with mp3, camera, gaming and other technologies, and several countries in Asia and Europe approached a mobile subscription rate close to (or even over) 100 per cent penetration.¹² The consequence of the latter is that mobile operators are entering a new phase in which not only is the number of new subscribers lower but also the average revenue per user (ARPU) is declining,¹³ compelling them to look out for 'new revenue sources' as 'mobile internet',¹⁴ 'mobile news services', 'mobile television',¹⁵ etc.

Today's ICT environment has clearly become an environment in which we have evolved from triple (television, internet, telephony) towards 'quadruple play' (+ mobile), and in which consumers are confronted with an ever-increasing offer of (mobile) technologies, devices and services, also an environment in which the demand side is confronted with the danger of becoming overwhelmed by 'too much too soon'^{16,17} and in which the success of innovations is becoming more and more dependent on

'attitudinal determinants' or attitudes towards technologies.¹⁸⁻²² In this environment, it has become crucial to target every consumer(s) segment(s) with the appropriate 'attitudinal' message(s).

Owing to the increasing number of failing innovations for which marketing is often taking the blame afterwards,²³ marketing and introduction strategies have more than ever become 'one-shot opportunities'²⁴ in this highly competitive environment. One of the key challenges in this quest for 'more efficient marketing' and better innovation introductions is the acquisition of a more accurate insight into attitudinal adoption determinants.

Or as Moreau *et al.*¹ indicate in the above-mentioned quote: efficient targeting ('it is critical to target innovation-prone consumers effectively') will be key to tackle that challenge. The high penetration rates of 'personal' mobile devices may be a valuable asset to do that, but the main prerequisite to make that targeting more efficient is an accurate identification of those consumers ('it will be critical to identify innovation-prone consumers') and an accurate insight into their 'attitudinal' adoption determinants ('a clear understanding of the factors affecting consumers' adoption processes').

MARKETING IN TODAY'S ICT ENVIRONMENT

If marketing is often taking the blame for failing innovations in today's ICT environment, this is because the traditional marketing approaches are not efficient enough in reaching the target audience. For the marketer in today's ICT environment, this implies two challenges:

- (1) *Through which paths can I reach the target audience(s) more efficiently?* Traditional advertising and marketing approaches seem to have become insufficient, which results in an ongoing quest for new paths to do that more efficiently. In today's fragmented market environment,^{25,26} it is evident that traditional mass market (and mass media) approaches need to make way for a more differentiated and personalised approach of (micro)segment

targeting.^{27,28} In order to achieve this, and given the fact that almost everyone has a personal mobile device, the advertising and marketing sector is rigorously experimenting with a diversity of new mobile marketing paths. *Mobile opt-in programmes* are commonly used to offer updates on promotions as last-minute travel offerings, and also as a *return path* to react on mass media campaigns advertisers are increasingly integrating mobiles in their campaigns. Some are experimenting with *sms-to-mail campaigns* (eg launch of 'Superman Returns' movie) in which people can send an sms to indicate their interest and receive additional information by mail. Others are experimenting with 'mobile billboard downloads'²⁹ or 'profile and location based mobile ads'.³⁰

- (2) *With which messages can I reach the target audiences more efficiently?* More efficient channels and communication paths will not suffice for a better marketing, however. Equally important at least for efficient micro-segment targeting is to have the correct arguments and messages to communicate to each of those micro-entities.³¹ And also, in this context, it is clear that the 'traditional approaches' cannot satisfy anymore. Innovator, early adopter, majority and laggard segments for different kinds of innovations for example, have always been associated with a typical 'archetype' or sets of profile assumptions in terms of demographics and attitudes towards new technologies, which are traditionally used to select and target the different types of adopter segments.³²⁻³⁴ When it comes to the targeting of innovators for example, marketing handbooks dictate that messages should be targeted at relatively young people, with a high level of income, education and social status',³⁵ and anticipate their typical attitudes towards new technologies (complexity not being a threshold, susceptible for social pressure, etc). In today's ICT environment, however, these profiles and assumptions have become too inconsistent³⁶ to remain reliable as a basis for efficient targeting communications and discrimination between segments.^{18,37-40}

As communication scientists, we mainly focus on the second challenge for today's (mobile) ICT marketer: more efficient (micro)segment targeting based on a detailed product- and segment-specific insight into communication arguments. The main area in which such an insight seems to be required is that of the 'attitudinal' adoption determinants.

ADOPTION DETERMINANTS IN TODAY'S ICT ENVIRONMENT

As 'traditional demographic characteristics' lost value over the years, 'attitudinal' adoption determinants have been put forward more as the alternative.^{18,20-22,41} 'Attitudinal determinants' stand for subjective perceptions of innovation characteristics and personality traits.

For a long time, the approach of these attitudinal adoption determinants was mainly inspired by diffusion theory, in which innovations were supposed to have a set of five characteristics (*relative advantage, complexity, compatibility, trialability and observability*), of which the subjective perception determines one's attitude towards the technology, and one's innovativeness or timing of adoption decision.⁴²⁻⁴⁴ The assumptions on the relationship between innovativeness and adoption determinants in terms of perceived innovation characteristics are summarised in Table 1. As indicated by the + or - signs, the perception of each of these innovation characteristics is assumed to have a fixed relationship with one's innovativeness. The more one perceives a relative advantage or the less one perceives the innovation as complex, the more one is assumed to be innovative for the specific technology. Innovators and early adopters are assumed to have a higher perception of relative advantage than the majority segments and a lower complexity perception. These determinant assumptions often serve as a basis for communication strategies when introducing innovations,⁵⁷ or as the framework for methodologies to detect innovativeness and adopter segments.

Over the years, the increasing attention paid to these 'attitudinal' adoption determinants resulted in a considerable yet cluttered extension of the original set of five adoption determinants. The

Table 1: Diffusion theory: Assumption on adoption determines

Adoption determinant	Assumption	References
Perceived relative advantage	(+) Positive correlation: the more an innovation is perceived as better than its alternatives or the idea it supersedes, the more innovative it is	Rogers (2003: 229, 265) ⁴² ; Sameer (1999: 20) ⁴⁵ ; Karahanna <i>et al.</i> (1999: 188) ⁴⁶ ;...
Perceived complexity	(-) Negative correlation, the more an innovation is perceived as relatively difficult to understand and use, the less innovative it is	Rogers (2003: 266) ⁴² ; Davis (1989: 340) ⁴⁷ ; Plouffe <i>et al.</i> (2001: 68) ²⁰ ; Chang and Cheung (2001: 5) ⁴⁸ ; Servaes and Heinderyckx (2002: 105) ⁴⁹ ; Chen <i>et al.</i> (2002: 708) ³⁷ ;...
Perceived trialability	(+) Positive correlation, the more there can be experimentation with the innovation on a limited basis, the more innovative it is	Rogers (2003: 265) ⁴² ; Choi <i>et al.</i> (2003: 169) ⁸ ; Heres <i>et al.</i> (2002: 57) ⁵⁰ ; Dowling (1999: 112) ⁵¹ ;...
Perceived compatibility	(+) Positive correlation, the more one perceives the innovation as consistent with the existing values, experiences and needs, the more innovative it is	Rogers (2003: 266) ⁴² ; Lin (2003: 354) ³⁸ ; Brown <i>et al.</i> (2003: 384) ⁵² ; Bouwman <i>et al.</i> (2002: 19) ⁵³ ; Guiltinan (1999: 30) ⁵⁴ ;...
Perceived observability	(+) Positive correlation, the more the results of the (use of the) innovation are perceived to be visible to others, the more innovative it is	Rogers (2003: 266) ⁴² ; Lin (2003: 354) ³⁸ ; Meijer <i>et al.</i> (2002: 2) ⁵⁵ ; Easingwood and Lunn (1992: 74–75) ⁵⁶ ;...

convergence with social psychology theories such as the Theory of Reasoned Action (TRA)^{58,59}, Technology Adoption Model (TAM)^{60,47} and (Decomposed) Theory of Planned Behavior ((D)TPB)^{61,62} in particular led to an extremely valuable — yet fragmented — increase in (research on) adoption and determinant models. Some consider one or two extra determinants,⁶³ while others considered eight,²⁰ ten⁸ or more determinants.

COMPRISING MODEL OF DETERMINANTS

Before focusing on ‘gaining the necessary insight in those determinants’, one is confronted with the problem of a ‘lack of overview’, since the increased multidisciplinary interest entails a cluttered and inconveniently arranged entirety of determinants. Evidently, good marketing communication requires an insight into more than the five determinants of Rogers’ diffusion theory, but it remains unclear in how many and which determinants this insight is actually required. Since a convenient overview of (potentially) relevant adoption determinants for ICT innovations is still lacking to date,^{64–66} we conducted a meta-analysis of determinants for ICT adoption, starting from studies and theories⁶⁷ whose central building

block was diffusion theory’s set of five determinants. This resulted in an extension to 19 determinants, in which we distinguish ten innovation-related characteristics (perceptions), eight adopter-related characteristics and the impact of the marketing strategy (Table 2).

Clearly, innovativeness and adoption decisions seem to be determined by more determinants than the original five initiated by Rogers’ diffusion theory. The perception of relative advantage for example, can express itself in several dimensions. The perceived cost and tangibles/aesthetics are the most important of them. Most followed Rogers in his conceptualisation of observability in terms of the perceived result demonstrability, but some distinguish the latter from ‘visibility’ as the degree to which the innovation is visible to others in its own right. It is also important to account for the perceived enjoyment of using the innovation, and ‘reliability’ as a dimension of perceived risk that is not covered by other determinants.¹⁰⁵ Innovativeness, on the other hand, is the most important personality trait. It covers a multitude of subdimensions such as ‘venturesomeness’, ‘novelty seeking’, ‘cosmopolitanism’, ‘variety seeking’, ‘information seeking’, etc. Opinion-leadership needs to be considered as a separate dimension,

Table 2: Extension of adoption determines

Adoption determinant	Assumed relationship with innovativeness	References
<i>Innovation-related characteristics</i>		
Relative Advantage	+	Rogers (2003: 229, 265) ⁴² ; Sameer (1999: 20) ⁴⁵ ; Karahanna <i>et al.</i> (1999: 188) ⁴⁶ ; Lin (2003: 354) ³⁸ ; Bouwman <i>et al.</i> (2002: 19) ⁵³
Cost	-	Easingwood and Lunn (1992: 74) ⁵⁶ ; Heres <i>et al.</i> (2002: 57) ⁵⁰ ; Servaes and Heinderycks (2002: 105) ⁴⁹ ; Fliegel and Kivlin (1966) ⁶⁸ ; Cestre and Darmon (1998: 125) ⁶⁹
Tangibles	+	Veryzer (1998: 136) ⁷⁰ ; Chan-Olmsted Gershon (2001: 284) ⁷¹ ; Heres <i>et al.</i> (2002: 57) ⁵⁰ ; Punie (2000: 422) ⁷²
Complexity	-	Rogers (2003: 266) ⁴² ; Davis (1989: 340) ⁴⁷ ; Plouffe <i>et al.</i> (2001: 68) ²⁰ ; Chang and Cheung (2001: 5) ⁴⁸ ; Chen <i>et al.</i> (2002: 708) ³⁷
Trialability	+	Rogers (2003: 265) ⁴² ; Choi <i>et al.</i> (2003: 169) ⁸ ; Heres <i>et al.</i> (2002: 57) ⁵⁰ ; Dowling (1999: 112) ⁵¹ ; Frambach and Hillebrand (1994: 38) ⁷³
Compatibility	+	Rogers (2003: 266) ⁴² ; Lin (2003: 354) ³⁸ ; Brown <i>et al.</i> (2003: 384) ⁵² ; Bouwman <i>et al.</i> (2002: 19) ⁵³ ; Guiltinan (1999: 30) ⁵⁴ ; Meijer <i>et al.</i> (2002: 2) ⁵⁵
Observability	+	Rogers (2003: 266) ⁴² ; Lin (2003: 354) ³⁸ ; Meijer <i>et al.</i> (2002: 2) ⁵⁵ ; Easingwood and Lunn (1992: 74–75) ⁵⁶ ; Bouwman <i>et al.</i> (2002: 20) ⁵³
Visibility	+	Heres <i>et al.</i> (2002: 57) ⁵⁰ ; Karahanna <i>et al.</i> (1999: 188) ⁴⁶ ; Plouffe <i>et al.</i> (2001: 68) ²⁰
Enjoyment	+	Choi <i>et al.</i> (2003: 168) ⁸ ; Chang and Cheung (2001: 2) ⁴⁸ ; Randolph (1999: 738) ⁶⁵ ; Igbaria <i>et al.</i> , 1996: 128 ⁷⁴ ; Mundorf and Westin (1996) ⁷⁵
Reliability	+	Frambach and Hillebrand (1994: 38) ⁷³ ; Ram and Sheth (1989: 8) ⁷⁶ ; Dodgson (2000: 99) ⁷⁷ ; Eastin (2002: 252) ⁴⁰ ; Dearing and Meyer (1994) ⁷⁸
<i>Adopter-related characteristics</i>		
Innovativeness	+	Dowling (1978: 235) ⁷⁹ ; Hirschman (1980: 285) ⁸⁰ ; Li (2004: 187) ⁸¹ ; Jeffres, Atkin Nenendorf, 1998: 485 ²¹ ; Lin Jeffres (1998: 349) ⁸²
Opinion leadership	+	Oxley and Nancarrow (2003: 40) ³⁴ ; Frambach and Hillebrand (1994: 41) ⁷³ ; Lin (2003: 352) ³⁸ ; Marsden (1981: 1203) ⁸³ ; Woolgar (1996: 92) ⁸⁴
(Product) knowledge	+	Atkin <i>et al.</i> (2003: 161) ¹⁹ ; Gatignon and Robertson (1989: 25) ⁸⁵ ; Moreau Lehmann and Markman (2001: 27) ¹ ; Fichman and Kemerer (1997: 1345) ⁸⁶
Optimism	+	Parasuraman and Colby (2001) ⁸⁷ ; Wei (2001) ⁸⁸ ; Neuendorf <i>et al.</i> (1998: 83) ⁸⁹ ; Punie (2000: 215) ⁷²
Image/Prestige	+	Choi <i>et al.</i> (2003: 168) ⁸ ; Rogers (2003: 230) ⁴² ; Plouffe <i>et al.</i> (2001: 68) ²⁰ ; Moore and Benbasat (1991: 195) ⁹⁰ ; Sheth <i>et al.</i> (1991: 161) ⁹¹
Willingness to pay	+	Talukdar <i>et al.</i> (2002: 102) ⁹² ; Jiang (2002: 181) ⁹³ ; Ricci, (2000: 156) ⁹⁴ ; Busselle <i>et al.</i> (1999: 46) ⁶⁴ ; Lennstrand (1998a: 8) ⁹⁵ ; Gatignon and Robertson (1989: 25) ⁸⁵
Control, voluntariness	+	Venkatash (2000: 346) ⁹⁶ ; Lee and Baek (2001: 1) ⁹⁷ ; Randolph (1999: 739) ⁶⁵ ; Eastin (2002: 255) ⁴⁰ ; Pajo (2000: 2) ⁹⁸
Social influence	+	Choi <i>et al.</i> (2003) ⁸ ; Karahanna <i>et al.</i> (1999: 187) ⁴⁶ ; Taylor and Todd (1995) ⁶² ; Lau <i>et al.</i> (2001: 60) ⁹⁹ ; Fishbein and Ajzen (1975: 302) ⁵⁹
Marketing (impact)	+	Steenkamp and Gielens (2003: 380) ¹⁰⁰ ; Jankowski and Van Selm (2001: 222) ¹⁰¹ ; Bouwman and De Jong (1996: 166) ¹⁰² ; Sultan <i>et al.</i> (1990) ¹⁰³ ; Gatignon and Robertson (1985: 850) ¹⁰⁴

just as a person's optimism towards technology, product knowledge, willingness (and ability) to pay, the perceived impact on one's personal image, the perceived control, impact of social influences and the impact of marketing, advertising and promotional strategies.

If a good targeting and marketing communication in today's (mobile) ICT environment requires an insight into more than the traditional five determinants, it will largely boil down to an insight into these 19 determinants. It will probably never be the case that all these determinants are relevant, but if prior-to-launch research could reveal which determinants are the most important drivers and thresholds for which segments, this would allow to adjust the targeting communications (eg by emphasising the 'status impact' and 'perceived enjoyment' for one segment, while tackling 'voluntariness' or 'complexity' — perceptions and — thresholds for the other).

Just as this is the case for other profiling variables (eg sociodemographics) (see discussion above), a growing number of studies are also revealing an increasing inconsistency for these determinant assumptions.^{20,64,106,107} The assumed relationship with a person's innovativeness is certainly not always confirmed, and dependent on the innovation being the subject of research, it is, often quite, different determinants that are the significant determinants of the adoption decision. Hence, also for these attitudinal determinants, one cannot afford anymore to start from generalising assumptions and profiles. Therefore, the required insight into determinants can be specified to a need for a *product-specific* insight into determinants. If we also account for the earlier remark that more efficient marketing communication also implies more (micro)segment targeting, we can even specify this to a 'need for *product- and segment-specific* insight in determinants'.

The question, however, remains as to how to acquire such an insight.

CASE STUDIES AND METHODOLOGY

The above-mentioned question was also the central question in two recent case studies

conducted by the MICT-IBBT research group.¹⁰⁸ Both studies were set up to acquire the necessary insight into attitudinal adoption determinants for two 'mobile innovations', as a basis for their introduction in Belgium (i.t.o. marketing and targeting campaign). In the first case study (2006), a sample of 269 respondents was questioned on their attitude towards a new 'mobile news' — application in the context of the IBBT-Romas¹⁰⁹ project. In the second case study (2007), a representative Flemish sample of 405 respondents was questioned on their attitude towards *mobile television* services. In the first study, data were collected by means of an online survey (after two months, during which the respondents could test the mobile news application). In the second study, data were collected by means of 40-min CAPI interviews (in which respondents were shown DVD-fragments in order to familiarise them with mobile television applications and usage moments).

Methodologically, each of the studies had to tackle the same 'double question': (a) in the first instance, gaining a prior-to-launch insight into the different (potential) adopter segments for the new mobile application; and secondly (b) gaining an insight into the attitudinal adoption determinants for each of those technology-specific segments.

The first challenge was tackled by means of an intention survey method: the Product Specific Adoption Potential (PSAP) scale. For the second question, the 19 determinants were operationalised in a battery of 47 Likert statements (cf. Table 3), to be answered on five-point agreement scales.

The PSAP scale is an intention-based survey method in which respondents are allocated to innovator, early adopter, majority and laggard segments based on the stated intentions on a general intention question and on respondent-specific formulated questions gauging their intention for 'optimal' and 'suboptimal' product offerings.^{110–113} The operationalisation of determinants into a scale of 47 items is the combined result of desk and focus group research. A first phase of desk research resulted in a long

Table 3: Operationalisation of determinants in 47 Likert statements

<p>Compatibility – lifestyle and personality</p> <p>7. Consultation of Mobile news/TV services fits my lifestyle</p> <p>39. If I buy a new mobile, it has to be a model that fits my personality</p>	<p>Marketing strategy</p> <p>26. If I would subscribe to a mobile news/TV application, it would be important to me that it is provided by a well-known 'brand'.</p> <p>27. If I would consider mobile news/TV adoption, I would first check the ads, brochures and promotions.</p>
<p>Compatibility – (Technological)</p> <p>30. I am interested in subscribing to mobile news/TV services? but I would mind if that would imply an investment in a new device.</p> <p>13. Mobile news/TV services are only interesting to me as a part of the subscription on other mobile services.</p>	<p>Innovativeness</p> <p>6. I think to be among the first to subscribe to such mobile news/TV services.</p> <p>34. Based on what I already knew about the application and what I have learned today, I will certainly search for more information about subscribing to these services.</p>
<p>Relative Advantage</p> <p>11. The advantages of mobile news/TV services are clearer to me than the disadvantages.</p> <p>40. I don't see where or when to use mobile news/TV services.</p>	<p>Opinion Leadership</p> <p>15. If mobile news/TV would be introduced on the market, people in my environment will certainly come to me for advice.</p> <p>Product Knowledge</p> <p>19. I recently send something about mobile news/TV services or recently talked to someone about it.</p>
<p>Cost (Relative Advantage)</p> <p>Subscription on mobile news/TV services seems expensive to me.</p> <p>1. Mobile news/TV services will probably cost too much for many people.</p>	<p>35. I consider myself well-informed about the possibilities and (dis)advantages of mobile news/TV services.</p> <p>Optimism</p> <p>44. The fast technological developments are a good thing.</p>
<p>Tangibles (Relative Advantage)</p> <p>25. As the mobile news/TV services is presented and testable now it has an attractive design and style.</p> <p>14. If I would consider buying a new mobile, design would be a very important buying argument to me.</p>	<p>45. If you don't want to run behind, adoption of new technologies is necessary.</p> <p>Image Prestige</p> <p>33. Subscribing to mobile news/TV services applications would have a positive impact on my image and social status.</p>
<p>Effectiveness (Relative Advantage)</p> <p>Mobile news/TV services will certainly make some things easier for me.</p> <p>36</p>	<p>38. Subscribing to mobile news/TV services beams out a certain standing.</p>
<p>Trialability – Physical</p> <p>41. I would like to try out mobile news/TV services before subscribing to them.</p>	<p>Willingness-to-pay</p> <p>22. Even if it costs a bit more, mobile news/TV is something I really want.</p>
<p>Trialability – Vicarious</p> <p>28. Before subscribing or adopting mobile news/TV services I prefer to look around for a while and see how others are experiencing the application.</p>	<p>Control/Self-efficacy</p> <p>46. I have no problem to sort out on myself how mobile news/TV application work and must be installed.</p>
<p>Observability – visibility</p> <p>12. One of the nice things of a mobile news/TV application is that it is something to show off with among friends.</p>	<p>Voluntariness</p> <p>42. If I would subscribe to mobile news/TV services, it would completely be my own decision. No one would influence me in making that decision.</p>
<p>17. I see many people in my environment who use mobile news/TV services.</p>	<p>Social influence</p> <p>9. Most people in my environment will certainly be enthusiast about the mobile news/TV application.</p>

Table 3: Continued

<p>Observability — Result Demonstrability/ Communicability</p> <p>24. I am perfectly able to explain the strengths and the weakness of mobile news/TV services to others</p>	<p>Social influence — network externalities</p> <p>37. I am interested in subscribing to mobile news/TV services, but only if there are sufficient people in my direct environment doing so. Otherwise, the application wouldn't have much value to me.</p>
<p>Enjoyment</p> <p>4. Mobile news/TV service seems very user friendly to me.</p>	<p>Social influence — interpersonal communications</p> <p>3. Before subscribing to a mobile news/TV application, I would like the advice of some people.</p>
<p>Complexity/Comfort Level</p> <p>8. I fear that mobile new/TV services application offers different possibilities, which makes it rather complicated.</p>	<p>16. Mobile news/TV services will certainly be a topic of discussion among my friends and family.</p>
<p>20. The mobile news services application seems very user-friendly to me.</p> <p>29. The mobile news/TV services application offers different possibilities, which makes it rather complicated.</p>	<p>Social influence — Compliance</p> <p>2. If 'mobile news/TV usage' would be considered as 'trendy' in my environment, I would certainly consider subscribing to it.</p>
<p>Reliability</p> <p>31. I doubt the reliability and proper functioning of the mobile news/TV services application.</p>	<p>10. My direct environment will probably expect me to be one of the first to use mobile news/TV services.</p> <p>32. Even if I am interested, I would not subscribe if my environment would be negative about mobile news/TV applications.</p>
<p>Perceived Risk (financial)</p> <p>18. I fear that subscribing to a mobile news/TV application would be way above my budget.</p>	<p>Social influence — Identification</p> <p>47. If I would use mobile news/TV services, it would certainly tell something about me and my personality.</p>
<p>Perceived Risk (social)</p> <p>21. If I would use mobile news/TV services, people in my environment would look odd at me.</p>	
<p>Perceived Risk (implementation)</p> <p>23. If I would have to use such mobile news/TV applications on my own, I don't think I would manage.</p>	

list of operationalisations of the 19 determinants in other studies and models.^{8,20,48,62,63,87,90,104,114–116} In the second phase, this long list was verified in four focus group discussions in order to select the best operationalisations.¹¹⁷

RESULTS

With the purpose of acquiring the necessary insight into attitudinal adoption determinants for the preparation of introduction, marketing and targeting strategies for both mobile applications, each of the 269 (mobile news study) and 405 (mobile television) respondents was asked to evaluate the 47 items on a 5-point Likert scale, ranging from 1: 'Completely disagree' to 5: 'totally agree' (Table 4).

Table 5 reports on two types of analysis on those data: (a) a comparison of mean agreement scores between adopter segments (one-way ANOVA, analysis of variances and mean scores) in order to detect differences in attitudes towards the new technologies; and (b) regression analysis of the determinants on the respondents' adoption intention, in order to detect up to which degree these attitudes are correlated with the adoption intention. The combination of both analyses should provide a valuable input for more effective segment and technology-specific marketing and targeting communication strategies when introducing both new mobile applications.

The PSAP method revealed a larger potential for the *mobile news* application in Flanders than for

Table 4: Segmentation forecasts for *Mobile Television* and *Mobile News* in Flanders

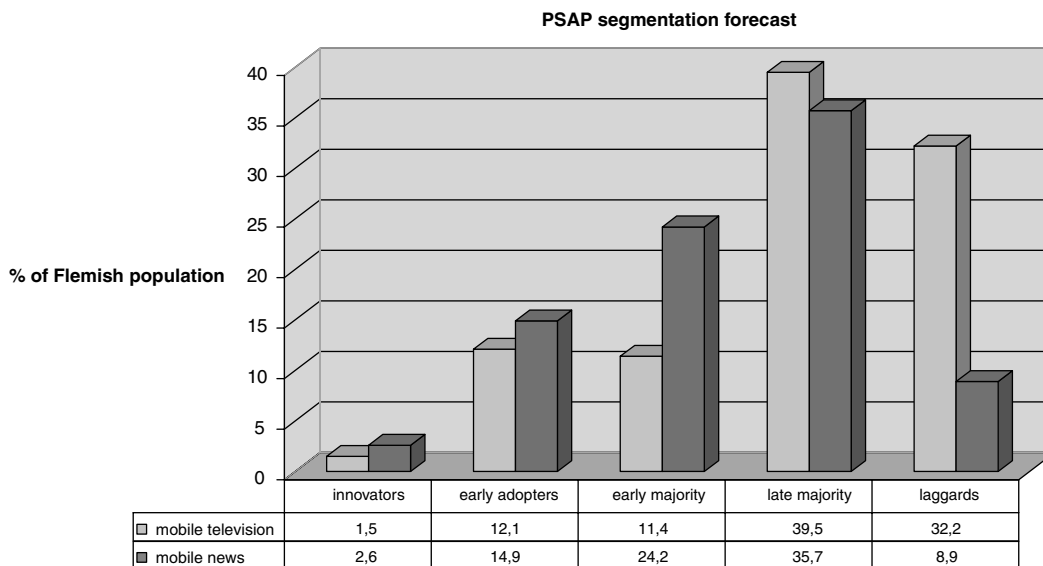


Table 5: Adoption determinants for *Mobile News* and *Mobile Television*. Comparison of mean agreement scores (ANOVA) and regression on adoption intention

	(a) ANOVA				(b) Regression analysis		
	Mean comparison (1: Completely disagree – 5: Totally agree)				Regression weights		
	Earlier adopters	Early majority	Later adopters	p-value	EA R²: 0.795 0.641	EM R²: 0.503 0.591	LA R²: 0.424 0.343
1.	3.20	3.85	3.81	0.001	NS	NS	NS
	3.36	3.65	4.02	0.000	NS	NS	-0.104 (S)
2.	2.36	2.11	2.01	0.116	NS	NS	NS
	3.13	2.76	1.93	0.000	NS	NS	-0.125 (S)
3.	2.43	2.80	2.89	0.092	NS	NS	NS
	3.53	3.30	3.62	0.0387	NS	NS	NS
4.	3.70	3.50	3.25	0.015	NS	NS	NS
	4.09	3.70	2.85	0.000	NS	NS	-0.143 (S)
5.	3.55	3.73	3.79	0.323	NS	NS	NS
	3.87	4.13	4.09	0.345	NS	NS	NS
6.	3.34	2.48	2.08	0.000	NS	NS	-0.309 (S)
	2.80	2.28	1.44	0.000	NS	NS	NS
7.	3.81	3.30	2.89	0.000	NS	NS	NS
	2.95	2.93	1.68	0.001	NS	NS	NS
8.	2.11	2.48	2.40	0.146	NS	NS	NS
	2.47	2.43	2.60	0.623	NS	NS	NS
9.	3.16	2.90	2.76	0.026	NS	NS	NS
	3.51	3.09	2.59	0.000	NS	NS	NS
10.	3.73	3.16	2.83	0.000	NS	NS	NS
	2.56	2.33	1.59	0.000	NS	NS	NS
11.	3.55	3.13	2.98	0.003	NS	NS	NS
	3.18	2.98	2.20	0.000	NS	NS	0.092 (S)
12.	2.64	2.19	2.10	0.020	NS	NS	NS
	2.82	2.28	1.83	0.000	0.247 (S)	NS	NS
13.	3.73	3.52	3.31	0.070	NS	NS	NS
	3.38	4.02	3.45	0.012	NS	NS	NS
14.	3.55	3.38	3.60	0.488	0.362 (S)	NS	0.182 (S)
	3.47	3.74	2.99	0.001	0.256 (S)	NS	NS
15.	3.68	3.37	3.26	0.079	NS	NS	NS
	3.16	2.63	2.12	0.000	0.179 (S)	NS	NS
16.	3.34	3.11	2.84	0.017	NS	NS	NS
	3.11	3.09	2.26	0.000	NS	NS	NS

Table 5: Continued

	(a) ANOVA				(b) Regression analysis		
	Mean comparison (1: Completely disagree –5: Totally agree)				Regression weights		
	Earlier adopters	Early majority	Later adopters	p-value	EA R^2 : 0.795 0.641	EM R^2 : 0.503 0.591	LA R^2 : 0.424 0.343
17.	2.70	2.43	2.15	0.006	NS	NS	-0.215 (S)
	2.67	2.59	2.04	0.000	NS	NS	NS
18.	2.93	2.94	3.21	0.106	NS	NS	NS
	2.73	2.85	3.18	0.029	NS	NS	NS
19.	2.57	2.65	2.50	0.735	0.214 (S)	NS	NS
	2.09	1.63	3.18	0.001	NS	NS	NS
20.	3.86	3.48	3.43	0.013	0.565 (S)	NS	NS
	3.33	3.63	3.14	0.017	NS	NS	NS
21.	2.00	2.08	2.11	0.733	NS	-0.467 (S)	NS
	2.29	2.04	2.68	0.004	NS	NS	NS
22.	2.64	2.18	1.90	0.000	NS	NS	NS
	3.00	2.52	1.53	0.000	NS	NS	NS
23.	2.05	2.21	2.20	0.612	NS	-0.260 (S)	NS
	2.60	2.11	2.29	0.178	NS	NS	NS
24.	3.89	3.56	3.39	0.022	NS	NS	NS
	2.87	3.04	2.72	0.284	0.181 (S)	NS	NS
25.	3.18	3.00	2.85	0.093	NS	NS	NS
	3.45	3.61	3.34	0.250	NS	NS	NS
26.	4.05	3.93	3.75	0.104	NS	NS	NS
	3.29	3.63	3.20	0.152	NS	NS	NS
27.	3.45	3.70	3.74	0.178	NS	NS	NS
	3.85	4.17	4.13	0.183	NS	NS	NS
28.	2.79	3.46	3.67	0.000	NS	NS	NS
	3.40	3.89	3.92	0.008	NS	NS	NS
29.	2.07	2.26	2.41	0.161	NS	NS	-0.184 (S)
	2.75	2.28	2.77	0.070	0.166 (S)	NS	NS
30.	3.16	3.70	3.86	0.001	NS	NS	-0.168 (S)
	3.33	3.34	3.47	0.778	NS	NS	NS
31.	2.28	2.41	2.58	0.208	NS	NS	NS
	2.69	2.70	2.91	0.308	NS	NS	NS
32.	1.86	2.05	2.21	0.111	NS	NS	NS
	2.67	2.33	2.38	0.296	NS	NS	NS
33.	2.47	2.28	2.20	0.298	0.483 (S)	NS	-0.230 (S)
	2.47	2.22	1.60	0.000	NS	NS	NS
34.	3.14	2.70	2.47	0.000	NS	NS	NS
	3.27	3.00	2.09	0.000	NS	NS	NS
35.	3.55	3.36	3.19	0.100	0.427 (S)	NS	NS
	2.98	2.76	2.64	0.158	NS	NS	NS
36.	3.63	3.23	2.93	0.000	NS	NS	NS
	3.36	2.87	1.95	0.000	NS	NS	NS
37.	2.12	2.08	2.05	0.897	NS	NS	NS
	2.15	2.09	1.75	0.011	NS	NS	NS
38.	2.41	2.25	2.19	0.496	0.862 (S)	NS	NS
	2.69	2.67	1.89	0.000	0.227 (S)	NS	NS
39.	3.05	3.30	3.13	0.567	NS	NS	NS
	2.82	2.65	2.16	0.001	0.366 (S)	NS	NS
40.	1.84	2.28	2.60	0.000	NS	NS	NS
	2.13	2.41	3.34	0.000	NS	NS	NS
41.	4.23	4.07	4.23	0.427	NS	0.356 (S)	NS
	4.18	4.11	3.96	0.382	NS	NS	0.080 (S)
42.	4.14	4.11	4.08	0.935	NS	NS	NS
	3.98	4.20	4.22	0.357	NS	NS	NS
44.	4.39	4.13	3.92	0.012	NS	NS	NS
	3.89	3.93	3.75	0.459	NS	NS	NS
45.	3.59	3.28	3.25	0.208	NS	NS	NS
	3.49	3.46	3.96	0.003	NS	NS	NS
46.	4.07	3.82	3.80	0.342	NS	NS	NS
	3.65	3.43	3.51	0.653	NS	NS	NS
47.	3.05	2.82	2.84	0.460	NS	NS	NS
	2.64	2.46	2.18	0.018	NS	NS	NS

mobile television. For the latter, only 1.5 per cent innovators (n: 6), 12.1 per cent early adopters (n: 49) and 11.4 per cent early majority (n: 46) were found, contrary to, respectively, 2.6 per cent (n: 7), 14.9 per cent (n: 40) and 24.2 per cent (n: 65) for the mobile news application. Next to 13 respondents not being allocated to an adopter segment due to 'unreliable answering patterns', 160 (39.5 per cent) were considered to be a late majority for mobile television, and 131 (32.2 per cent) as laggards. For the mobile news application, there were 33 unreliaables, 96 (35.7 per cent) late majority and 24 (8.9 per cent) laggards.

Owing to the small sizes of the innovator segments in both studies, the innovators and early adopters are grouped into one 'earlier adopters' segment for further analysis. Consequently, the two least innovative segments of late majority and laggards were also grouped into a 'later adopters' segment.

In the ANOVA analysis, determinants are considered as relevant when respondents appear to have an outspoken opinion on them. The items on which the respondents have no opinion are nonrelevant (depicted in grey) (neutral scores of which the mean ranges between 2.60 and 3.40). Means indicating that a segment is strongly agreeing are depicted in green (brighter shade of green when they strongly agree (means > 3.80), a lighter shade of green when they moderately agree (means ranging between 3.41 and 3.80)). Strong disagreement (means < 2.20) is depicted in red, and moderate disagreement (2.20–2.59) in orange. For the regression analysis, only the significant regression weights ($p < 0.05$) are reported in bold. When a determinant was not significantly correlated with the adoption intention, NS is mentioned.

Also in the reporting of the ANOVA as regression results, the cells contain two lines of figures/data. The first line contains the results for the *mobile news* application, and the second line the results for the *mobile television* application. The numbers in the left column correspond with the numbers of the items in Table 3.

A first glance at this table immediately indicates several differences between the attitudes or determinants for both innovations. In the average agreement scores for example, it can be noticed

that a determinant as 'tangibles' (14, 25) is more important for mobile television than for mobile news. Regarding 'reliability' (31), people seem to be more sceptical of mobile news, while the 'perceived control' (46) seems to be higher for this new mobile application. 'Product knowledge' (19, 35), on the other hand, is lower for mobile television, etc. With an R^2 ranging between 0.503 and 0.795 for the earlier adopters and early majority, these 47 'determinant operationalisations' certainly seem to be a good set of variables to explain the variance in the dependent variable 'adoption intention'. Even for the later adopter segments, this R^2 still ranges between 0.34 and 0.42. Thus, for both technologies, this set of attitudinal determinant statements explains adoption intentions quite well, but also here there are many differences in the significant determinants for the different innovations and adopter segments. 'Lifestyle compatibility' (39) for example is only significant for the mobile television's innovators, not for mobile news. Also, the 'Cost perception' (1) is only significant in the mobile television case (laggards). 'Triability' (41) is then significant in both cases, but not for the same segments. Other determinants such as the perceived impact of adoption on one's 'image' (33) were only significant for mobile news' innovators and laggards. Thus, many differences in attitudes exist, as well as when compared over the two cases, as compared over the different adopter segments, which emphasises again the need for a product- and segment-specific approach when preparing the targeting and marketing strategies for these mobile applications.

The combined interpretation of these differences in agreement scores and significant explaining variables allows to provide valuable input in the search for more effective (micro)segment targeting for the introduction of these new mobile services. In the paragraphs, below some of these conclusions are summarised for both technologies.

RESULTS: DETERMINANTS FOR MOBILE NEWS

Earlier adopters

The earlier adopters are the only segment that has clear moments of use in mind (1.84/5 on

statement 40) and for which the mobile news service is clearly perceived to have more advantages than disadvantages (3.55/5) (*relative advantage*), a finding that is also reflected in the perceived *effectiveness* (36): only the earlier adopters are (moderately) convinced that mobile news services will make things easier. For the subdimension *tangibles*, it turns out that the 'look and feel' of new technologies is an important criterion (item 14), and even a decisive predictive factor for the adoption intention of mobile news, although the tangibility of the mobile news application as it exists to date is unsatisfactory. Improving the design and style of the application seems to be an important 'working point' for the future.

The major perceived advantage for these earlier adopters seems to be of a more cognitive nature: impact on their status and being confirmed as an opinion leader. For this segment, it is known that is important to be (continuously) confirmed in their status of *opinion leader*. Also for mobile news, they expect themselves to be considered as some kind of opinion leader (15), which also explains the significant relation between degree of product knowledge and adoption intention (19, 35). Next to that, the forecasted earlier adopters also seem to be high potentials because of the possible impact on their image and prestige (regression 33 and 38). The perceived impact of mobile news adoption on their image, however, is not very high, but this may be due to the unsatisfactory design (25) and lack of outspoken advantages to date.

For the communication and targeting efforts to these earlier adopters, it will certainly be important to keep them well informed (product knowledge (35) important, but could be improved) and to keep in mind that they (item 10) are eager to keep up a certain appearance or to come up to certain expectancy (*social pressure*). Combined with an emphasis on the user-friendliness of the application — also being a compelling reason to adopt for the earlier adopters (20) — an appeal to these more cognitive arguments seems to be the best approach for targeting earlier adopters. Mobile news adoption may also be framed as compatible

with their busy and innovative lifestyle (7) in which the use of such applications is quite 'fun' or enjoyable (4).

Early majority

There clearly exists a certain interest in the mobile news application among the early majority, but the (*relative advantages*) are not clear enough (11, 28). To date, they still cope with too many thresholds and considerable uncertainty. A first indication of this can be found in the *trialability* being very important (and a significant driver) to them (item 41). Also in the outspoken *perceived risks* (21, 23), we find this revealed. Targeting efforts towards the early majority will have to work on diminishing the worries about implementation (23) and social disapproval in case of adoption (21). For both items a significant negative impact on adoption intention can be noticed if the perceived risk increases.

Other important issues to keep in mind when approaching this early majority will be their *price-sensitivity* (1, 5) and their worries about the *technological compatibility* (30, 13): they are less interested in the application if it implies investing in a new mobile device, and they would like the application to be part of a 'larger extensive application package'.

Later adopters

Even more than for the early majority, *technical compatibility* and the investment in a new device (item 30, regression weight -0.168) really is a significant adoption threshold for the later adopters for mobile news. A more or less surprising 'adoption driver', on the other hand, may be the 'look and feel' of the new application and device. *Tangibles*, in other words, can also be an important argument for these later adopters, but to date it is not sufficiently focussed upon in the current application of mobile news (25). Improving the design and style seems to be an important 'working point' for the future.

The novelty of the mobile news application makes it obvious that the respondents have not seen many people in their environment who use mobile news services (17). Seeing more people using it, however, would help the later adopters

reduce their uncertainty about the innovation. Seeing more people in their environment significantly increases their adoption intention. Even a 'vicarious trial' (no physical trial of the application, but 'looking' at how others use it) (28) would be valuable for them.

For the later adopters, it is striking that 'too much services under one umbrella' might have a negative impact on their adoption intention (cf. regression item 29). The challenge is to work on a few mobile news services with a clear relative advantage, rather than a portfolio of multiple services lacking a clear advantage and risking having a negative impact on the adoption intentions of later adopters. Contrary to the earlier adopters, a communication emphasising the impact of mobile news adoption on their image would have a negative impact on the adoption intention of the later adopters (33).

RESULTS: DETERMINANTS FOR MOBILE TELEVISION

Earlier adopters

When it comes to the presentation of mobile television to its potential earlier adopters, attention will have to be paid to its *tangibility* (look and feel) and a confirmation of their status, opinion leadership and 'techie' image. Also, the ANOVA and the regression analysis (14) reveal that the look and feel or the design of the product (*tangibility*) is a significant adoption determinant. The significant relation between adoption intention and *observability/visibility* (regression item 12) indicates that mobile television may have a certain appeal to the earlier adopters to 'show off' (despite the lower mean score in the ANOVA analysis, which may be due to socially desirable answering). A similar conclusion can be made with regard to *Lifestyle Compatibility* (39), *Image/Prestige* (38), *Result demonstrability/communicability* (24) and *Opinion leadership* (15). Although the early adopters do not explicitly admit the importance of these determinants in relation to their adoption decision, it seems wise to incorporate these aspects into the targeted introduction and communication strategies, since the regression

reveals a positive impact. For example by positioning mobile television as a 'high-tech gadget' fitting a busy lifestyle, stressing the design of the device, etc. Related to this, it might also be considered to position mobile television as quite high-tech and complex. Although the earlier adopters do not perceive it as complex (29), it is striking that a higher complexity perception makes adoption of mobile television even more attractive to them (cf. regression).

The lower mean score and significant regression weight for *product knowledge* (19) indicates that also the 'informing communication' cannot be neglected in the earlier adopters, and in the answers on item 27 some kind of uncertainty-reduction behaviour might be detected. Buying from a well-known and reliable brand should give them more certainty. Also, the high mean score (4.18) on *physical trialability* (41) reveals some kind of insecurity among earlier adopters. They certainly want to try it out before adopting.

This does not mean, however, that too much emphasis should be placed on the user-friendliness of the technology: *complexity* drives the earlier adopters to adopt the technology (see discussion above), they are keen on high-tech gadgets and features and they are confident about themselves when it comes to figuring out how an application or technology works, etc (*Control/self-efficacy*) (46). The ANOVA analysis also indicates that attention should be paid to the advantages of mobile television and usage moments (*relative advantage*) (40), *enjoyment* (4) and price (*cost*) (5). Even innovators and early adopters are worried that mobile television will be too expensive for many people.

Early majority

For the early majority segment, none of the determinants appears to be a real driver (or threshold) for adoption in the regression analysis. The results from the ANOVA analysis, however, confirm that the early majority is insecure about its adoption intention. To resolve this insecurity, they would rather choose a well-known brand (*marketing strategy*, 26). In line with this, they feel a need for *trialability* (physical (41) and

vicariousness (28)). Compared to the earlier adopters, the early majority is also less convinced of the *relative advantages* of mobile television (11, 40). But as for the innovators, they do perceive some *enjoyment* in the use of mobile television (4).

With regard to the issue of *compatibility*, the early majority prefers not to invest in a new device and is only interested when mobile television subscription is part of other mobile services. Also, the look/feel (*tangibles*) (24,15) and *cost* (1, 5, 22) of the device/service should not be neglected when targeting this specific segment. As this segment has a limited *product knowledge* (19) of mobile television, they certainly also need additional information. Whereas we saw that the early adopters are rather sensitive to social, image, prestige, observability ... determinants, the early majority rather focuses (uncertainty-reduction) on product-related, financial, technical ... aspects regarding mobile television.

Later adopters

When taking into account the significant drivers and thresholds from the regression analysis, we can conclude that later adopters clearly do not see a *relative advantage* (item 11) in mobile television, which is affirmed by the low perceived *effectiveness* (36) and the lack of perceived *enjoyment* (4) in using mobile television. Another important threshold seems to be the *cost* (regression item 1).

As with the other two adopter segments, later adopters express some kind of uncertainty about mobile television, which translates into the need for *trialability*, physical (S41) as well as vicariousness (S28).

When taking into account the distinctive means on certain items that are, however, not linked to a significant driver (or threshold), we can see that the later adopter's noninterest in mobile television is not due to a general negative attitude towards ICT (*optimism*, 44 and 45). *Lifestyle compatibility* (7, 39) and *observability* (12, 17), however, seem to be totally unimportant for later adopters, something that is confirmed in the equally low score for *network externalities* (37). It is remarkable that even the later adopters do not

think that mobile television is a complex technology (*complexity* 8, 20, 29). They even consider themselves perfectly capable of dealing with mobile television without help (*control* 23,46).

In short, later adopters believe that they are capable of using the mobile television technology, but they do not think mobile television is fun, do not see a relative advantage and think it will be too expensive. Mobile television does not fit in with their lifestyle, nor do they feel it will enhance their social image or prestige.

CONCLUSION

Today's rapidly evolving mobile ICT environment confronts suppliers with new challenges. Two of them are related to the quest for more efficient targeting/marketing strategies since 'inefficient marketing' is often blamed for the majority of the increasing number of failures in this environment:

- a. Through which paths can I reach the target audience(s) more efficiently?
- b. With which messages can I reach the target audience(s) more efficiently?

Focusing on the second challenge in this paper, we learned that more efficient marketing involves more segment- and product-specific messages, and that the acquisition of an insight into attitudinal adoption determinants is key to formulate those messages. The problem, however, lies in the fact that the literature, models and studies on these determinants are very scattered and fragmented. Therefore, in the first instance, we conducted a meta-analysis on these works, which resulted in a comprising determinant model containing 19 determinants. In order to measure them, a battery of 47 Likert statements was developed, and applied in two case studies on the attitudes towards *mobile news* (n: 269) and *mobile television* (n: 405) adoption. A brief extract of some of the results from both studies illustrates how the crossing of these attitudes with 'segmentation forecasts'¹⁸ for both innovations can provide mobile marketers with valuable input to set up more efficient (micro)segment targeting and marketing campaigns, or to formulate the correct

messages to reach the target audience(s) more efficiently. These messages can be communicated through the 'traditional' communication paths, but it seems evident that more and more newly developed 'mobile communication paths' will become available to communicate those messages more efficiently.

In order to identify the segments to whom these messages should be communicated, the user research conducted needs to comprise sufficient profiling variables with which the forecasted adopter segments can be crossed. In the case of mobile television for example, earlier adopters appeared to be young and heavy television watchers (of specific entertainment channels as VT4 (SBS)). In general, the earlier adopters for mobile television were still studying or unemployed, lived alone or still lived with their parents and came from a lower social class. They clearly possessed more than average mobile multi-media technology like advanced MP3-players, digital cameras and portable DVD-players. They were also the only segment to use their (usually advanced) mobile phones for multi-media applications like taking pictures, making movies, listening to music, playing games, etc. In the 'mobile news' study, the comparison between adopter segments revealed large differences in media use and news interest. Although the earlier adopters appeared to be heavy media users, they mostly consume media for leisure purposes and to stay up to date with local news, with an outright preference for specific news providers. Referring to the mentioned challenges, it is evident that such profiling information is a key to determine the best paths to target the audience more efficiently. Once these paths are determined, the segmented insight into adoption determinants should help to formulate the messages to target the audience(s) more efficiently.

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