De Marez Lieven, Verleye Gino
Dept. of Communication Sciences
University Gent

Lieven.DeMarez@rug.ac.be
Gino.Verleye@rug.ac.be

Diffusion of innovations: successful adoption needs more effective targeting

Abstract:

Despite the promising prophecies that usually go hand in hand with the introduction of new technologies or any other innovation, they often turn out to be a big disappointment. In a lot of cases, the reason for this can be found in a bad introduction- and communication-strategy. In order to improve these strategies we developed a measurement tool, the PSI-scale, which enables a researcher to detect in advance (before the actual introduction) the innovators, early adopters, early majority, late majority and laggards for a certain innovation. Based on the resulting segments and profiles, it is possible to develop an introduction- and communication-strategy that has better chances for successful customer adoption.

" We can also now focus marketing effort on targeting innovators. Once we have singled them out and understood what drives them, we can write and design our communications specifically to recruit them. We can also choose whatever media are best to reach them with greatest efficiency. In short, in the late 1990s, we have the capability to focus on innovators. But we still have to know who they are." (Carter, 1998)

The above-mentioned citation is from a John Carter (Media Solutions) article in Admap, in which he explains why it is initially better to focus on the innovators (and early adopters) instead of targeting the entire market at once, when introducing a new product/innovation. In order to improve the odds on a successful introduction he states that we have to 'single out' the most interested ones in the new product/service (the innovators), learn what drives them (which features of my new product make it interesting for them?) and design the communications specifically to recruit and convince them. What he isn't saying is how that communication needs to be designed; or in which way the introduction-strategy has to be rolled out. He closes with the remark that we still have to know who they are. A remark that illustrates a need that is felt (not only by Carter, but also among many others in practice), but for which there aren't really satisfying solutions. What we are talking about, is the need for a method to predict in advance (before the actual introduction of the new product) who the innovators, early adopters, … for a specific product are. Or to say it in Carters words: *"We still need to find a way to single them out."*

The purpose of this article is to initiate a way of answering this question, that has been left open by Carter (and many others). After a large sketch of the situation, we will briefly mention the main methods of innovation forecasting[1], that have been used until today; followed by a description of our own measurement tool. An instrument that enables a researcher to predict in a better way[2], the innovation segments for a certain product in advance. We emphasize the words 'in advance', because for the people on the communication department, as well as for the people on R&D, it can be very valuable information to have profiles of the most, as well as the less interested segments, and to know which features or product-characteristics make your product interesting for which segments; on a moment the product hasn't been introduced yet.

We illustrate all this with the case of 'digital television in Flanders'[3]. Based on our own measurement tool (PSI), as well as based on a more traditional method of innovation forecasting, we obtained (in two different ways) five innovation segments (innovators, early adopters, early majority, late majority, laggards) for digital television in Flanders (for the moment dtv isn't on the Flemish market yet). We'll try to prove that we developed a valid measurement tool, that is more precise than the traditional approaches. For each of those five segments, we also drew up a profile, containing information about lifestyle, media-usage (in order *"to choose whatever media are best to reach them with greatest efficiency"*), interest in dtv-features and the price they are willing to pay for it (*"to understand what drives them"*),

---

[1] With *'innovation forecasting'* we mean the prediction (in advance) of innovation categories for a specific new product; the detection of those segments and the making of a profile of those segments, before the product is lounched.

[2] When compared to the traditional methods

[3] As we write (December 2001) digital television still has to be introduced in Belgium. Within the near future, several players have plans to do so, which makes dtv an ideal testcase for us.

etc. … . Based on all this we developed a communication strategy that should lead to a more effective introduction of digital television in Flanders.

Introduction

Within our domain of 'communications and communication technologies' we are confronted with a lot of new developments and new products. Despite the promising prophecies associated with it, and the technological possibilities of these ict-innovations, it can't be denied that a lot of them fall short of (the often high) expectations. Not seldom, these market-introductions turn out to be big disappointments. When searching for an explanation for the failure of these innovations, people often question the strategy of introduction that has been followed: some think the wrong things have been communicated, some think the wrong segments have been targeted, while others are convinced that the price was too high, … . Although much of these introduction-campaigns or –strategies are based on preliminary research, none or few of them can give an answer (in advance) to the question who the different segments are, according to their interest in the new product, and in which applications of the new product they are interested, and how much they are willing to pay for it. Having an answer on these questions would seriously increase the odds for a more successful adoption.

Because there isn't really a method available that enables a researcher (before the introduction of the product, or even when the product is still in its R&D-stage) to detect those segments in advance, we did an attempt to develop such an instrument. An instrument we named *PSI-scale*, because it measures the Product Specific Innovativeness (PSI) of a person towards a certain new product. Using this PSI-scale it must be possible:

-   to predict the several adoption-categories for a specific product in advance
-   to draw up profiles of these categories (including information on interest in applications, lifestyle, media-usage, …), in order to be able to deploy a more effective, a more targeted communication- and introduction-strategy. A strategy we will call *BPM* or *Bowling Pin Model*

To illustrate all this, as mentioned before, we will predict these adoption-categories, and deploy a strategy for the introduction of digital television (dtv) in Flanders. Why digital television? Dtv seems to arrive (finally) also in Flanders (Canal Digitaal, e-VRT, Callahan-Telenet, …), and a lot of questions remain unanswered for all of these players, the prediction of the adoption of dtv in Flanders was an interesting case. And if we look to the disappointing results of dtv in the Netherlands and the UK, it makes it even more interesting to investigate if there is a market for dtv in Flanders. And if so, what are the specific characteristics of that market. Once we know who the more and the less interested segments are, which media they use, how much they are willing to pay for which combinations of features, …, we can do a proposition of an intro-campaign for digital television in Flanders.

Sketch of a situation: failing innovations.

"Wap-mobiles: the betamax of the telephone-industry." (Jackson, 2001), *"Doubts about DoCoMo's third generation mobile phones"* (Van der Lugt, 2001), *"The future after the soap bubble for e-Belgium"* (Albers, 2001), … : these are only a few of the many headlines

illustrating that the adoption of new communication technologies isn't going as well as expected. Despite the promising prophecies the introduction of a technology as wap, as well as the acceptation and penetration of a concept as e-commerce turned out to be very disappointing. And as third generation mobile telephony is moving ahead towards launch, there are already doubts. The (temporarily limited number of) applications shown at the annual world-mobile phone-congress in Cannes 2001 certainly weren't convincing enough. Technically everything seems to turn out well, but questions such as "if there really is a market for it; and if there appears to be one, with which applications that market needs to be approached" rise. All signals pointing to the fact that the success of 3G can't be taken for granted. If we go a little further back in time, we also can add HDTV, Cdi and 3DO to this list. A list of examples that makes us think about the possible causes of these failing innovations. In most cases the explanation of the failure (or disappointing adoption) lies in one of the following three causes:

- the product / the concept itself
- no market
- bad marketing of targeting, mostly due to a lack of insight in 'consumer-needs & -wants'

A first reason for the lack of success, is the product or concept itself. A first (logical) condition for a successful product, is a product that works; a product offering some added value for the consumer, when compared to its alternatives. For some people, this could have been the reason to reject wap for example: if we see that the average wap-user in 2000 (having his wap-mobile for at least a week) still needed 1.9 minutes to dial up the weather forecast of the day, 1.6 minutes for the tv-guide, or still more than a minute for the main newspaper headlines (Jackson, 2001; Nielsen Norman Group Report, 2000), it maybe isn't that surprising, that not much people were waiting for such a technology. That doesn't mean there wasn't (isn't) any interest at all for wap and its applications; but in the way it was offered, it was just too slow, and as a consequence also too expensive. The (potential) wap-user soon realised he paid for every of those minutes internet access, and that it was still cheaper for him to buy a newspaper every time he wanted to consult the weather forecast, the tv-guide or the headlines. HDTV on the other hand, is an example of a technology that failed because there simply wasn't any market for it.

But most of the disappointing innovations find their cause in a bad 'introduction-strategy'. Due to an almost 'euphoric trust' in the technology itself (the technological step forwards is so fantastic to them, that they only find it normal that the consumer also seeing it that way, and that adoption by these consumers is the logical next step) people often make the mistake to do not enough effort to achieve a profound insight in consumer-needs & -wants. Without having a good insight in what the consumer really wants, for which features he is willing or not willing to pay, how we can reach those different consumer-segments, … the new technologies get introduced (some on a more 'hit-or-miss'-way than others), often with the known consequences: huge piles of money spent on a non-effective introduction-campaign, to end up with the diagnose that the product didn't reach the mass market, but was only adopted by a small segment.

DTV: also a failing innovation?

When we are talking about technologies introduced with promising prophecies and huge marketing campaigns and media-coverage, digital television (dtv) certainly is worth mentioning. In countries as the UK, Spain, Portugal, Sweden, the Netherlands, … digital television has already been introduced in Europe. In Belgium, Flanders more particularly, the public broadcaster is in full preparation of its e-vrt-platform, Canal+ has already started with a (quite limited version of) CanalDigitaal, and also other players (such as Telenet) are working on a digital tv-offer. The agendas aren't running simultaneously, but the switch-off from analogue to digital seems to be nothing more than a logical next step.

But what about the consumer? Is he looking at this the same way? Is the step from analogue to digital also that logical for him? Is he really waiting for the change to digital? Can we call dtv in advance a success or not?, … Several reactions from players on markets where dtv has already been introduced, learn us that, again despite the promising prophecies, the acceptation of digital television isn't going as smoothly as expected. At the presentation of the German digital zdf-platform, for example, the following remark was made:

> *"Over much of Europe, digital pay-TV remains characterised by poor take-up … . partly down to badly judged marketing decisions …"* (Thomson, 2001a)

Apparently, the adoption of dtv disappoints somewhat in Europe. According to Stuart Thomson (Cable & Satellite) this is mainly due to badly judged marketing decisions. And those bad decisions can be made in the different domains of the marketingmix. The **P**roduct can be offered in a wrong form: a STB[4] containing a hard-disk that is too heavy for what consumers are expecting from dtv for example, by which the product becomes more expensive for that same consumer. Research has also shown that trivial things such as the colour of the set-top-box, can be an important factor in the 'adoption-decision-making-process': a grey-white colour makes the consumer think about the whole pc-event[5]. Also **P**ricing can't be neglected: or we offer the consumer immediately a lot of applications, which will make the potential of digital a lot more clearer from the beginning, but also makes the product more expensive and by which we also take the risk of frightening some consumers (because they are overwhelmed); or we start with a more 'basic', and also cheaper, product, and offer the additional features later in time. For what concerns **P**romotion it often happens that the wrong things are communicated to the wrong people/segments. An older couple that can't work with a pc, and certainly not with the internet, doesn't need any communication in which they are told that e-mail and home-banking is from now on possible with the remote control of their television. It can be that the only dtv-application in which they are interested, is being able to start, stop and pause their favourite soap 'Neighbours' or 'The bold and the beautiful', when they need to go to the toilet or when someone's at the door.

So, a better filling-in of the marketing-P's must be a goal. Especially the promotion-P must be worked out more strategically and in a more segment-tailored way. But to do this, we need concrete information form reliable research.

---

[4] STB: set-top-box

[5] Even the 'Technology Readiness'-group of Prof. Parasuraman (University of Miami) considers 'tangibles' as a factor that can't be underestimated, when it comes to the acceptation of an innovation. The 'look' and 'the feel' are things of which consumers are very sensitive (Parasuraman, Colby, 2001).

Not that this was a bad marketing decision, but at the beginning of this year OnDigital changed its name into ITVDigital. Reason for this change of name was the disappointing introduction of OnDigital (Thomson, 2001b). In the Netherlands is the acceptation of dtv even more disappointing. Henk de Goede (cable-company Casema), had to dismiss 25% of his personnel (300 on 1200) last summer, due to the disappointing results of digital television. There were only two solutions, according to de Goede: drastic increase of the price or … a national innovation-fund (Giesen, 2001).

That these disappointing results are partly due to badly judged marketing decisions, has already been said by Thomson. Fritha Sutherland (1999) described this as *'remote overload: too much too soon'*. What she means with this, is that people are forcing things too much. They try to change the customer from a passive tv-user too fast to an active and interactive user of a multimediaplatform. In the euphoria of what is technologically possible, they suddenly harass the market with lots of applications and possibilities, on which they can appeal to with their remote control. But they do not take into consideration that the consumer isn't really waiting for a lot of those things. For some features, such as home-shopping through tv, the market simply isn't ready yet. By overwhelming them with applications and services (too much too soon) the treshold to digital television increases. Wouldn't it be better then to approach the market in a first stadium with a more basic product, with a 'basic digital package'? A package of which we know with great certainty that it doesn't frighten the larger part of the market.

Diffusions of innovations: theory

If we try to link all this to theory, we soon end up with 'innovation-theories'. The basic work par excellence within this tradition is 'Diffusion of innovations' by Everett Rogers (1962). Since 1962, many authors worked further on this theory, but the core remained the same over all those years: when a new product/a new technology is introduced, the target market can be divided into five segments along an axis of risk aversion: in the beginning there are the innovators, followed by the early adopters, the early majority, the late majority and the risk-allergic laggards. In the beginning there always is a small segment of the population, 'the innovators', that adopts the new thing anyhow. Price, or already proven use or performance are not very important to them, they want to have it as soon as possible. They really feel the need to be among the first ones to have it. According to Rogers the size of this small group is about 2.5% of the population. Shortly after these innovators follows the adoption by the 'early adopters': a somewhat bigger segment (13.5%) which also shows a very big interest in the innovation. After these two very 'innovative' segments follows the mass market (about 70% of the market). Within this mass market two groups are distinguished: the more interested 'early majority' (34%) and the less interested 'late majority' (34%).

We can see the 'innovators' and 'early adopters' as a kind of trendsetters. They have an important 'opinion leader-role' to play towards the rest of the market. One of the most important principles of these innovation theories is the principle of 'copy-behaviour' (Carter, 1998): early adopters copy the behaviour and product-usage of the innovators, early majority copies the early adopters, and gets copied by the late majority, … . Less innovative segments observe the more innovative ones, and when they see them use something interesting, they will copy that. The innovators and early adopters are by far the most important segments: not only because they are the first ones generating cash flow, but also, and even more, because

they are the first ones that have to be copied. If we think back off Fritha Sutherlands remark (too much too soon), this can be another reason to start approaching the market with a basic package (instead of the whole product at once). By offering the market immediately a product with the most sophisticated applications (e.g. offering dtv with the emphasis on the possibility of home-shopping, which makes it possible to order a pair of football-shoes, simply by clicking on it during a game, or surfing or e-mail through your tv, …) innovators and early adopters will be very interested in it and most likely they will also adopt it, but you will have less chances on a mass market interested in that product. It doesn't seem very likely that the early majority will start copying the early adopters in their usage of these sophisticated applications. For this reason, it seems better to start with a basic product, of which we know the mass market is interested in it, and by which we will have a bigger chance on getting that copy-mechanism started. But to know how this basic product looks like, to know which are those basic applications in which most of the market is interested, we need a research tool that enables us to make a distinction between the five innovation-segments (and their different interests in applications) for a certain new product in advance.

For Carter (1998) this copy-behaviour, even more than advertising and marketing, is the key to gain acceptance for a new product or new technology. An opinion that needs some nuancing, according to us. Due to a (too) big confidence in the technology, a lot of people suppose this copy-mechanism will start and do its work from itself. But that certainly isn't the best way for a successful introduction. In our opinion, every of those copy-mechanisms needs to initiated, and also during the further development of the process they need to be accompanied by a well targeted communication-strategy. We certainly can't say that it doesn't matter which messages we send to which segments and on what moments. It wouldn't show of great strategical marketing-insight if we would set up a big mass media-campaign to promote a number of sophisticated applications of a new technology, on a moment the early adopters still have to start copying the use of the basic applications.

Not that we want to bring up Chello to illustrate this, but earlier this year they had an 8 million € campaign to promote their broadband services. In their communications, the '500kpbs access service' was emphasized, with a focus on segments as 'gamers' and 'the most interested ones in downloading video and audio applications' (Hawkes, 2001). But, can we be sure that this was the right message to bring through the mass media? Certainly if we know that the basic aim was to target only a few segments. Don't we risk frightning some of the less interested segments in this way? Was it more suited to use specific channels to communicate towards gamers and downloaders. How do they know, by the way, that those are the most interested segments in these applications?

The critical point in this adoption curve is somewhere around the place (or moment) the early adopters have to start adopting (double vertical dotted line). The innovators are a group of which we can be relatively sure they will adopt the (new) product. It doesn't really matter in which form the new product is offered (which applications, how much applications, …); it is new, and that reason is good enough for them to purchase. From the early adopters on, the product will have to be offered in a certain way/form, to get it adopted by them: it can't be more expensive than a certain price, or this and these application(s) certainly need to be in the offered package, before they eventually would be prepared to purchase, … . The product must fulfil some conditions (product must be tailor-made) to be adoptable for them. Knowing this, it doesn't need much explanation, to illustrate the importance of having a research tool that enables a researcher to detect those conditions for every adoption-segment in advance. A

research tool that helps us to deliver more tailor-made work, is a necessary condition to march on towards the mass market.

Figure 1: Rogers' innovation curve (Rogers, 1995: 262)
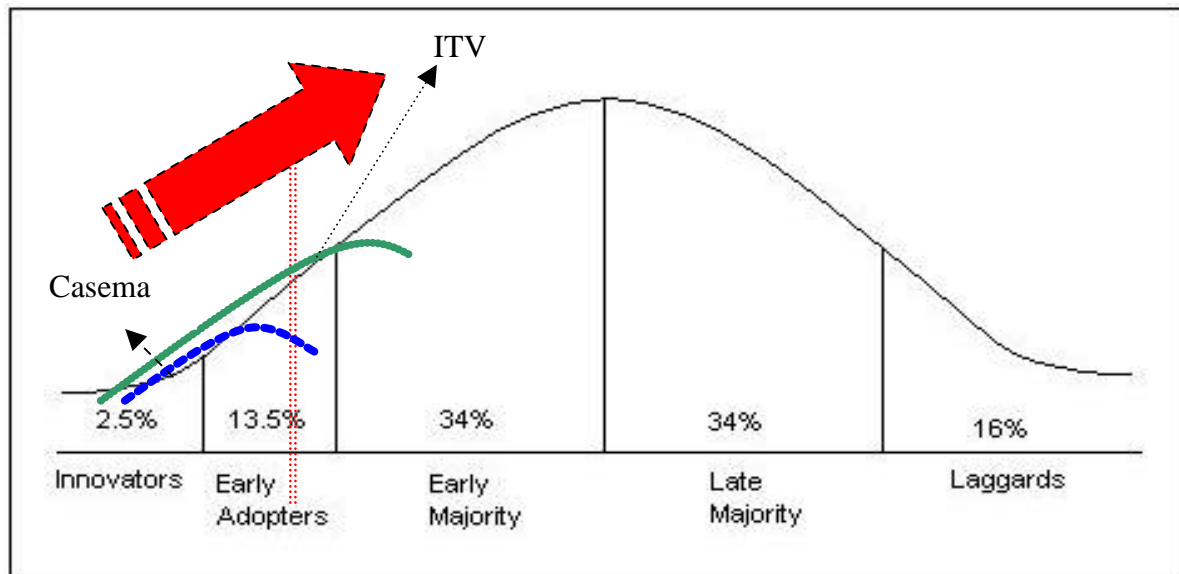
It isn't that simple apparently to make the step from those first groups (innovators en early adopters) to the mass market. A clear strategy is needed to make the jump towards that mass market. Geoffrey Moore (1999: 13) compares it with a chasm which had to be bridged (Crossing the chasm)[6]

As described in theory, this adoption curve is an 'ideal scenario' of course. A lot of innovations don't succeed in running through this scenario completely. The don't manage to make the jump towards the mass market, or to cross the chasm. Based on some recent quotes, we have reason to suppose that this is also turning out to be the case for digital television:

> *"Over much of Europe, digital pay-TV remains characterised by poor take-up … . partly down to badly judged marketing decisions ..."* (Thomson, 2001(a))

> *"There certainly have been signs that digital pay-tv growth is levelling off sooner than had been expected. ..." (at the time of the switch from OnDigital to ITVdigital)* (Thomson, 2001(b))

> *"Acceptation of digital television big disappointment in the Netherlands ..." (Casema-director Henk de Goede) (Giesen, 2001)*

One by one these citations illustrate that the turning point for the adoption of digital television is coming sooner than expected. The adoptions saturates sooner than can be expected based on the 'ideal theoretical scenario'. For ITV Digital (UK) it looked good for a while (they were on schedule), but right on the moment the mass market had to start copying/adopting, the

---

[6] In figure 1 this chasm is illustrated by the double vertical dotted line.

acceptation of dtv came to stop a bit, or certainly slowed down in the UK (cf. figure 1). In the Casema-case (one of the providers of digital television in the Netherlands) the situation is even more dramatic: the 'innovator'-stadium isn't completely over yet here, and adoption already seems to stop. For ITV that adoption threatens to stop at the chasm, for Casema even before that chasm is reached.

A last innovation segment after all are the laggards (16% according to Rogers): a group of people at the rear of axis of risk-aversion, showing no interest in the new technology or new product, and not having the intention (or only very late) to adopt.

## How to cross the chasm? How to reach that mass market?

It is obvious that, only when the chasm between early adopters and mass market can be bridged, an innovation can be called a success? But how do we make that jump? In the UK people think to do that by offering so called 'killer-applications'. All hope is placed now on a number of applications of which is thought they can force the breakthrough towards the mass market, of which is thought the greater part of market will find them interesting, and with which they hope to reach people/segments they weren't able to reach so far. By offering things as DVR (digital video recorder), games and online betting they hope to give sales a push in the back and to reach the mass market with digital television. (Thomson, 2001(b)). But on what are they basing themselves to consider exactly those applications as the killer applications? Isn't it possible that applications such as online betting and gaming are once again applications that only appeal to the innovators and the early adopters? If so, we make dtv more interesting for the innovators and the early adopters (the people who adopt dtv anyway) by offering these applications, but at the same time the treshold is made higher for the mass market.

We know that a small part of the market purchases the new product anyway (the innovators). If there are only four applications offered, or a package of 20 applications, or the communication emphasizes only a few basic applications, or immediately the most sophisticated applications, it all doesn't matter very much when it comes to the adoption by the innovators and the early adopters. It's simple for them: the product is new and because of that they will purchase. Sometimes producers are from moment one on inclined to show/illustrate the maximum potential product: if it was up to them, they would introduce the innovation immediately with all its possibilities and its most sophisticated applications. But reality has proven that this certainly isn't always the best introduction strategy to follow. It would be much better if those introduction strategies would be a bit more well thought-out. The main purpose of every of those producers is obtaining adoption by the mass market; the early majority and the late majority need to copy the innovators and early adopters. For that reason it is important to know in advance what exactly makes (or can make) dtv interesting for those mass market-segments. Being able to detect this in advance, would enable people to bring their innovation on the market in a form of which is known it appeals to the mass market (most probably a very basic product). The innovators and early adopters will adopt this 'basic' product as the first ones. It won't be the ideal product for them (only basic applications, and no sophisticated ones, in which they are also interested), but the chances that the majority will start to copy this, are much higher. The applications are more or less interesting to them; because we are only talking about some basic applications; also the price can be kept at a pretty basic level; and they don't get frightened by sophisticated applications (that makes the product also more expensive). To put it briefly, by offering a basic product in

an initial stadium, we have clearly better chances on copying behaviour occurring, and once the biggest part of the market has become familiar with this basic product, we have a better operating base to start working on the readiness of every segment for additional applications. So, what must be avoided, is immediately offering too much applications (too much too soon). This would seriously reduce the chances on adoption by the majority, because a lot of these applications aren't interesting, which makes the product by consequence too expensive, to them, or because they get overwhelmed and also frightened by the offer. Also the offering of applications for which the majority has totally no interest (or emphasizing those applications in communication/ads) must be avoided.

Concerning this, Geoffrey A. Moore (1999(a): 38) developed his 'Bowling Pin Model'. In this model for the introduction of innovations he states that in a lot of cases a gradual introduction is better than an introduction by which the whole market is offered the whole product (with all its applications) at once. Instead of haphazardly trying to gain different niches by promoting the product from the start with a whole bunch of applications, he's convinced that it is better, in an initial stadium, to concentrate only on a few very interested segments. By offering that one or those few segment(s) a product that is tailor-made for them (but can also be situated within the domain of interest of some 'adjacent niches'), you're practically sure of their adoption. Once they've purchased the product, sales towards those adjacent niches will be more easily, because of the already existing mouth-of-mouth-relations between those niche-segments, allowing so-called 'references'. What Moore means with this word-of-mouth-advertising-mechanism is actually very comparable with the idea behind Rogers' copy-mechanism.

Figure 2: Bowling Pin Model (Moore, 1999(a): 38)
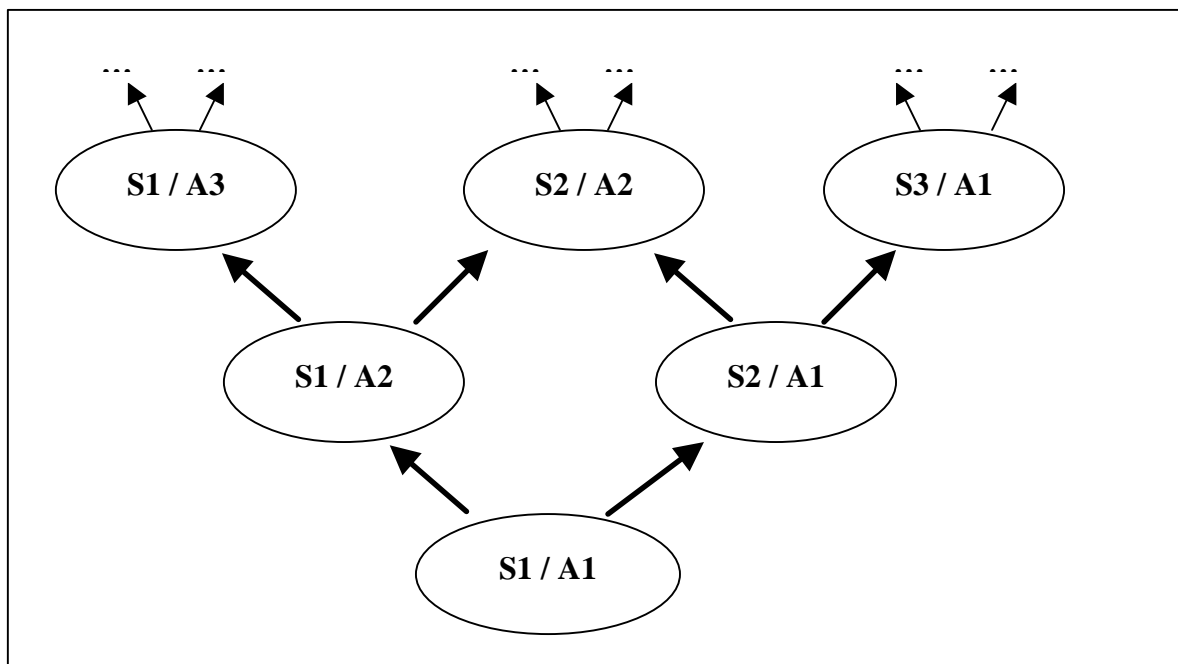
In the figure above this model is schematically clarified. Initially the focus goes to one segment (S1) of which we know it is very interested in the new product, because of one or a few application(s) (A1). Condition for the offered application A1, or the application which is emphasized in communications, is that is has the potential of appealing the interest of other

segments after a while. Once the first segment adopted, a kind of bowling game gets into stride. A second segment (S2) bearing close resemblance to the first one, sees how acquaintances/relatives from the first segment are using the new product, the worth-of-mouth-advertising occurs, and people start to show some kind of copy-behaviour (and as consequence S2 adopts the basic A1). At the same time S1 is offered a second, new application (A2). An application that will be adopted by S2 on a moment that S3 adopts the basic A1, and when the first segment S1 is offered a third application A3, etc. …

One of the examples Moore uses to illustrate the effectivity of this Bowling Pin Model is the introduction of Apple Macintosh (Moore, 1999(a): 39). He describes it as follows:

"… in the case of Apple Macintosh, Segment 1 was 'in-house graphic artists' and Application 1 was 'desktop publishing' The idea then became to leverage two key assets from success in that segment to facilitate entry into related segments (adjacent niches).

The first of these was customer references. Staying within the graphic artist community, after desktop publishing, which grew up around Aldus's Pagemaker, additional applications evolved including desktop presentations, around MacDraw first and then Aldus's Persuasion and Microsoft's Powerpoint, and the file-sharing and e-mail to enhance exchanges with client groups. These applications were much easier to bring on-line because the customer segment was already familiar with the Macintosh, and people could watch others use it, try it out themselves, and then adopt knowing there was someone else around who could help them when they got in trouble.

At the same time, another form of market development leverage is also at work, this one based on extending the whole product. Desktop publishing was fine for in-house artists, but it needed extensions in order to serve agency-based graphic artists in advertising and publications. As these higher-end capabilities came on-line, the whole product went through another series of mutations, focused on color separation and pre-press requirements, to be adoptable by professional publishers. Each extension of the whole product, however, built on previous work and on already established relationships with third parties. As a result it grew much more rapidly than would otherwise have been possible. …"

In this way, segments initially less interested, or only showing a 'latent interest', gradually get warmed for the new product. But is very important to find a first segment from which we can operate towards different other segments ('adjacent niches'), and of which we know they are very interested in one application or a combination of applications that also appeals to those adjacent niches. As a consequence, you reach the whole market anyway after some time, offering the total product with all its applications, but in a way that there has been left more 'adjustment-time' for the market, to become familiar with the new technology. A bit more time for adjustment that can be crucial for a new technology. Because 'uncertainty' and ' not being familiar' with a new concept appears to be one of the biggest thresholds for acceptation of new technologies (Flaherty, 2001)[7]. When people choose for the option of immediately playing the whole market, they run the risk of overwhelming and frightening a big part of the market (a part that is quite uncertain initially), which makes that they won't adopt, and keeps adoption limited to the innovators and early adopters.

---

[7] Prof. Parasuramans 'Technology Readiness Group' (2001) also emphasizes the importance of the factor 'comfort level' when it comes to the acceptation of innovations. They describe it as 'a feeling of control (or lack thereof) over technology'. It's a kind of 'uncertainty-factor' covering consumer-feelings as 'the technology is too complex', 'a lack of trust in tech support', 'getting overwhelmed by the technology', …

It is obvious that this Bowling Pin Model (BPM) is mainly based on the belief in the mechanism of copy-behaviour. Carter (cf. supra) anyhow, would find this an ideal introduction-scenario because it first concentrates on / it first picks out the most interested ones (innovators), which are targeted with specific tailor-made communication. We however, are convinced of the fact such a copy-mechanism can only be effective, when it is accompanied by thorough thought communications-strategy. What do we mean by that? The point is that, by managing such a strategy, we need a clear picture of the media-usage of the different segments, in order to choose the best media to reach them. We need fill in two communication paths as good as possible (a mass media path and a second path through specific channels). The purpose of the first path, the mass media, is to inform the global market and trying to convince them. It is evident that we can't go very deep into things in those campaigns, but for the innovators, and to a somewhat lesser degree also for the early adopters, this 'superficial' information will be sufficient to make their 'readiness' for adoption bigger than the 'resistance' towards the innovation, and to make them really purchase the innovation. From the early majority onwards (probably also still some early adopters) it will take a bit longer before that readiness goes beyond the resistance. Mass media campaigns alone won't be enough anymore here to get that readiness big enough, to convince them to adopt. To obtain the latter, more specific campaigns are needed; campaigns that go deeper into things, and in which can made clear what the product can mean for them. A more personal communication, whereby we have a lifestyle-profile for every segment, so we can make clear how the product fits into that lifestyles. A strategy, in which every segment is approached through their most typical channels and where the communication emphasizes exactly the things that are interesting for those segments. For every segment we need thus in advance a detailed profile of their lifestyle, media-usage and interests.

Alex Stoter (1997: 168) sees the 'role of communications with the acceptance of innovations' as follows:

Figure 3: Target groups, stadium of change, media-usage and communication-aims (Stoter, 1997: 168)

		Innovators	Early adopters	Early Majority	Late Majority	Laggards
Phase 1: Intro	Mass media	Inform, Obtaining understanding	Inform, Obtaining understanding	Inform, Obtaining understanding	Inform, Obtaining understanding	Inform, Obtaining understanding
Phase 2: Diagnosis		Convincing	Convincing	Convincing	Convincing	Convincing
Phase 3: Decision		Decision	Decision	Decision	Decision	Decision
Phase 4: Implementation	More specific, personal campaigns	Behaviour	Behaviour	Behaviour	Behaviour	Behaviour

[shaded box] = readiness > resistance

At the introduction of an innovation, the consumer has to run through four phases: initially there's an introduction-phase, in which it is the main purpose to inform the total market (by mass media) and to obtain understanding for the unknown, new product. This is followed by a phase of diagnosis: the phase of weighing the pros and the cons of the innovation, and in

which the consumer needs to be convinced. Through the decision-phase (adoption or not) people end up in the phase of implementation, where the innovation actually has to be purchased and used (or not). Everyone (each of the five adoption-segments) goes, according to theory, through these four phases, but what differentiates these segments, is the timing of the moment on which readiness for adoption goes beyond the resistance towards the adoption, and the adoption really gets accepted and adopted.

For the innovators, and to a lesser degree also the early adopters, the first mass medial signals (although without any depth) are enough yet to increase their readiness and reduce their resistance. More intensive targeting-efforts towards these people are more or less useless as a consequence. From the early majority onwards (and also still for some early adopters) communicating through mass media will still be needed to inform and convince, but it won't be enough anymore to make them ready for adoption. To reduce the resistance with these segments, more specific targeting-efforts will be required. Efforts that are tailor-made and more personal.

Hence, the conclusion that a big, mass medial campaign (generally informing, without much depth, and with an emphasis on things that appeal to almost everyone) needs to be accompanied by different concrete (profound) communication-efforts towards specific segments.

It speaks for itself that we can only do this, when we have a 'tool' at our disposition, which allows us to detect such innovation-categories for a specific innovation in advance, and to draw up profiles containing information on media-usage, lifestyle and interest in different applications.

BPM in practice?

> *"... There will always be a base line of modems for people who only want 1 thing, but most of them will probably, in a couple of years' time, have a lot of extra features, ..." (Torr in Thomson, 2001(c))[8]*

> *"... what exactly does it do and how does it work? Add to that the high price and you have the issues that are confusing consumers and limiting the penetration of PVR's ... coupled with greater understanding of the service through word of mouth advertising, it will help drive the adoption of PVRs over the next few years." (Flaherty, 2001)[9]*

Although reactions as these illustrate that people are aware of the logic behind the BPM-theory, we find that in a lot of cases people still choose for a more haphazardly introduction-strategy, instead of the more precise and gradual way of introducing an innovation such as the Bowling Pin Model. The reason for this is not really a lack of confidence in the strategy, but a lack of useful information to draw up such introduction-, targeting- and communicationstrategies effectively. To draw up such a BPM-model we need to know at least who are the more and the less interested segments, and in which applications exactly they are

---

[8] Illustrates that people realise that the same product can't be sold to the entire market: there always are groups (late majority, laggards) only wanting one thing (basic package / right side of the bowling game); but there are also groups interested in more features (innovators, early adopters / left side of the bowling game).
[9] Illustrates that people believe in the power of word-of-mouth-advertising and the copy-mechanism, two basic principles of the theories of Moore (BPM) and Rogers (innovation curve).

interested in. Clear profiles are required, containing information on media-usage, the things that can make the innovation interesting to them, the price they are willing to pay for it, …). Besides the specific interests in applications for every segment, we also need to know if there are applications that appeal more or less to the entire market (interesting for the composition of a basic package).

A lot of market research that has been done in preparation of such introduction campaigns fails to deliver a response on most of these questions. Reason: a lack of a measurement tool enabling a researcher to make a clear distinction between the different innovationsegments.

Innovation forecasting?

If we search for different ways of 'innovation forecasting' that are being used, we can mainly distinguish three traditions: bibliometrics, econometrics and DSI-scales (Watts, Porter, 1997). Each of these traditions is inadequate to give an answer to the questions above.

As well in the literature, as in practive, the 'bibliometrics'-tradition isn't really considered as the most effective way of innovation forecasting. Those still making an appeal on it, do that mainly on budgetary grounds. With bibliometrics we mean a research tradition, in which research and forecasts are based on literature research: people search into literature for results and information on/of existing tests, patents, substitutes, introductions in other markets and countries, …; and integrate all this into one document, on which conclusions are based concerning the innovations which have to be brought on the market. A document that is also the fundament for the introduction strategy that has to be drawn up. Based on existing research reports (e.g. on interest in wap in '99) people draw for example in 2001 conclusions on the adoption of 3G mobile phones. However, it would be absurd to believe that the most interested ones in Wap in 1999, will automatically be the most interested ones in 3G.

The biggest problem with which the econometrics-tradition is confronted, is that this tradition of research doesn't allow to make forecasts in advance (before introduction, even on a moment the product is still in its R&D-stadium) concerning the adoption curve. The tradition does allow to make very accurate forecasts about the pattern of the curve, but to do this it needs at least a half or even a whole year of data. This means that the innovations must be on the market yet, before they can start forecasting. Those forecasts are based on different variables, such as 'time of adoption' of the first adopters (innovators). Since we need an answer to our questions in advance (before introduction), is also this tradition inadequate for us.

DSI-scales (DSI: Domain Specific Innovativeness) at last, do allow us to make forecasts in advance, but they are, according to us, not specific enough. Different authors (Leavitt and Walton (1988), Price and Ridgeway (1983), …) have developed scales to measure the degree of innovativeness of a person. Innovativeness is seen as a personality trait and is measured by a series of Likert-items. One of the most frequently used DSI-scales is the one from Goldsmith & Hofacker (1991) (Bearden, Netemeyer, Mobley, 1993: 59).

1. In general, I am among the first (last) in my circle of friends to buy a new ……….. when it appears
2. If I heard that a new ……….. was available in the store, I would (not) be interested enough to buy it.
3. Compared to my friends I own a few of (a lot of) …………… .
4. In general, I am the last (first) in my circle of friends to know the titles/brands of the latest ……………… .
5. I will not buy a new …………. if I haven't heard/tried it yet. (I will buy a new ……….. if I haven't heard/tried it yet.)
6. I (do not) like to buy ……………. before other people do.

The domain, towards people want to measure the degree of innovativeness (e.g. ICT) has to be filled in on the dotted lines. When the degree, up to which people agree with the statements, is filled in on a five-point-scale (1:totally agree and 5: totally disagree), the total score on this scale varies between 6 (6x1) and 30 (6x5). In this way every respondent gets a total innovativeness-score (on 30) for the domain of ICT.

These scores can be linked to innovationtheories in several ways:
- A first possibility is the use of 'arbitrary cutoffs'. In a random way bounds are set to determine if someone is an innovator, an early adopter or … . People with a total score between 26 and 30 (or between 1 and 6, dependent on the scaling) for example, are considered as innovators for the domain (ICT), those that obtained a score between 21 and 25 are early adopters, those between 16 and 20 early majority, …[10]
- A second possibility is the use of the theoretical 'fixed percentages' (Rogers, …) Rogers, for example, assumes innovators to consist of 2.5% of the market, early adopters 13.5%, early and late majority both 34% and laggards 16%. Linking this to the obtained scores on the innovativeness-scale, means that, based on the percentiles, we can obtain our five innovation-categories. The highest 2.5% of the scores are the innovators, the following 13.5% (between percentile 2.5 and the 16th percentile) are the early adopters, …[11]

On both ways of working several critics are possible. John Carter (1998) means that it certainly has no use of keeping with those fixed percentages. He perfectly agrees with the fact that there always is a small group of people adopting the new product immediately, but he doesn't believe in the fixed percentages of 2.5% innovators and 13.5% early majority. There are plenty of examples, according to him, illustrating that innovators aren't always 2 à 3% of the population. One of these examples is the British national Lottery, achieving greater than 50% penetration among UK adults in its first week. Another example was the launch of the Mercedes SLK. The entire first year production was sold out before most people had ever actually seen one in real life, let alone test-driven a car. However, cases that demonstrate that innovators need not always be exactly 2.5% of the participants in a given market.

Also on validity and reliability of these DSI-scales, there have been several critics (Flynn, 1993). But the main reason why these scales aren't appropriate for us, is that they aren't product-specific enough. Regardless of the way in which the results on the DSI-scale are

---

[10] This way of working results in a division in five adoption-categories, whereby we don't know the size of every category

[11] This way of working results in a division in five adoption-categories than can't vary. We always end up with 2.5% innovators, 13.5% early adopters, 34% early majority, 34% late majority and 6.5% laggards.

used, we always end up with a segment innovators for the domain (e.g. ICT), a segment early adopters for the domain (e.g. ICT), … and a segment laggards for the domain (e.g. ICT). We may have innovators for a certain domain than, but that doesn't automatically mean we also have our innovators for every product within that domain. A naïve way of interpreting could make us conclude that an innovator for the domain of ict, is automatically also an innovator for every product within that domain. An innovator for wap, according to this reasoning, would automatically also be an innovator for digital television. Doesn't seem very logical, isn't it? A part of the innovators, delivered by the DSI-scale, will indeed be very interested in both technologies (wap and dtv), but there will also be wap-innovators with only a moderate or even no interest at all in digital television. And also the other way around. In general an ict-innovator, according to the DSI-scale, will indeed by an innovator for that domain (for most of the technologies within that domain), but the forecast remains too vague to draw conclusions for the different products within that domain. So, what is required is a kind of PSI[12]-scale, a scale measuring the innovativeness for a specific product within the domain, and not for the entire domain.

As a first reaction to this, one might probably wonder why we need to develop a new scale to be more product-specific. Can't that be solved just by filling in the specific technology, e.g. digital television, on the dots (instead of the domain)? No, because if we do that, we end up with a few impossible or useless statements. Item 3 for example, would give the following: *"Compared to my friends I own a lot of digital television."* Taken into account that we question our respondents before the introduction, this is a useless statement: when a product isn't on the market yet, it's impossible for people to own it yet.

What we need thus, is a scale, enabling us, in a relatively simple way (as the DSI-scale), to make an innovation-segmentation for a specific product. Why simple? Because we have to account for the fact that the scale must be usable to question large samples (as well by telephone as postal as by face-to-face interviews). Based on a few simple, but efficient questions it must be possible to end up with an accurate product-specific innovation-segmentation. A segmentation that is more specific than the one we would receive, using the DSI-scale. A part of the innovators we would receive, using the DSI-scale, will indeed be innovators for the specific product of our interest. They also have to be detected by our PSI-scale as an innovator. This implies that the segmentation, based on the PSI-scale, will have to correlate partly with the segmentation, based on the traditional DSI-scale. That correlation can't be too high on the other hand, because our aim is to segment in a more specific way than the DSI-way. More specific, in that way, that within the innovators for the domain of ICT, we only want to single out those with a specific interest for that one product digital television. Those who lack that interest (in dtv), may be innovators for other technologies within the domain of ict, but they can't be picked out by the PSI-scale.

---

[12] PSI: Product Specific Innovativeness

PSI-approach

How do we handle this the best way? Let's list the conditions again which the scale has to meet:
- The scale must be simple. Based on the answers of a few questions it must be possible to split up a population in five innovation-segments. These questions must be clear enough to be used in a telephone survey, as well as a personal interview, as a street-interview.
- The scale must be usable in advance. With 'in advance' we mean the scale must be implementable on a moment the product still has to be launched. Even on a moment the communication-strategy has to be drawn up. This[13] also implies that we have to bear in mind that the people (respondents) don't know the product yet, on the moment they'll get questioned.
- The segmentation, based on the PSI-scale, must be more specific than the traditional DSI-way of working. On the other hand the PSI-segmentation can't deviate too much from the DSI-segmentation, because the 'true product-innovators (dtv)' that are predicted by the domain-scale, also have to be predicted by the PSI-scale.

The first problem we are confronted with, is that we want to question the consumer on something he doesn't know very well yet, or even not at all. This implies that, before we start asking him questions, we have to inform him in one or another way about the new concept. There are several options to do this. The best way to do this of course, is a tangible introduction to the new concept. But in most cases, it won't be possible to test or show the new product in a material/tangible way, which makes us fall back on audio/video-presentations, pictures and/or plain text in which is explained what the innovation stands for, what people can expect from it, how it has to be used, … . But how the information on the innovation is given is not the most important thing; some ways (video) are only more pleasant than others are for the respondent (plain text). The most important thing is the training of the interviewers. If the survey is done by telephone, or by personal interview, the role of the interviewer is crucial. Regardless of the way in which the respondent was informed on the innovation, it still is up to the interviewer to decide if the respondent has a correct picture in mind of the innovation or not. Before jumping to the questions (e.g. concerning their interest in different applications) we need to be sure that all respondents are on the same wavelength. They all must have a same picture in mind on what dtv stands for, if we want to compare their answers. The picture they have in mind, also has to be a correct (not too positive) picture of what the technology stands for, what its applications are, …. . Within this framework we have to make sure that the information given to the respondent is not too promotional. If the respondent would only be given a promotional film or an ad-folder on digital television, we run the risk of creating a too positive image. If there would only be emphasized that from now on it will be possible to manage money affairs or shopping from the armchair, there probably would be many interested ones. A lot more innovators would be forecasted, compared to their number in reality. One of the main duties of the interviewers is to nuance this image, when it appears to be too positive. There can, for example, be pointed to the fact that there is still an investment required for a set-top-box; and the more sophisticated the desired applications, the higher the price or subscription that will have to be paid. However, when the respondent went through the given information (text, video, …) the innovation is discussed with the interviewer. Only when the interviewer is convinced that the respondent has a correct picture

---

[13] The fact that we want to work in advance

in mind of digital television, they can jump to the actual questionnaire. To do this efficiently, the interviewers need to be well trained: they all must have the same, correct picture in mind of the innovation.

Once the respondent got acquainted with the innovation, with the new technology, they start with the questionnaire. Besides the PSI-scale (three questions), this questionnaire can obtain all kinds of questions (lifestyle, media-usage, questions on price-sensitivity, …). All questions needed to end up with detailed and usable profiles of the innovation-segments.

To obtain these five innovation-segments we need the answers on our PSI-scale (Product Specific Innovativeness). The scale consists of three questions, for which there are five possible answers (same five for each of the three questions). After reading the text, watching the video or testing the innovation, the respondent receives the following question:

First question:

"Suppose digital television was on the market yet. As you see dtv now, up to which degree would you be interested to subscribe yourself on a dtv-package?"

This first question is a very general question, asking for a general interest in digital television. There's no specification of price, content-offer or applications. Answering this question can be done by ticking one of the following answering possibilities:

1. *I subscribe immediately*
2. *Big chance I subscribe*
3. *I prefer to wait a bit longer, maybe later*
4. *I don't think to subscribe*
5. *I certainly won't subscribe*

Only on the base of the answers on this question, we have a general indication of a group interested ones, and a group not-interested ones, and a very big group in between. To split up these groups more specifically, we need the following two questions[14]:

Second question:

"If you would be offered an optimal dtv-package[15] (only the channels you are interested in, the services you want to use, and all that for a price that isn't higher than the price you are willing to pay for it), up to which degree, would you be interested to subscribe yourself?"

In the foregoing discussion with the interviewer it will have become clear what are the main interests of the respondent (e.g. someone only interested in epg, e-mail, and more thematic channels (sport and nature)). Knowing this, the interviewer can formulate the second question.

---

[14] The answering possibilities on question two and three are the same as for the first question
[15] An optimal dtv-package is discussed with the interviewer: what price, which applications, …
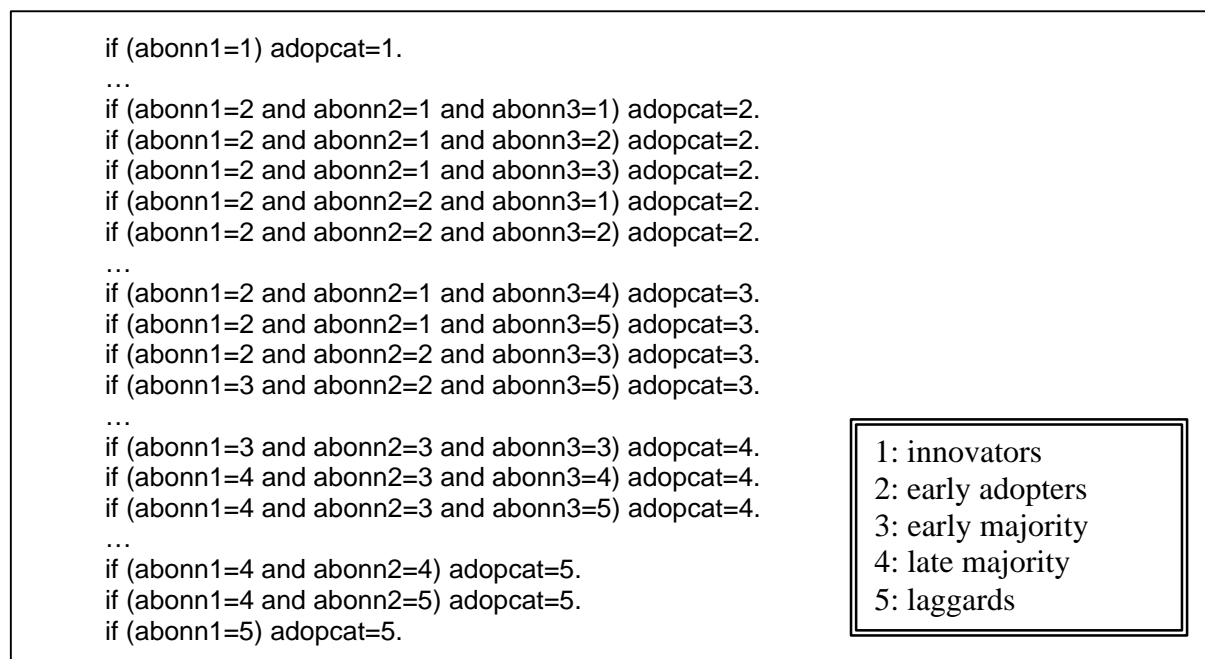
Third question:

"If you would be offered a dtv-package that is not your optimal package, but deviating from it on a certain point (higher price, not all your favourite features, ...), up to which degree, would you be interested to subscribe yourself?"

So, we have one general question and two specific questions. We suppose that someone not showing any interest in dtv on the general question, won't suddenly be more interested on the specific questions. If someone answers to subscribe immediately on question two and three, we expect him to give the same answer on the first question. A reasoning which hasn't been contradicted by our data. Everybody (without any exception) that answered immediate subscription, gave the same answer on the first question.

Someone who answered to subscribe immediately on the general question, and also on the other two questions, is considered as an innovator for digital television. Those answering 'big chance on subscription' on the first question, but immediately willing to subscribe for an optimal package (and answering 1, 2 or 3 on the third question) were considered as an early adopter, ...
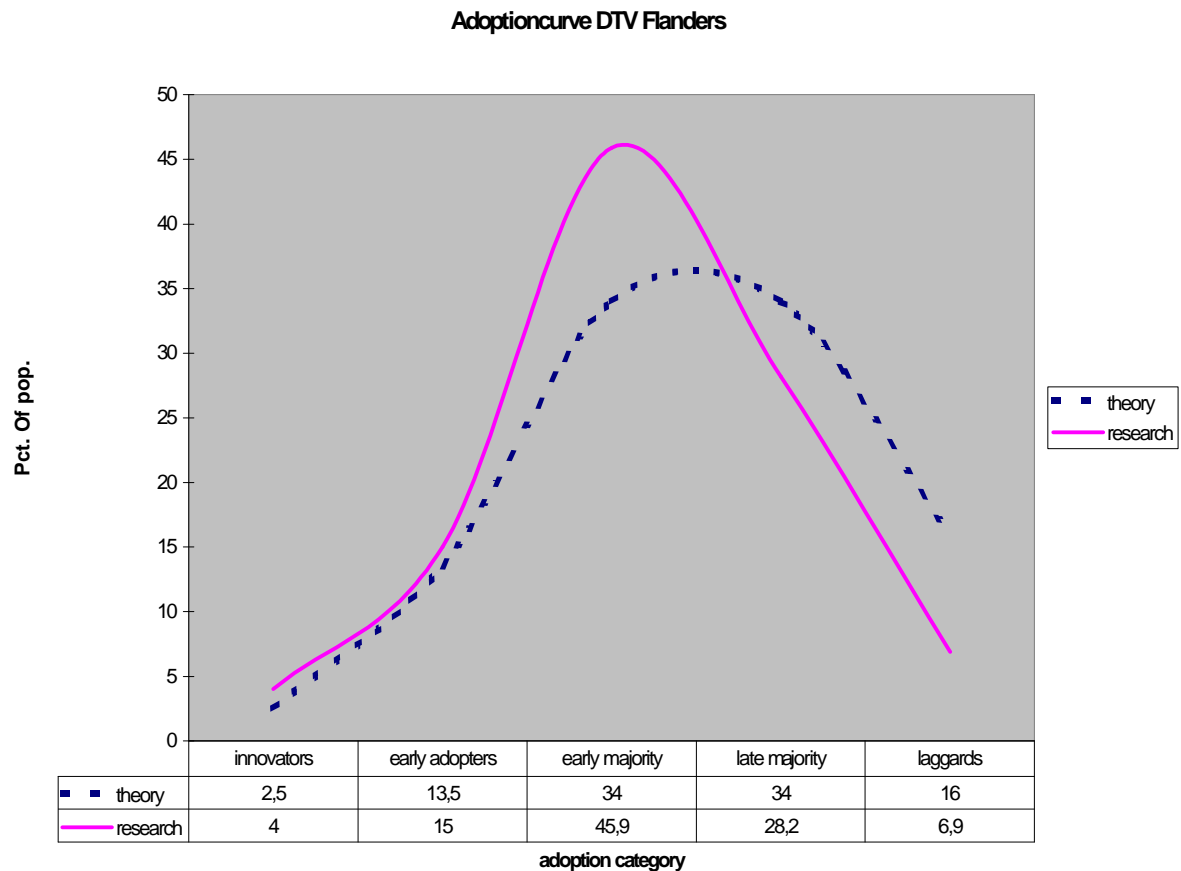
Figure 4: Allocation to the five innovationsegments based on the three questions

```
if (abonn1=1) adopcat=1.
…
if (abonn1=2 and abonn2=1 and abonn3=1) adopcat=2.
if (abonn1=2 and abonn2=1 and abonn3=2) adopcat=2.
if (abonn1=2 and abonn2=1 and abonn3=3) adopcat=2.
if (abonn1=2 and abonn2=2 and abonn3=1) adopcat=2.
if (abonn1=2 and abonn2=2 and abonn3=2) adopcat=2.
…
if (abonn1=2 and abonn2=1 and abonn3=4) adopcat=3.
if (abonn1=2 and abonn2=1 and abonn3=5) adopcat=3.
if (abonn1=2 and abonn2=2 and abonn3=3) adopcat=3.
if (abonn1=3 and abonn2=2 and abonn3=5) adopcat=3.
…
if (abonn1=3 and abonn2=3 and abonn3=3) adopcat=4.
if (abonn1=4 and abonn2=3 and abonn3=4) adopcat=4.
if (abonn1=4 and abonn2=3 and abonn3=5) adopcat=4.
…
if (abonn1=4 and abonn2=4) adopcat=5.
if (abonn1=4 and abonn2=5) adopcat=5.
if (abonn1=5) adopcat=5.
```

> 1: innovators
> 2: early adopters
> 3: early majority
> 4: late majority
> 5: laggards

Using this gradual or stepwise-way of allocation, we become a product-specific innovation-segmentation. A split up in five innovation-segments, by which we don't stick to those fixed percentages, and that can result as well in a 1% innovatorsegment, as a segment of innovators that consists of 49% of the population.

In our research on digital television in Flanders, these innovators were 4% of the Flemish household-population (2.5% in theory), the early majority appeared to be larger than in theory (45.9% instead of 34%), while the laggards were smaller than in theory (6.9%).

Figure 5: Innovation curve: theory (or results based on DSI) vs. Dtv-Flanders (based on PSI)

Adoptioncurve DTV Flanders

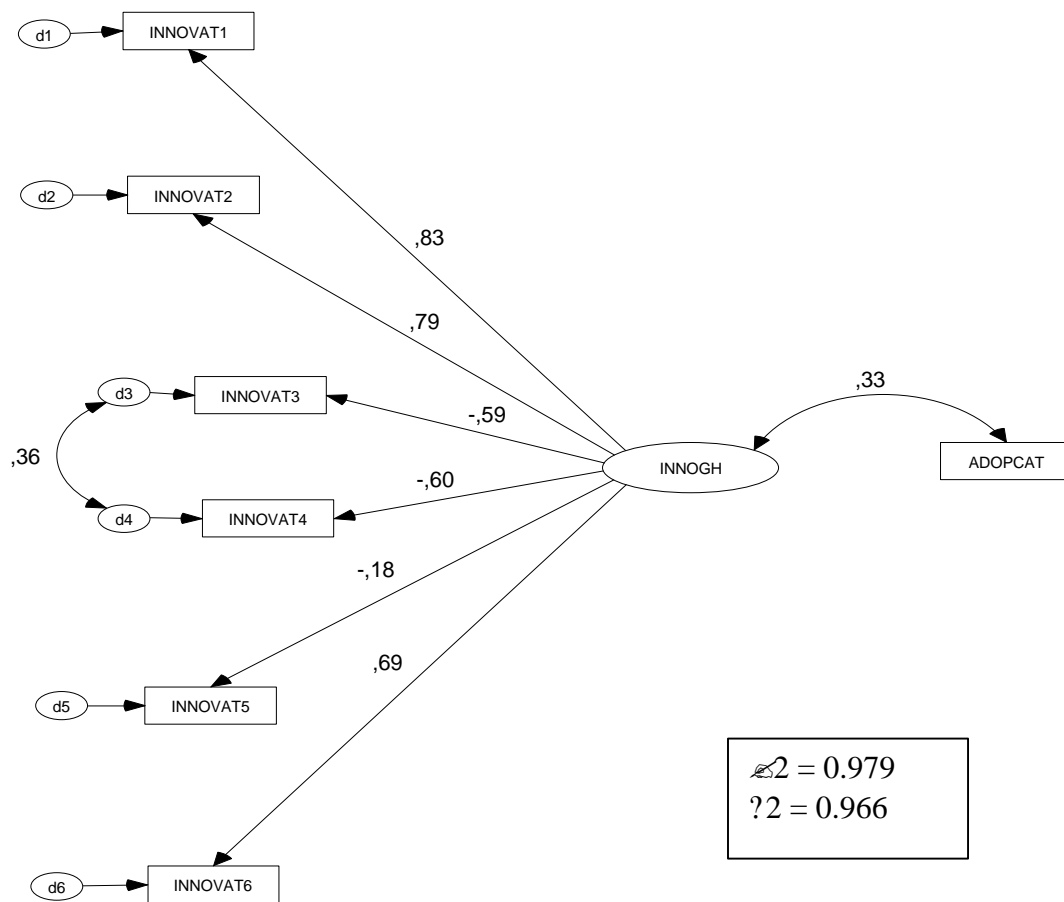|	innovators	early adopters	early majority	late majority	laggards
theory	2,5	13,5	34	34	16
research	4	15	45,9	28,2	6,9

The dotted line shows the innovation curve as described in theory. Also when we use the DSI-scale, using percentiles (the persons that obtained the highest 2.5% of the scores are the innovators, the following 13.5% are the early adopters, …) we end up with this adoption pattern. The full line shows us the curve as forecasted in our research, using the PSI-scale. Although this line follows more or less the theoretical pattern, we find less laggards and a bigger mass market. As for most other innovations or new technologies, there seems to be a small group of people in Flanders, willing to adopt digital television immediately. But we also find a large 'waiting and still hesitating' majority: people that only adopt when digital television meets certain conditions (price, applications, …). Now, we'd like to find out what those conditions are, who those people are, and how we can reach them.

Having explained how we came to this segmentation, we still can't work with it. Before we start working with it, and begin to describe these segments and draw up a communications-strategy, we need to find out if the PSI-scale is a valid instrument, and if the result is indeed more specific than when we would have worked with the traditional DSI-scale.

Validity?

To test the validity of the instrument (PSI-scale), we also integrated the DSI-scale of Goldsmith & Hofacker[16]. Both scales resulted in an innovation-segmentation for digital television in Flanders

Figure 6:

$$\text{@}2 = 0.979$$
$$?2 = 0.966$$

As described earlier, the DSI-scale consists of 6 items (innovat1 to innovat6). Based on this scale we become the segmentation 'innogh' (based on the percentiles): five segments (innovators, early adopters, early majority, late majority and laggards) according to their innovativeness concerning the domain 'ict'. For each of these five domain-specific-segments there can be made profiles in order to draw up an introduction- or communication-strategy for digital television[17], in the most effective way possible. Because of earlier mentioned reasons, we think this approach isn't specific enough, which made us feel the need for a more product-specific approach. Because of that, we developed a PSI-scale, measuring a person's

---

[16] On the dots we filled in 'ict' for the domain
[17] One of the products within that domain of ict.

innovativeness concerning a specific product within a certain domain. This product-specific segmentation resulted in the variable 'adopcat'[18]. It speaks for itself that the result of both segmentations partly correlate. A part of the innovators for the specific product digital television was also detected as an innovator for the ict-domain by the dsi-scale. We see this confirmed in the LISREL measurement-model above, in which we see a 0.33 correlation between the dsi- and the psi-segmentation.

Psychometric Mokken Scalability analysis of the three items assuming a cumulative order in the three items yields a H=0.73 and a scale reliability Rho=0.85 indicating a reliable cumulative scale.

More specific?

In the search for ways on which 'innovation forecasting' is done, we only found one tradition slightly satisfying the need for distinguishing the more innovative segments from the less innovative ones: DSI or domain specific scales. A gathering of scales measuring the innovativeness for a certain domain as a personality trait. As an illustration of them we described the one from Goldsmith & Hofacker (1991); a frequently used scale within this domain.

Based on the percentiles (cf. supra) this scale allowed us to split up the population into innovation-segments, perfectly sized as theoretically described. (innovators 2.5%, …, early majority 34%, ….). In this way we obtain five innovation-segments for the domain of ict. Concerning the validity of this DSI-scale, we have no remarks: our data prove that those pointed out as innovators or early adopters by the dsi-scale, are indeed 'the bigger owner' for every technology within this domain of ict (cf. table)

Figure 7: Ownership for ict-technologies x innovationsegments (dsi)

	Innovators	Early adopters	Early majority	Late Majority	Laggards
TV	100 %	98 %	98.6 %	97.1 %	97.4 %
Dish	15 %	5.1 %	5 %	2.5 %	5.3 %
Video	95 %	94.9 %	93.2 %	89.7 %	71.1 %
Internet con.	90 %	82.7 %	70.1 %	55.9 %	27.6 %
Games computer	40 %	32.7 %	25.3 %	17.6 %	11.8 %
DVD	35 %	33.7 %	10.4 %	8.3 %	2.6 %
PC	100 %	98 %	90 %	82.4 %	60.5 %
CDR	65 %	55.1 %	19.9 %	13.2 %	9.2 %
Minidisc	20 %	17.3 %	14.5 %	11.8 %	7.9 %
…	…	…	…	…	…

Our main remark on using this scale is that it isn't specific enough. Drawing conclusions and drawing up a introduction-strategy, based on these dsi-findings, can be considered as quite thoughtless. It is very plausible that someone who is, globally seen, an innovator for the total

---

[18] How the answers on the PSI-scale resulted in a segmentation of five innovationsegments, is described earlier in this paper.

domain, shows not a single interest for one or two products within that domain (e.g. digital television). There can, for example, be a segment of people, immediately purchasing minidisc, wap, gps, …., but having no interest in digital television (because they aren't heavy tv-users). There also can be very interested people in dtv, that are seldomly interested in other ict-technologies (early majority by dsi-scale).

What we are trying to say with this, is that, people basing their marketingcampaigns on these dsi-scales, easily end up with Thomsons (2001) 'badly judged marketing decisions'. By basing themselves on these domain-specific profiles, people start targeting segments/people that aren't really interested (useless marketing-efforts); and a lot of the really interested ones in the specific product don't get reached by the marketing-efforts (because they aren't very interested in the total domain). So, what is needed, is a measurement tool that detects only the interested ones in one specific product. A scale that enables us to single out as well, within the group of dsi-innovators, only those interested in the specific product digital television; as the dtv-interested ones within the less innovative dsi-segments (early adopters up to laggards).

Figure 8: PSI vs. DSI-segmentation

DSI-innovation-segments (ict)		PSI-innovation-segments (specifically dtv)					Total
		Innovators	Early Ad	Early Maj.	Late Maj.	Laggards	
	Innovators	3	3	9	4	1	20
	Early Ad	4	31	45	14	4	98
	Early Maj.	11	36	109	55	10	221
	Late Maj.	6	21	94	70	14	205
	Laggards	1	2	28	32	14	77
	Total	25	93	285	175	43	621

In the table above, we have the innovation-segments for the domain ict (dsi-scale) in the rows, and the innovation-segments for the product digital television (psi-scale) in the columns. Although these two segmentations correlate up to a certain degree, it immediately catches the eye that these two segmentations are not completely the same. Besides the already mentioned .33-correlation, we also notice a dense populated diagonal, illustrating the correlation between the two segmentations. In fact, coefficient Kappa equals 0.11 for this table.

There are sufficient indications yet, showing that we can work more precisely and more specific, with less chance on 'badly judged marketing decisions', when we base ourselves on the psi-scale. When using the dsi-scale we become 20 innovators, instead of 25 with the psi-scale (specifically digital television). Comparison between the two segments however, learns us that only three of the domain-innovators are also part of the most interested ones in the specific product digital television. If one would base himself on these dsi-profiles to draw up a marketing-campaign towards innovators, he certainly runs the risk of making 'badly judged marketing decisions'. He would aim his efforts on 3% (20/621) of the population, while the real innovators for digital television actually are a somewhat bigger group: 4% of 25/621. Besides that, the efforts would also be aimed mainly at the wrong people: he would only reach 12% (3 out of 25) of the people he intended to reach (the innovators for digital television). This means that, in this case, 88% of the marketing-efforts would be more or less useless.

In addition, even a fourth ((4+1)/20) of the people pointed out as innovator by the dsi-scale, shows only a very small interest in digital television. When we look at the laggards for the domain ict, we see that most of them are indeed not very interested in digital television, but

there's still 4% within this group, that seems to be innovator or early adopter for digital television.

Summary

Summarizing we can say that a lot of technologies within the domain of communications fail, despite the great expectations with which they have been introduced. One of the reasons for this is a bad marketing- and communication-strategy: either the communication was targeted at the wrong people, or the wrong things have been communicated or offered to the wrong people, …

If we link theory to practice, we automatically come to the conclusion that the first ones to be targeted are the innovators and early adopters. They have to warmed to purchase the innovation/the new communication-technology. The form in which this innovation has to be introduced to these innovators and early adopters must be of a kind that it also appeals to the rest of the market (early and late majority, and if possible also the laggards). For the innovators and early adopters, the product won't have its 'ideal form' immediately (it will be too basic probably), but it will at least be a form that gives the product a bigger chance to reach the mass market. After a while the innovators and early adopters can be offered additional applications; applications that only appeal to them and for which they are the only segments that want to pay more for them.

It seems logical that this theoretical gradual scenario is a better introduction-scenario than the overwhelming strategy of immediately offering the whole product to the whole market. But to implement this 'ideal scenario' effectively there need to be found an answer to questions as 'Who are the innovators for my product?', 'In which applications are the different innovation-segments interested?', 'Which segments are willing to pay more for which applications?', 'How do we have to reach those different segments?', 'And with which messages?', …

Most of the times people don't succeed in obtaining an answer to such questions in advance (before the introduction), which makes that there is seldomly chosen for the BPM-introduction-strategy. Those who do choose this gradual strategy, often don't succeed because they start targeting arbitrary niches (because they don't know exactly who the innovators or most interested segments are). Why wasn't this possible until now? Because the different traditions of innovation forecasting didn't allow to forecast the different segments in advance, and if they tried to do so, because they weren't product-specific enough.

Trying to solve this problem, we did an attempt to develop a research instrument that is relatively simple to implement in large-scaled processes of data-collection, and that makes it possible to distinguish in advance between product-specific innovation-segments. Because of this latter, the instrument was named PSI-scale (Product Innovativeness Scale). The scale consists of three questions, appears to be valid, and gives a result that is more specific than the more traditional DSI-scale.

We already illustrated how this PSI-scale allowed to make a valid innovation-segmentation for digital television in Flanders. In the following paragraphs we'll pay more attention to the profiles of those segments, and the way those profiles can be used.

Case: digital television Flanders

Different projects show us that digital television has (finally) arrived in Flanders: Flanders public broadcaster planned its eVRT-pilot early 2002, Callahan is developing its dtv-strategy through Telenet, … . Its arrival makes the producer-side very enthousiastic, but that enthousiasm is certainly not shared (yet) by the consumer-side. Most of the Flemish don't know exactly what dtv is, they still have a lot of unanswered questions about it, and they certainly aren't sure if it fits in their way of life.

However, we can add 'digital television in Flanders' to the row of technologies that have been introduced with drums beating and colours flying, but of which the market certainly isn't convinced yet. But dtv still has to be introduced in Flanders, which makes it an ideal opportunity to test our innovation-segmentation (in advance) in a practice-related case.

What is the purpose of this research?

- ✍✍A first purpose is to validate our research-instrument (PSI-scale). The foregoing already learned us that the instrument is a valid one, and that it enable us to make a more concrete delineation of product-specific innovation-segments.
- ✍✍A second purpose is a concrete filling-in of the research-instrument and its results. A filling-in that has to illustrate the potential added value it has to offer to marketing, targeting and communications. We'd like to give answers to questions as:
  - *Who exactly are the five innovation-segments for digital television (lifestyle, media-usage, …)*
  - *Is their a difference between the interest of the segments in the different applications? And is the greater interest of certain segments also implying a willingness to pay more?*
  - *Is there something like a basic package, that more or less appeals to the total market? And which are the additional applications that can be offered gradually? And to whom do they have to be offered?*
  - *How do we best reach those segments?*
  - *….*

The sample

For our research we contacted over 1000 Flemish households, and asked them if we could interview the decision-makers for the purchase of (new) communication technologies. 621 of them agreed to do this (N=621). They had to fill out a 10-paged questionnaire, including questions on sociodemographic situation, media-possession and –usage, interactive buying behaviour, lifestyle DSI-scale of Goldsmith and Hofacker (6 Likert-items), PSI-scale, price-setting and interest in dtv-applications.

Because most people didn't knew exactly what digital television was, or they had a too positive image of it, the respondents first had to read an introductory text (2 pages) on digital television. Afterwards, this text was discussed with the interviewer. This took about 10 to 15 minutes. Only when the interviewer was convinced the respondent had a correct image of what digital television precisely is, they went to the actual questionnaire.

Before describing our sample we want to emphasize that our main purpose was to interview decision-makers for new communication-technologies within households, and not to be perfectly representative for Flanders. Nevertheless we controlled for too skewed distributions on the main sociodemographic variables. Knowing that our interviews have been done with decision-makers for new communication technologies, it maybe isn't that surprising that our sample shows a male overweight: 62.1% male against 37.9% female. Two thirds (60.5%) of them is married, while 30% of the unmarried (39.5%) is living together with their partner, 32.5% having a relation without living together and the rest is single. Education, income and age were distributed as follows:

Figure 9: Distribution of education, income and age.

Education	LO: 1.4%	Lsec: 8.5%	Hsec: 31.4%	HOKT: 28.8%	HOLT: 12.1%	Univ. 17.7%
Income	< 900€ 13.4%	900-1250€ 22%	1250-1750€ 28.4%	1750-2500€ 21.8%	>2500€ 14.4%	
Age	<20: 2.1%	20: 28.4%	30: 18.4%	40: 32.4%	50: 15.2%	>60: 3.5%

Who are those five innovation-segments for digital television in Flanders?

Based on the answers on our PSI-scale we were able to split up our Flemish sample into five innovation-segments according to their interest or degree of innovativeness towards digital television.

Figure 10: innovation-segments based on PSI-scale

| innovators | early adopters | early majority | late majority | laggards |
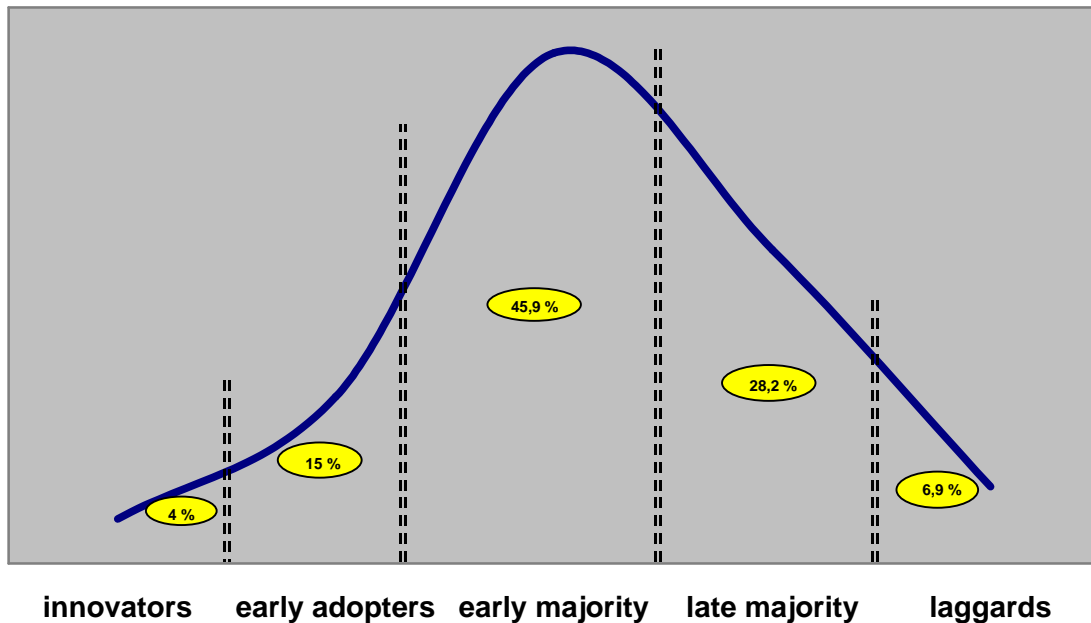
In his article 'why settle for the early adopters?', Carter (1998) made the remark: *"... in this way, we can see that 2.5% should be taken as an indicator of the numbers one might find in any particular market, rather than a hard and fast rule."* According to his meaning, it is wrong to stick to those fixed percentages of 2.5% innovators, 13.5% early adopters, … . This theoretical percentage distribution only has to be seen as a global indicator. It is important to remember that there always is a small group that always adopts and a segment showing no interest at all. In between there's the big mass market. By using a segmentation, as described above, we account for this. So, what Rogers, Schoemaker and Watkins (1985) called 'earlier adopters'[19], is for digital television in Flanders a segment of 19% of the Flemish households (or at least the decision-makers for new communication technologies of those households): 4% innovators and 15% early adopters. The 'waiting mass market' consists of 45.9% early majority and 28.2% late majority. The group not-interested ones, the laggards (6.9%) appears to be smaller than predicted by theory.

But which profiles do these five segments have? On what bases do these categories differentiate themselves from each other? Mainly we can put it as follows:

For the five categories as a whole we find a positive correlation with age (Pearson 0.125, p=0.02) and the number of children (Pearson 0.105, p=0.012), and a negative correlation with income (Pearson –0.234, p=0.000). This means that, the older someone is, or the more children someone has, the bigger the chance to be located somewhere at the rear of the innovation-curve. Higher incomes on the other hand are more innovative for digital television. So, we can say that the most interested ones in digital television are young people, without

---

[19] With 'earlier adopters' they meant the collection of innovators and early adopters. Because the segment of innovators is often too small for effective targeting and marketing, they thought it was better in some cases to consider those two segments as one group.

children, and situated at an income-level that is higher than average. Apart from this, these five segments differ of course on a lot of other variables. We can summarize it as follows:

The **innovators** for digital television in Flanders are young (mid 30), well educated people, not having much of leisure time (a lot of self-employed people and executives). They describe themselves as active pc-users, and 'heavy readers' of newspapers and magazines. In their spare leisure time they like to go out, and show who they are by their music choice, clothing, and the following of trends.

Within this category we also notice a remarkable share of students, singles and lower incomes (< 900€). The latter isn't that surprising anyway, if we account for the phenomenon of 'credit-buyers'. Also for things as wide-screen TV's, wap, games computers, … we saw that share of lower incomes within the innovators. They may be buying on credit, but by being among the first ones having those technologies, the create a sort of identity.

The monthly amount these innovators are willing to pay for dtv is on average about 30€ But we emphasize that this is an average for the whole segment of innovators. If we leave students (no income) aside this 'willing to pay'-average increases up to 40€ a month. If we only consider the self-employed we even end up with an average of 50€an month.

Besides this, the segment of innovators is also slighty deviating from the 60/40 male/female-distribution. Within these innovators there are proportionally more men (70/30). Concerning media-usage after all, we can consider innovators as a segment of 'heavy sufers' and 'heavy viewers. Daily they surf on average 50 minutes, and watch television for 2 hours a day.

Although the Flemish **early adopters** have a quite similar profile as the innovators, the price they are willing to pay is significantly less: about 22.5€ a month. However, this group is somewhat elder (38 years) and more environment-conscious and social minded when compared to the other segments. With 'social minded' we mean spending more time with family and friends. This segment, with the biggest share of non-married couples living together, surfs the most (over 1 hour a day) and is medium viewer (1 ¾ hours a day). Surfing is something they do as well for leisure-purposes, as for professional purposes.

The **early majority** already has an average age of 40 years and is willing to pay about 20€a month for digital television. It is a segment with significantly more servants, reading a lot of newspapers and using their pc mainly for professional purposes. Socially, they have a 'lower profile' (less social activities and spending less time with friends and family) than the other segments. They are medium surfers (about 45 minutes a day), but they do this mainly for work, not in their leisure time. They watch about 1 ¾ hours tv a day.

The **late majority** wants to pay 15€for digital television and has, except for the bigger share of lower incomes (<900€ and 900-1250€), a similar sociodemographic profile as the early majority (average age also around 40, …). This late majority especially distinguishes itself by their media-usage: they read less newspapers and magazines, but watch a lot of tv (over 2 hours a day). They are less experienced with the internet (30 up to 40 minutes a day).

For the **laggards** after all, the monthly price for dtv can't be more than 7.5 up to 9.5€ a month. It's a higher aged (> 45 years), low-educated segment with a low income. As the late majority, they also show a low media-usage (as well for newspapers as for magazines, internet and television). Although almost everyone has a computer at home, it is seldomly

used by these respondents (decision-makers for new communication technologies). Probably these computers are used by the children.


Programs: packages?

One of the questions that live with those planning to offer digital television, is which packages of programs, or which packages of thematic channels they have to offer. Trying to help answering this question we investigated if there is a connection between our segments and the degree of watching certain genres.

Because this was still an exploratory research, and because we didn't want to fatigue the respondent with a too long questionnaire, the questions on this topic were limited: we only integrated seven genres[20] in our research: we realise this list is far from complete, but it is enough to illustrate that this viewing-behaviour and 'preference of genre' can result in interesting mappings for the different innovation-segments.

One of the things we learn from this, for example, is that all five categories have a more or less substantial interest in 'news and current affairs'. Every segment watches regularly or as much as possible programs of this kind. The fact that we already knew that the early majority was the segment spending most time on reading newspapers, makes it not that surprising that this is also the segment spending most time on watching these news- and current affairs-programs. The laggards on the contrary, appeared to be a segment that spent significantly less time on watching television. But when they do watch television, they mainly watch game shows. And although soaps are not that popular in general, there still is a segment of young people in the beginning of the adoption-curve (innovators, early adopters), with a bigger interest in foreign soaps and fiction.

---

[20] The seven genres: 'game shows', 'movies', 'foreign soaps/fiction', 'Flemisch soap/fiction', 'Documentaries', 'Human Interest', 'News and Current Affairs'

Figure 11: Packages through correspondence analysis.
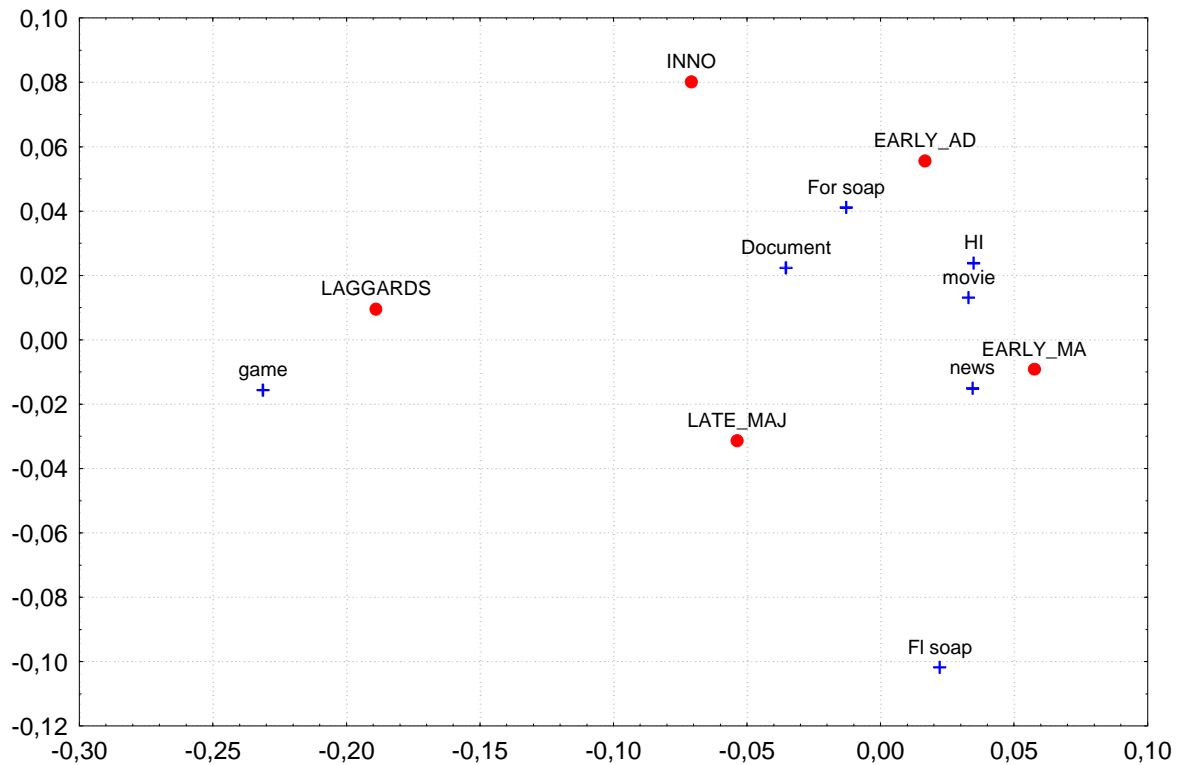
And when we run a factor analysis on these data, we end up with the following three packages ($R^2 = 64.17\%$):

1. News and current affairs + documentaries + Human Interest
2. Movies
3. Soaps + Game shows

The interest in movies is an interest that more or less stands alone. It isn't immediately accompanied by interests in other genres. People that are interested in news and current affairs on the contrary, mainly appear to be interested also in documentaries and human interest. An interest or aversion for soaps goes hand in hand for most people with an interest or aversion for game shows.

This way of working certainly is too incomplete/too less specific to have any value as an input in practice for drawing up a communication-strategy or for 'content packaging', but at least it illustrates such mappings can be interesting 'tools' when they are filled out specifically for concrete needs in practice.

When people can offer a spectrum of 20 channels (some sports channels, some adventure- or nature channel as National Geographic or TravelChannel, some lifestyle-channels, some genre-specified movie channels, …) and they asked themselves which are the best formulas in order to obtain a good adoption, such mappings can be extremely valuable. If the five innovation-segments are plotted on these 20 channels (based on the content-interest of the segments), people are able to create packages in an often more effective way then used to do, and they also know what to communicate to what segments. If we would, for example, know
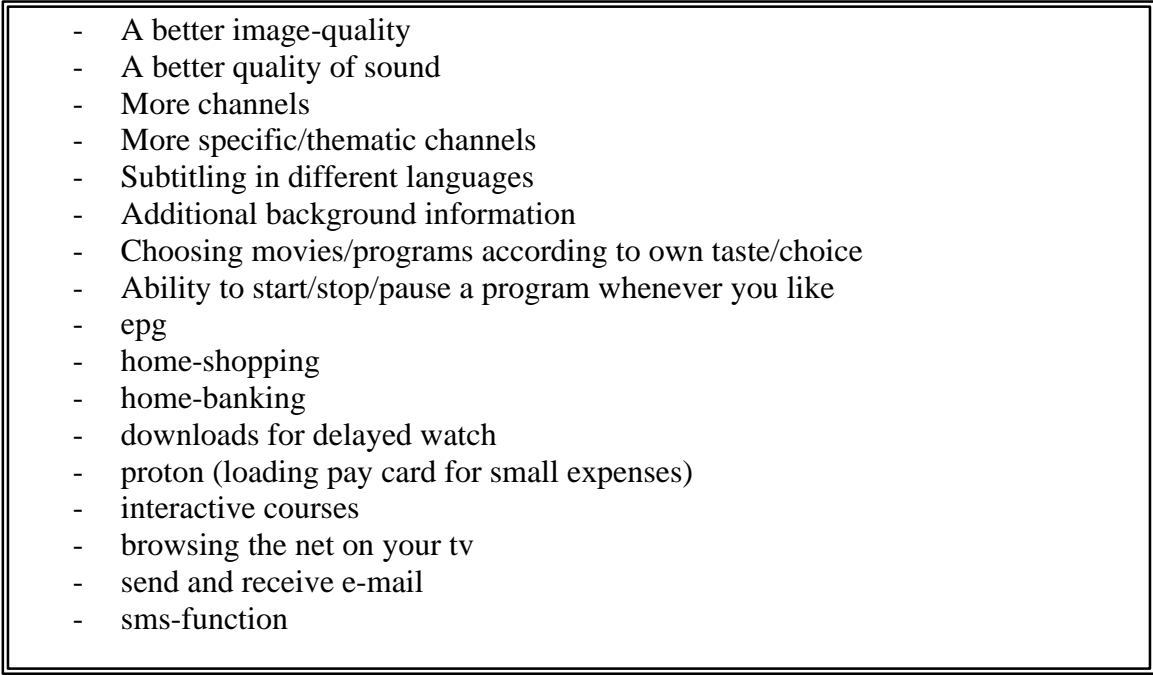
that an early adopter is someone with a great interest in environment, classical music and film noir, he can be offered a tailor-made package. If we also would know in addition, that this same early adopter is willing to pay 30€ a month for digital television, this can result in offering a package containing only two 'nature-channels', two 'classic music-channels' and a film noir-channel. The supplier may then be having more 'nature'- and 'classic music'-channels in his spectrum, he can decide not including them in the offered package because that would increase the monthly fee up to 35€ a month (and that's more than they are willing to pay, which can slow down adoption). In this way, tailor-made packages can be created, with which the segments can be targeted at the right price.

Interest in applications

In order not to keep the adoption limited to that small segment of innovators, and to get digital television adopted by the biggest possible share of the market, it is very crucial to have a thorough insight in the interest these innovation-segments have in the several dtv-applications. Based on this information there can be offered more than just a 'tailor-made product'. We also know what has (and what can't) to be emphasized in communications. Also in the search for so-called 'killer-applications' it seems useful to know in which applications the global market is more or less interested, and in which the interest is more segment-concentrated.

Therefore, the respondent was informed (in the introductory text and the discussion with the interviewer) on a compilation of possible dtv-applications. They had to evaluate 17 applications or features, indicating how interesting each one of them seems to them.

Figure 12: The 17 dtv-applications the respondents had to evaluate

- A better image-quality
- A better quality of sound
- More channels
- More specific/thematic channels
- Subtitling in different languages
- Additional background information
- Choosing movies/programs according to own taste/choice
- Ability to start/stop/pause a program whenever you like
- epg
- home-shopping
- home-banking
- downloads for delayed watch
- proton (loading pay card for small expenses)
- interactive courses
- browsing the net on your tv
- send and receive e-mail
- sms-function

Again a list which is far from complete, but that has never been our purpose. The basic aim of this list of applications, is illustrating that there is a difference in interest in applications between the innovation-segments, and how knowledge of these differences can be used to draw up a strategy of introduction for digital television.

Figure 13: Interest in dtv-applications (segments based on. PSI-scale)
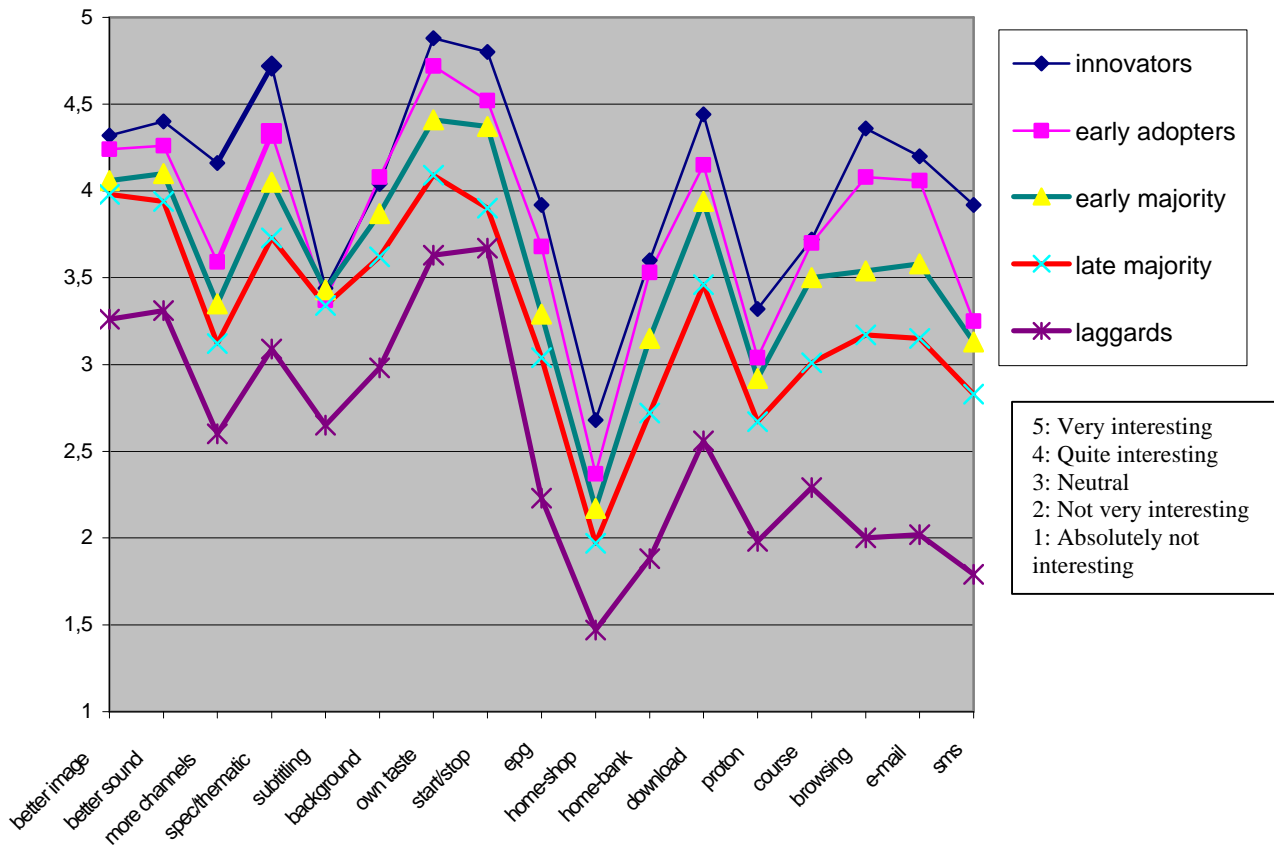
In the figure above we see the interests of our five product-specific innovation-segments in the 17 dtv-applications. It immediately strikes that there are clear, significant differences between the different segments. The five 'interest-lines' of the innovation-segments run more or less parallel, and in a logical sequence. With logical we mean that the interest in the applications decreases, when we go more to the rear of the adoption curve. Innovators are practically for all applications the most interested ones; early adopters are generally less, but still, quite interested, … , and laggards are the least interested ones. Kruskal-Wallis, as well as Anova-tests yield significant differences between the five segments. Except for subtitling (significant at the 0.05-level), all differences are significant at the 0.01-level.

For one application, the difference in interest is more pronounced than for the other. If we take 'better quality of sound and image' for instance, there are no significant differences in interest between the first four innovation-categories. Only the laggards are significantly less interested in these applications, when compared to the other four segments. Except for 'additional background information', subtitling in different languages' and 'interactive courses', innovators are always more interested than the early majority, but the difference in interest between these two segments is never big enough to be significant. For some, as Rogers and Schoemaker (Watkins, 1985), these findings would be an argument to consider

innovators and early majority as one group. Rogers and Schoemaker emphasize the importance of the innovators however in the marketing-proces, but argue that this segment is often too small to concentrate marketing-efforts on it effectively. Because of that, they propose to treat these groups as one, namely the 'earlier adopters'. Obviously, also in our case the innovators are the smallest segment (4%), but 4% of the Flemish household, in our opinion, isn't that small to be considered as negligible. If we could have a profound insight in this 4%, if we could map how to reach them and what drives them, it may be better after all to consider them apart from the early adopters.

If we do considers them as one group, the 'earlier adopters', we find significant differences (p < 0.05) on applications as 'Choosing movies/programs according to own taste/choice', 'epg', 'browsing the net on your tv' and 'send and receive e-mail', when we compare them with the rest of the market. These are mainly applications that are internet-linked, or supposing at least a certain level of interactivity. Therefore it may be not that surprising that it are exactly the segments that have most internet-experience, showing a significant bigger interest in these applications.

For other applications we are more inclined to make the dichotomy 'innovators + early adopters + early majority' on the one side and 'late majority + laggards' on the other side. One of these applications for example is 'the possibility to ask for additional background information' with certain programs (news, journal, ..). If we link this to our general profiles of the segments, it certainly isn't an odd finding that we don't find a significant difference between earlier adopters and early majority here. These latter appeared namely to be segments with a big interest for 'news and current affairs'.

In this way we can go further for a while with describing differences and searching for reasons explaining those differences. But the fact if these differences are significant or not, is not the only thing we have to pay attention to; we also need to look for the actual degree of interest that is show in the applications. We may be finding significant differences between the interests in a certain application, finding out that the degree of interest of all five segments lies between 'neutral' and ' absolutely not interesting'. Not really an application to consider as a killer-application. On the other hand there can be applications for which there haven't been found significant differences in interest, because all segments are equally (but very) interested. Which makes it a very interesting application.

If we take the value 4 (= quite interesting) as a cut-off, we have not one application interesting enough for the laggards. Only the interest in 'being able to choose movies or programs according to your own taste/choice' and 'being able to start/stop/pause programs when you want to' come near to that 4, and appeals to them to a limited degree (evaluation between neutral and quite interesting). For innovators on the other hand, there are only seven applications (subtitling, epg, home-shopping, home-banking, sms, interactive courses, and loading pay card) for which the interest isn't that big. The non-interest is most pronounced for the home-shopping-application. A lack of interest that is found with all five segments.

PSI more specific?

One of the main starting points to develop a scale to measure the 'product specific innovativeness', was a kind of unhappiness with the existing scales. Unhappiness, because those other scales weren't specific enough; they weren't able to make a clear distinction between the different innovation-segments for a specific technology.

By means of a crosstab (cf. supra) in which we crossed the five DSI-innovation-segments with the five PSI-innovation-segments, we already showed that both methods didn't give the same results. We also assumed that the PSI-segmentation was a more product-specific result. The following figure illustrates this.

Figure 14: Interest in dtv-applications (segments based on DSI-scale)
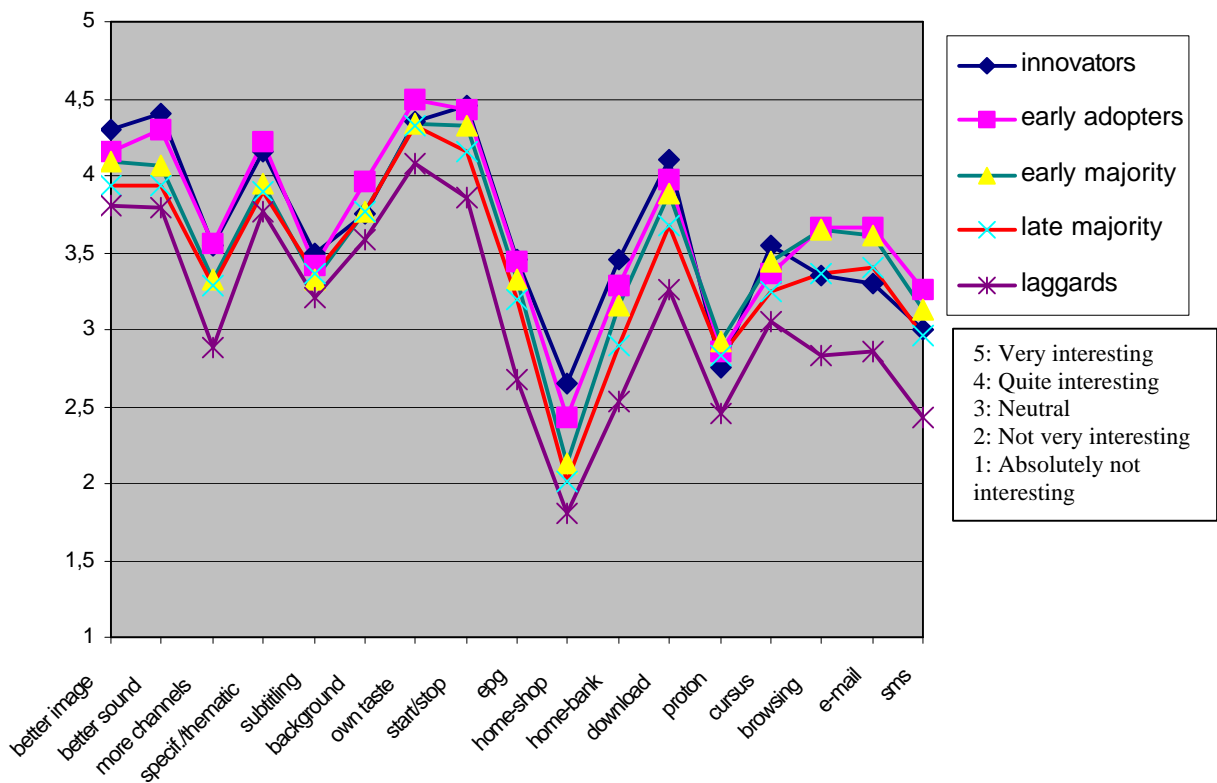
As described earlier, the DSI-scale consists of six items, and results in a total score between 6 and 30. By using the percentiles (cutoffs on 3rd, 16th, 50th and the 84th percentile) to split up these total scores, we also end up with five innovation segments (for the domain, and not for the product). If we map the interests of these segments in the same way as we did for the PSI-segments, it immediately strikes that we end up with a less clear, and more blurred graph. The distinction between the interests of the different segments is far less clearer (there are also not much significant differences left) and less logical than in the PSI-case. There's practically no application left in which the innovators appear to be significantly more interested. As a consequence it wouldn't very logical to call this the most innovative segment for digital television. It is even an indication of what we posed earlier in this paper: an innovator for the domain isn't necessarily an innovator for every product within that domain.

Figure 15: dsi-innovation-segments x media-possession : correspondence analysis.
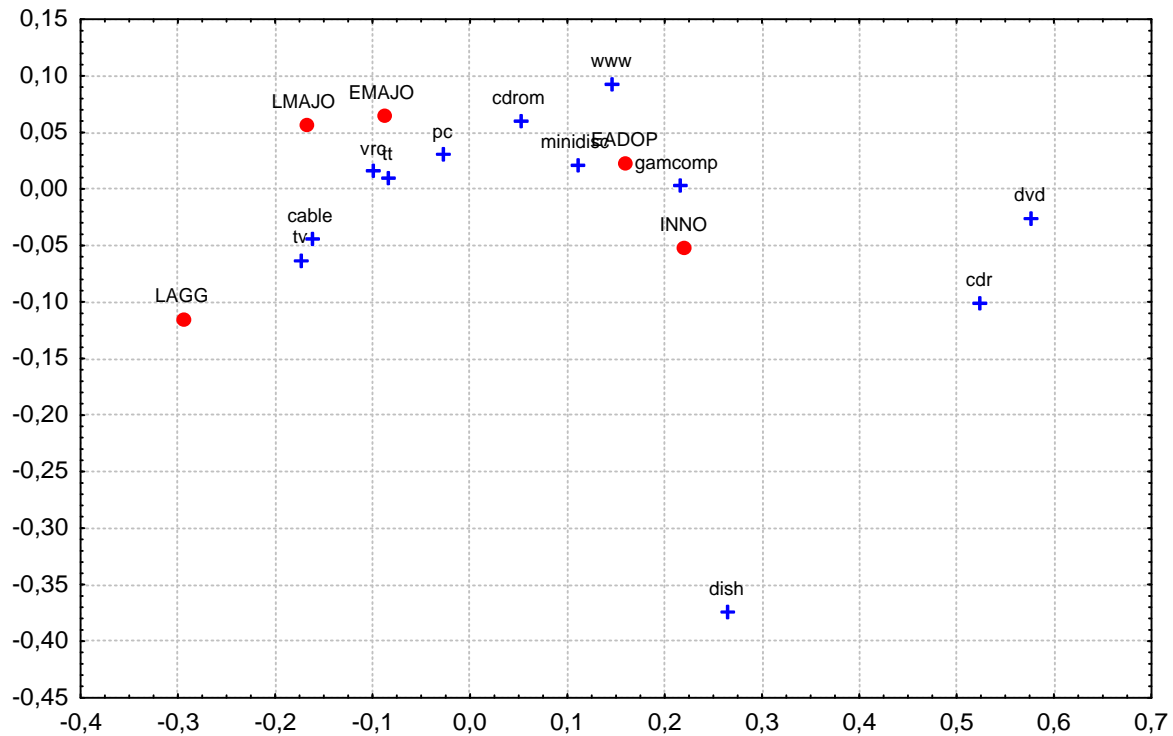
The innovators indicated by the dsi-scale, will probably be indeed be an innovator for a lot of other technologies within that domain (games computer, minidisc, dvd, cdr, dish, …), but they don't seem to be in the front of the row when it comes to digital television. Shortly, an innovator for a certain domain isn't equally innovative for every product within that domain. In the figure above we see this illustrated. Along the X-axis we see the five innovationsegments (based on DSI): from the left to the right we first have the laggards for the domain ict, and we end with the most innovative group for ict, the innovator. On top of this, we have plotted a series of media (technologies) which these segments have (or haven't) in their possession. In this way, we can see a group of 'common property media' (tv, cable, vcr, pc teletext); media that are in the possession of almost everyone. Apart from that we also see a group of technologies (internet, minidisk, games computers, cdr, dvd, dish) located nearer to the first segments of our adoptioncurve. So, the most innovative segments for the domain ict (also defined as new communication technologies), are people possessing relatively more dvd, minidisc, cdr, games computers, … . They distinguish themselves by the possession of these 'real' new technologies (not the common technologies as tv or vcr), which partly validates this global split-up or innovationsegmentation (based on DSI-scale). But at the same time we see that these domain-innovators and –early adopters are more innovative for one technology than for another. And for digital television, they seem less innovative.

Killer applications?

So, what we needed was a more product-specific measurement-tool, and with the PSI-scale we hope to have partly fulfilled that need. Based on this PSI-scale we ended up with five innovation-segments for digital television, of which we drew up profiles, and of which we more or less know who they are, and in which applications they are/aren't interested.

Theory and experience with introductions of innovations in the past learned us that it is actually not that important for a group of innovators, in which form a new technology is offered. They adopt the innovation anyway, simply because it is new, and they want to be among the first ones to have it. This implies that we don't necessarily have to search specifically for killer-applications to obtain adoption by the innovators. If the product is offered now in its most sophisticated form (most interesting for them, with a lot of applications), or in a more basic, and less interesting for them, form, they will adopt anyway, and they will pay for it anyway. Simply because it is new, and they must have it. The most critical stadium is what Moore called 'the chasm', the gap between the 'earlier adopters' and the mass market that needs to be bridged. And especially for this stadium good killer-applications will be needed. We don't have to watch out only for what is interesting for innovators, but also, and even more, for what is interesting for the early adopters, the early and the late majority.

If we would only account for this 'interest'-fact, dtv shouldn't be offered at all to the laggards, because not one application appears to be interesting for them. And innovators on the other hand should be offered all applications (except maybe for subtitling, epg, home-shopping and home-banking, loading pay card, and interactive courses). Towards early adopters the only things that can be emphasized would be better quality of images and sound, more specific channels, the possibility to choose, according to your own taste, and the possibility to start/stop when you want to do that. But wouldn't it be naïve to account only for the degree up to which the different segments find the several applications interesting? It's obvious that we have to offer the consumer something that appeals to him (not always the case in practice), but as a supplier/producer you also need to be sure that the consumer is willing to pay for what is offered to him. So, we certainly have to account for the degree up to which the consumer is interested in an application, but also, if an (increased) interest goes accompanied with a willingness to pay more (a greater monthly fee) for it.

If we account for both of these, we see, for example, that innovators, and to a lesser degree also early adopters, do consider browsing the www on their television and sending and receiving e-mail on that same television, as interesting applications, but that they are not willing to pay for it. They find these applications interesting, but they won't adopt them. Why's that? Probably they are segments, already surfing, browsing and e-mailing a lot on their pc (as well at home as at work) yet. They are so used to it that way, and they can't imagine themselves using such a thing as a 'multimedia-terminal' in their living-room. PC and TV remain separated worlds for them (for the moment). They will keep doing the things they were used to do on their pc, on that same pc. TV serves other purposes to them.

Other things we learn, if we link 'the interest in applications' to 'the price they are willing to pay' are:

- From the early majority onwards (late majority, laggards) people only want to pay more for a set of basic-applications: more specific/thematic channels, epg, the possibility to start/stop a movie or programme when you want to do that, and a better quality of sound.
- For what concerns the application of home-shopping through television (t-commerce), we can say that it was clearly considered as the least interesting application. Even the interest of the innovators and the early adopters in it was located somewhere between 'neutral' and 'not very interested'. Nevertheless we found a subsegment within the early adopters; showing interest in this home-

shopping-application, and also willing to pay for that application. We are talking about recently married couples or couples living together, already having some kind of experience with e-commerce or other forms of interactive buying behaviour (mail order, …).

- When we compare this to the application 'possibility to ask for additional background information with some programmes' we notice that the general interest of all segments is already a bit higher. Despite the facts that there are a lot of applications people find more interesting, and there isn't much difference in the degree up to which the first four segments find this application interesting, this can be a killer-application. We already know namely that these four segments are all very interested in news and current affairs: a perfect genre to link to the background information-application. If this linkage can be made, and also communicated, this certainly is an application with the potential of appealing to the greater part of the mass market.

- Just as with home-shopping, the interest in the proton-application (loading pay card for small expenses) was relatively low. Servants (mainly located in the early majority) and students however, do find this an interesting application, and also want to pay a higher monthly fee for it. Apart from profession, we also see that singles are significantly more interested in this application than people with a relation.

- Students are also very interested in, and willing to pay for the epg-application. For workers on the other hand the emphasis will have to be on better quality of images and sound, to get them investing in digital television. Of the self-employed we already knew they were willing to pay over 50€ a month for digital television. This mainly appears to be for the applications 'browsing the web through your television'.

- Males easily pay more for more (specific/thematic) channels, while females are more inclined to pay more for applications as sms, browsing, proton, and e-mail.

- …

Bowling Pin Model for digital television in Flanders?

By drawing up profiles of productspecific innovation-segments for digital televisions, and by mapping their interests in the different applications, we already collected a lot of information which can be very valuable for taking 'better marketing- and targeting decisions'.

Concerning the best way to implement all this information in order to obtain the most efficient marketing-strategy possible, there still is a broad discussion margin. In our opinion, is Geoffrey Moores 'Bowling Pin Model'-reasoning the best way to do this. After all, it is something new that is being brought on the market, which makes it obvious that not everyone is immediately ready to buy it. This certainly pleads for a strategy of gradually introducing the product, a strategy in which the innovation can roll into the market as a matter of speaking (instead of immediately confronting the market with the total product, and running the risk that a large share gets frightened by the 'new unknown product ' and the overwhelming strategy, implying these customers are lost), and in which the initially less interested segments have the chance to get used to the new product. And since the underlying idea of this Bowling Pin Model implies such a gradual approach of the market, it seems an ideal strategy to us. This makes that a possible plan of communications could be as follows:

Figure 16: BPM for digital televison in Flanders
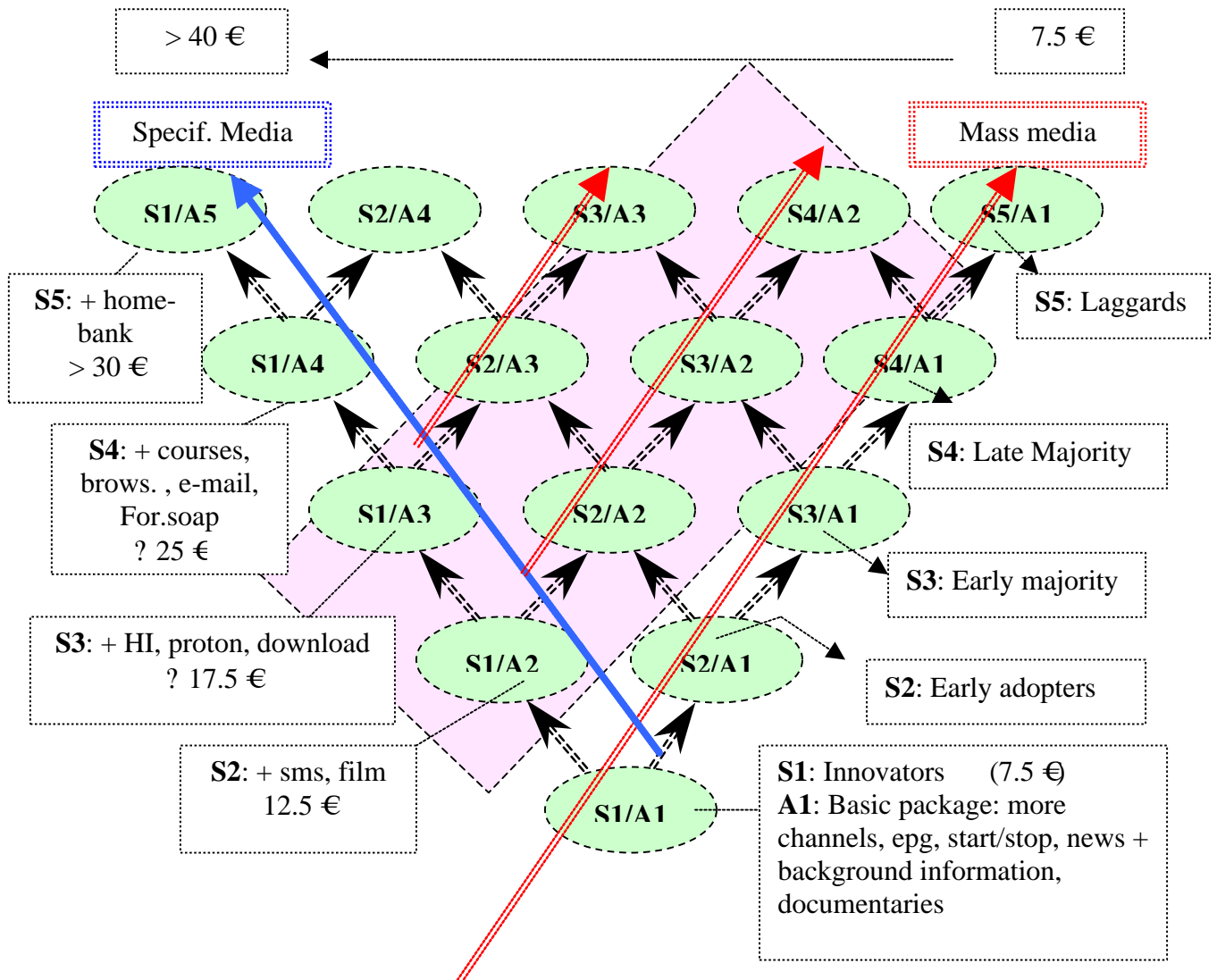
There can for example be chosen to start offering the market a basic package, for a price of 7.5 €up to 10 €a month. This package contains applications as a epg, the possibility to start and stop programmes when you like to, and the possibility to ask for additional background information with news, journal and current affairs-programmes. Besides the content-focus on news and current affairs, also the documentary-genre can be included in the basic package. These are the things that appeal to almost the entire market[21], and deserves the emphasis in the initial mass-medial campaign. Also the emphasis on 'more channels' can't be excluded from this campaign. This initial mass media campaign is illustrated by the long dotted line at the right pointing to the right upper corner, and going from S1 to S5. By choosing for the mass medial path in this stadium of offering the basic package A1 we can't do much wrong. Practically the whole market is more or less interested in it, and the price isn't higher than the price the least interested segment (laggards) is willing to pay for it. Also to get everybody acquainted with this new unknown product, the mass media are the best channel to choose in this initial stadium.

---

[21] Not only the innovators are interested in it, but also the rest of the market, by which the package has a bigger chance to get adopted by a larger share of the market.

By starting to offer such a basic package (of which we know the greater part of the market is interested in it and willing to pay for it), to market is also given some time to get familiar with the new concept of digital television. Time to get used to the fact that the 'traditional event of watching tv' is accompanied from now on with a certain degree of interactivity and a certain degree of controlling what's on your screen. There where a lot of people would immediately give up, if they would be offered immediately 'the total package' (at the full price, too expensive for a lot of people, and with all of its applications, a lot of them not interesting enough for a lot of people), they have the time now to learn to appreciate the dtv-concept. By having this time, there's also more time available to become ready, and to get them ready for more interactivity and more sophisticated applications (which they initially weren't interested in). Things as sms-applications, the possibility to send and receive e-mails, VOD, … will be better offered some later for this reason. Once the sales of this basic package begin to roll, or once the pins on the right side of the bowling game begin to fall (copy-behaviour ![22]), people can start offering more sophisticated applications (A2, A3, A4, …).

By using a targeted communication (full line pointed towards the left upper corner) towards these innovators and early adopters (we know their specific media-usage, and in the meanwhile we can also reach them by dtv, because they already adopted it for the basic package A1), we make these segments warm for additional dtv-applications (implying also higher monthly fees). In a first expansion-stadium of the product, people can start offering an sms-application and a movie-channel/VOD-application (Application 2). In a next stadium Application 3 can be offered: reloading-possibility for pay card and download-applications, enz; … . For application 2 and at the price for A1+A2 (about 17.5€ a month) we know that there is still a big potential in the market: we only assume the laggards not being interested anymore, which still leaves 93.1% of the market as a potential customer (100% - 6.9% laggards) for A2. Also for application 3, we think there's still a broad interest (and willingness to pay): innovators + early adopters and early majority (together 64.9% of the market). Once the innovators and early adopters have become aware of, and familiar with the new additional applications through the specific targeted communication towards this segments, there's a big chance these very innovative segments will adopt the product. Once they adopted it, the emphasis in the mass medial campaign (dotted lines pointed to the upper right corner) can change. Once the innovators (S1) have adopted the second application A2, they have to be copied by the rest of the market. We know that the potential for copying the use of this application is big (93.1%), thus we don't run big risks to change the emphasis in the mass medial campaign (instead of only promoting the basic package, the emphasis also comes to lie on sms and VOD). The same goes for A3, also an application still appealing to a large part of the market (64.9%): once the specific segment-targeted communication has done its work and the innovators have adopted this application, this application can also be included in the mass medial campaign. By offering this applications a bit later (not immediately at the introduction), and by working initially with targeted communication towards S1 (and S2), and only afterwards communicating and promoting through mass medial channels towards the whole market, we give the necessary copying behaviour more time and a bigger chance. This also reduces the odds on overwhelming and frightening 'initially less interested segments'. We even account for the fact that some habituation to a new concept is needed, if we want people to take the step to adoption.

---

[22] We have a big chance this copy-behaviour will take place, because it's the use of a package in which they are interested, they have to copy

First the basic package thus, which is promoted through the mass media, and afterwards, additional (and more sophisticated) applications are promoted. An additional offer, going hand in hand with a gradual increase of the subscription rate. An additional offer, initially promoted by targeted (segment-tailored) communication, and only afterwards through the mass medial campaigns. This communicationstrategy of 'first targeted, secondly mass media' is only useful to promote additional applications that have a relatively big potential. This 'first targeted, secondly mass media'-strategy is illustrated in figure 16 by the coloured rectangle. At the right of this area communications can be done through the mass media. At the left of this area mass media won't be useful anymore because the interest isn't that big anymore. S4 and S5 only appeal to the innovators and early adopters: a market share that is too small to approach through the mass media. So, at the left of this area we only use specific media (specific targeted). Within this area a combination of specific and mass media is used. So, as soon as the interest in the additional applications is limited to the innovators and early adopters (for A4 and A5 this is the case), we only use a specifically targeted strategy of communications anymore. A4 and A5 are also the applications that will need most persuasive power to get them adopted. Vague mass medial messages won't be sufficient anymore here, which makes a strategy of specifically segment-tailored communication[23], the best way to take. A strategy in which we can go deeper into things, and in which we can also situate the applications and their use, within the lifestyle of those segments.

In this way, we reach the whole market just as much with the total product (with al its applications), with that difference that not all applications were offered from the start and to everybody, but only to those that were interested in it and also willing to pay for it. This results in different packages and different forms of subscriptions on digital television within a price range of 7.5 €up to more than 40 €a month.

---

[23] This strategy of only using specific targeting doesn't only have to be used to promote A4 and A5 towards innovators and early adopters. It can also be used to promote other applications with a specific segment-related interest: for example to promote home-shopping towards those young couples within the early adopters, or to promote proton to students.

Bibliografie:

- CARTER, J. (1998). Why settle for 'early adopters'?, *Admap*, Vol. 33 (3):41-44.
- JACKSON, T. (2001-01-19). Wap-gsm: de Betamax van de telefoons. *The Financial Times.*
- VAN DER LUGT, H. (2001-08-23). Twijfels over succes DoCoMo's derde generatie mobiele telefoons. *De Standaard*: 22.
- ALBERS, I. (2001-06-16). De toekomst na de zeepbel voor E-België. *De Standaard*: 24.
- ALBERS, I. (2001-02-22). Na de UMTS-licenties, op zoek naar toepassingen. *De Standaard*.
- NIELSEN NORMAN GROUP REPORT (2000), Wap-usability report (December 2000).
- (a)THOMSON, S. (2001). Free interaction. *Cable and Satellite Europe,* June 2001: 2.
- (b)THOMSON, S. (2001)., Lifting the gloom. *Cable and Satellite Europe,* July/August 2001: 2.
- (c) THOMSON, S. (2001). The need for speed. Will cable modems take off in Europe?, *Cable and Satellite Europe,* February 2001: 9-16.
- GIESEN, P. (2001-07-02), De val van digitale televisie, *De Morgen*: 22.
- SUTHERLAND, F. (1999). Remote overload: Too much too soon?, *Cable and Satellite Europe,* July 1999: 46-49.
- ROGERS, E.M. (1995). *Diffusion of innovations* (4th ed.), The Free Press, New York.
- HAWKES, R. (2001). Net Worth, *Cable and Satellite Europe,* Vol. 36 (5): 16-22.
- (a) MOORE, G.A. (1999). *Inside the tornado.* HarperCollins, New York.
- FLAHERTY, N. (2001). TV gets personal, *Cable and Satellite Europe*, June 2001:10-16.
- WATTS, R.J.; PORTER, A.L. (1997). Innovation forecasting, *Technological forecasting and social change*, 56: 25-47.
- BEARDEN, W.O., NETEMEYER, R.G., MOBLEY, M.F.(1993). *Handbook of Marketing Scales. Multi-item measures for marketing and consumer behavior research.* Sage Publications, New York.
- FLYNN, L.R., GOLDSMITH, R.E., A validation of the Goldsmith and Hofacker innovativeness scale, *Educational & Psychological Measurement.* Vol. 53 (4).
- PARASURAMAN, A., COLBY, C.L. (2001-11-07), Technology Readiness, *http://www.rockresearch.com/Technology_Readiness/tq01b/tq01b.html* ?www-document?.
- (b) MOORE, Crossing the chasm
- STOTER, A.(1997). *De communicerende organisatie. Communicatie in relatie tot organisatieverandering*, Utrecht, Uitgeverij Lemma.
- WATKINS, T. (1985). *The Economics of the Brand.*, McGraw-Hill.