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Find the innovator. Identifying and understanding adopters of innovative consumer technologies in Flanders

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RESEARCH REPORT

FIND THE INNOVATOR

Identifying and understanding adopters
of innovative consumer technologies in Flanders

Marion Debruyne
Bert Weijters

December 2007

FLANDERS DISTRICT OF CREATIVITY

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Creativity is the key ingredient in making companies more successful and in helping regional governments ensure a healthy economy with more jobs. Flanders DC inspires creativity and innovation:

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2. by igniting **creative sparks** in everyday life and business, and
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November 15-16, 2006 - Ghent, Belgium



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- **Ondernemen.meerdan.ondernemen**, an online learning platform
- **Creativity Class** for young high-potentials
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EXECUTIVE SUMMARY

This report discusses the findings of a study conducted by the Flanders DC Knowledge Centre, entitled 'Find the innovator. Identifying and understanding adopters of innovative consumer technologies in Flanders'. The study investigates the extent of the Flemish population's innovativeness and endeavours to discover the profile of the most innovative and least innovative individuals. To do this, an online panel was queried at three different times about the consumer electronics products they own.

A central issue in the study is the appropriate way to measure consumer innovativeness. Innovativeness has been conceptualized as either 'dispositional innovativeness' or 'actualized innovativeness'. Dispositional innovativeness refers to the personal trait of being interested in new products. It is a stable personality characteristic. Actualized innovativeness measures the extent to which consumers have actually bought new products. The results confirm that dispositional innovativeness has a positive relationship to actualized innovativeness. A much stronger predictor of new product adoption, however, is interest in the product category. This means that, without the prior underlying interest in the product category, even an innovative consumer is much less likely to buy new products early on in the product life cycle. Therefore, when measuring innovativeness, it is better to look at actualized innovativeness, since behaviour stemming from dispositional innovativeness is context-dependent.

This study also reports some results on the demographic profile of the consumer and the extent to which this relates to the adoption of new consumer electronics. More innovative consumers are younger, male, highly educated and have a higher income. Products with the highest penetration rates overall are digital cameras, broadband Internet connections, USB memory sticks, text messaging, MP3 players and digital photo albums.

Since *interest in the product category* and *dispositional innovativeness* are the strongest predictors of actualized innovativeness, we have used these two variables to arrive at a segmentation. Four different segments can be identified: Cautious Buffs (30% of the population), Innovative Buffs (24% of the population), General Innovators (28% of the population), and Laggards (17% of the population). Innovative Buffs are the first to target with a new consumer technology. This segment consists mainly of younger men and is very accessible through marketing communication efforts via cinema, magazines and the Internet. Given their high interest and high innovativeness, 'newness' as such can be used as a sales argument to this segment. The second segment to target is the Cautious Buffs segment, since they are the second fastest in adopting new technologies. Technical information is acceptable for this segment, but it is not recommended to focus on newness or to create hype. Cautious Buffs are mostly men, but they are above the average age of 35. The third segment in terms of actual adoption levels is the General Innovator segment. This segment consists mainly of women and the age of the segment is below average (who are under 35 years of age). The Laggards are the slowest in adopting new technologies. This segment is older than the population average and is also predominantly female. They only adopt technologies when these become very generally accepted. When targeting this segment, it seems advisable not to focus on technical information or on newness, but rather to position the product as simple and reliable.

MANAGEMENT SAMENVATTING

Dit rapport bespreekt de bevindingen van een studie van het Flanders DC Kenniscentrum, getiteld "Find the innovator. Identifying and understanding adopters of innovative consumer technologies in Flanders". De doelstelling van deze studie is om de mate van innovativiteit van de Vlaamse bevolking te onderzoeken en het profiel van de meest innovatieve en minst innovatieve personen te ontdekken. Om dit te doen is een online panel op drie verschillende momenten ondervraagd over de consumenten-elektronica producten die ze bezitten.

Een centraal probleem in deze studie is de geschikte manier om consumenten-innovativiteit te meten. Innovativiteit werd geconceptualiseerd als enerzijds "dispositie-innovativiteit" en anderzijds "geactualiseerde innovativiteit". Dispositie-innovativiteit refereert naar de persoonlijke eigenschap om geïnteresseerd te zijn in nieuwe producten. Het is een stabiel persoonlijkheidskenmerk. Geactualiseerde innovativiteit meet de mate waarin een consument ook werkelijk nieuwe producten heeft aangekocht. De resultaten confirmeren dat dispositie-innovativiteit zich positief verhoudt tot geactualiseerde innovativiteit. Een veel sterkere predictor van de adoptie van nieuwe producten is echter de interesse die een consument heeft in een bepaalde productcategorie. Dit betekent dat zonder onderliggende interesse in de productcategorie een consument, ook al is die innoverend qua karakter, veel minder geneigd is om nieuwe producten in een vroeg stadium van hun product-levenscyclus te kopen. Aangezien het effect van dispositie-innovativiteit context-afhankelijk is, is het dus beter om te kijken naar geactualiseerde innovativiteit.

Deze studie rapporteert ook resultaten i.v.m. het demografisch profiel van de consument en de mate waarin dit gerelateerd is aan de adoptie van nieuwe producten. Meer innovatieve consumenten zijn jonger, eerder mannelijk, hoger opgeleid en hebben een hoger inkomen. Producten met de hoogste penetratiegraad zijn de digitale fotocamera, breedband internet connectie, de USB geheugenstick, SMS, de MP3 speler en het digitale foto-album.

Aangezien interesse in de productcategorie en dispositie-innovativiteit de sterkste voorspellende kracht hebben voor wat betreft geactualiseerde innovativiteit gebruiken we deze twee variabelen verder om tot een segmentatie te komen. Vier segmenten worden geïdentificeerd: Voorzichtige Fanaten (30% van de populatie), Innovatieve Fanaten (24% van de populatie), Algemene Innovatoren (28% van de populatie) en Laatkomers (17% van de populatie). Innovatieve Fanaten zijn de eerste doelgroep om zich op te richten met een nieuwe technologie. Dit segment bestaat uit voornamelijk jongere mannen en is best bereikbaar via communicatiekanalen zoals de bioscoop, tijdschriften en internet. Gezien hun hoge interesse en innovativiteit kan nieuwheid bij hen gebruikt worden als argument. Het tweede segment zijn de Voorzichtige Fanaten. Dit is het tweede snelste segment in het adopteren van nieuwe producten. Technische informatie is acceptabel voor dit segment, maar het is niet aangewezen om te focussen op nieuwheid of om een hype te creëren. Voorzichtige Fanaten zijn voornamelijk mannen maar ze zijn ouder dan gemiddeld. Het derde segment is dat van de Algemene Innovatoren. Dit segment bestaat uit voornamelijk vrouwen en de leeftijd van dit segment is beneden het gemiddelde. De laatkomers tenslotte zijn het traagst in het accepteren van nieuwe technologie. Het profiel van dit segment is ouder dan gemiddeld en is ook overwegend vrouwelijk. Laatkomers adopteren slechts nieuwe technologie op het moment dat deze werkelijk zeer ingeburgerd geraken. Om dit segment te bereiken is het aangewezen om niet te focussen op nieuwheid of op technische informatie, maar om het product te positioneren als eenvoudig en betrouwbaar.

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INTRODUCTION

This report discusses the findings of a study conducted by the Flanders DC Knowledge Centre, entitled 'Find the innovator. Identifying and understanding adopters of innovative consumer technologies in Flanders'. First, the methodology is explained, followed by a short description of the sample and the measures used. Then, the findings concerning consumer innovativeness and the adoption of consumer electronics are reported.

Methodology

Data collection occurred in three periods: July 2006, January 2007 and July 2007. At T1 (= July 2006), 2501 people were recruited from an online panel to participate in the study. At T2 (=January 2007), these same people were asked to participate again. 1447 people complied, which represents 57.8% of the original sample. At the same time, 201 new panelists were recruited to serve as a control sample. At T3 (=July 2007), the remaining participants were approached again to participate in the study, and 891 cooperated. Thus, the final sample represents 35.6% of the original sample. Again at T3, 200 new panelists were recruited to serve as a control sample.

Using an online panel for data collection provides a couple of key advantages. First, it allows for fast data collection, so that adoption rates will not vary substantially during one data collection wave. Second, it enables repeated measurements with the same respondents while minimizing attrition. Finally, previous research on adoption of consumer electronics has found minimal differences among surveys whose samples were generated through a random walk, by telephone, through the mail, or via online communication (Schillewaert et al., 2006).

Figure 1: Data collection overview

T1 = July 2006	T2 = January 2007	T3 = July 2007
Sample 1 (N=2501)	Sample 1 (N= 1447)	Sample 1 (N=891)
	Attrition T2 (N=1054)	Attrition T3 (N=556)
	Control Sample 1 (N=201)	Attrition T2 (N=1054)
		Control Sample 2 (N=200)

At all three measurement moments, respondents were asked whether they owned and used any of 31 consumer electronics products. The list of products was compiled by the research team and checked for completeness by a team of industry experts. Appendix 2 contains the list of products with their descriptions as they were provided to the respondents. At T1, a list of personal characteristics was also measured (since these remain stable over time, a second measurement was not necessary).

Sample

In the sample, we strove to represent the Flemish population by age and gender. However, this could only be controlled at T1 – at T2 and T3, the sample depended on the willingness of the people to participate again.

Table 1 shows the sample make-up by gender in all 3 time periods.

Table 1: Sample by gender

Gender	T1	T2	T3
Male	49.8%	50.6%	50.0%
Female	50.2%	49.4%	50.0%

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Table 2 shows the sample make-up by age categories in all 3 time periods.

Table 2: Sample by age

Age	T1	T2	T3
18-24	11.2%	13.6%	9.0%
25-34	20.5%	21.2%	20.0%
35-44	24.3%	25.1%	23.1%
45-54	25.4%	23.1%	27.4%
55-64	18.6%	17.0%	20.5%

HOW TO MEASURE CONSUMER INNOVATIVENESS?

When an innovation is brought to market, not all potential buyers actually purchase the product (or service) right away. Diffusion of innovations is a process that starts slowly, after which a period of stronger growth usually occurs (Golder and Tellis, 1997, 2004).

It is common in adoption research to segment consumers in adoption groups based on an *a priori* segmentation of the normal distribution characterizing the diffusion process. Although for most innovations, part of the population does not adopt, non-adopters are often not part of the segmentation. In this methodology (Rogers, 1962), the 2.5% earliest adopters are labelled 'innovators', the next 13.5% 'early adopters', followed by 'early majority' (34%), 'late majority' (34%), and 'laggards' (16%). A central proposition is that these adopter segments differ not only in their relative time of adoption but also in their characteristics (socio-demographic, personality, etc.). The theory is that the difference in these characteristics determines the difference in (time of) adoption.

For some consumers – labelled 'innovators' – adoption is mainly inspired by sources outside their direct social environment, mostly media or foreign markets, while for others – labelled 'imitators' – adoption is mainly influenced by information from within their social environment – that is, information coming from either innovators or imitators who have already adopted. This distinction between innovators and imitators is the key assumption of Bass' (1969) model of diffusion (Tanny and Derzko, 1988), and it carries important implications for marketing theory and practice. Based on this conceptualization of the diffusion of innovations, the following three variables are of key importance in understanding consumers' (time of) adoption (Steenkamp and Gielens 2003): (1) *dispositional consumer innovativeness* determines the extent to which consumers prefer innovations over known alternatives; (2) *market mavenism* determines the extent to which innovators and early imitators spread word-of-mouth information throughout their social environment; (3) *susceptibility to normative influence* determines the extent to which later imitators are receptive to the latter source of information. We'll now elaborate on these variables, and then we'll introduce two additional variables that are specific to a particular product category (i.e., consumer electronics).

Dispositional consumer innovativeness

It has been found that there are general and stable differences in consumers' propensity to adopt innovations early on (Rogers 2003). Innovativeness can be viewed as a generalized consumer trait that is positively correlated with product adoption across a wide variety of consumer goods. Steenkamp, ter Hofstede and Wedel (1999) define dispositional consumer innovativeness as "*the predisposition to buy new and different products and brands rather than remain with previous choices and consumption patterns*". Dispositional consumer innovativeness thus is a stable personality characteristic.

Since consumer innovativeness has proven to be a central determinant of the actual adoption of innovations, this consumer characteristic is high on the agenda of marketing researchers (Gatignon and Robertson, 1991; Im, Bayus and Mason, 2003). In marketing research, the conceptualization of innovativeness builds on psychological research concerning 'optimal

stimulation level' (Berlyne 1978), which refers to the observation that organisms may engage in activities merely for the sake of having exciting and novel experiences. Importantly, there are individual differences in the extent to which organisms in general – and people, in particular – feel intrinsically rewarded by such behaviour. So, exploratory tendencies motivate behaviour, but not equally so among different individuals. Building on the work related to optimal stimulation as well as earlier work in marketing (Hirschman 1980; Midgley and Dowling 1978; Raju 1980), Steenkamp and Baumgartner (1992) applied these findings to a consumption context and proposed the concept of exploratory consumer buying behaviour, later conceptualized as consumer innovativeness (Baumgartner and Steenkamp 1996; Steenkamp, ter Hofstede, and Wedel, 1999).

While innovativeness is driven primarily by the hedonic value of newness to some consumers, being innovative may also serve as a way of boosting social status (Weijters, Geuens and Roehrich 2005). This latter motivational aspect closely relates to 'market mavenism'.

Market mavenism

Some consumers are regarded by others as a good source of information with regard to products in general, including new products. These consumers actively gather and pass on information concerning innovations and can be regarded as an important information channel within the market (Feick and Price 1987). By purchasing and consuming new products, market mavens acquire product knowledge based on actual experience (Alba and Hutchinson 1987).

Susceptibility to normative influence

The influence that the market mavens' word-of-mouth information has largely depends on the extent to which others in the social system are open to it. This idea is reflected in the 'susceptibility to normative influence' variable, which refers to a consumer's tendency to conform to the expectations of others (Bearden, Netemeyer, and Teel 1989). Generally speaking, consumers who are independent in their decisions can be expected to adopt innovations if they believe the new products offer advantages over existing alternatives (Midgley and Dowling 1978). Consumers who are less independent will base their adoption decisions on market signals, leading to a so-called cascade effect, where success breeds success and high numbers of adoptions lead to even more adoptions (Golder and Tellis 2004).

Interest in the product category

Interest in the product category refers to the stable tendency to pay attention to, and be interested by, a specific product category (Laurent and Kapferer 1985). Midgley and Dowling (1978) regarded the impact of interest in the product category as an antecedent of new product adoption, but this variable has been largely neglected in more recent research. Consumers who have an interest in a given product category have a higher baseline probability of buying products in this category and are often better informed about new products in this category. Gatignon

and Robertson (1985) hypothesized that consumers with more product knowledge and better-developed schemas need to exert less effort to comprehend and evaluate an innovation and are therefore more likely to adopt the product earlier. On the other hand, Holak (1988) investigated the relation between interest in the product category and purchase intention for innovations in the photographic, entertainment, kitchen appliances and electronic categories, but she could not find 'interest in the product category' impacting purchase intention consistently or obviously across the four product categories.

Domain-specific consumer innovativeness

The above variables have the advantage of being stable and general, since they are embedded in central consumer traits and values (Weijters, Geuens and Roehrich 2005). On the other hand, some findings indicate that the level of consumer innovativeness is product specific and cannot be generalized across product categories – thus, it is more appropriate to use 'domain-specific innovativeness' as an antecedent to the adoption of innovations (Goldsmith and Hofacker, 1991). Domain-specific innovativeness refers to the extent to which a consumer generally purchases innovations in a given product domain (e.g. consumer electronics) relatively early as compared to others (Goldsmith and Hofacker, 1991). Weijters, Geuens and Roehrich (2004) showed that domain-specific innovativeness results from the coincidence of general consumer innovativeness and interest in the product category.

Consumer characteristics were measured by means of the items listed in Appendix 1, using seven-point agreement scales ranging from 'strongly disagree' to 'strongly agree'. The reliability of the scales measuring individual consumer characteristics was assessed with Cronbach's alpha.

Table 3: Reliability of scales

Scale		Cronbach Alpha
Dispositional Innovativeness	DSI	.838
Market mavenism	MMA	.797
Susceptibility to normative influence	NORM	.878
Interest in the product category	IPC	.849
Domain-specific innovativeness	DSI	.840

Actualized consumer innovativeness

Actualized innovativeness measures the extent to which a consumer has bought new products. In other words, this measure monitors actual innovative behaviour. Our measure for actualized innovativeness is based on the cross-sectional method, which uses the number of innovations adopted in a product category at the time of the survey (Midgley and Downing, 1978; Im, Bayus and Mason, 2003). From the list of 31 consumer electronics products, respondents were asked to

check which of the new products they owned. We observe y_{ijt} , a binary indicator of the adoption by consumer i of innovation j at time t . ACTINN, then, is operationalized as:

$$ACTINN_{it} = \sum_j y_{ijt}$$

Table 4: Descriptive analysis of actualized innovativeness

ACTINN	T1	T2	T3
Minimum	0	0	3
Maximum	27	27	27
Median	7	8	10
25 th percentile	4	5	7
75 th percentile	10	12	14

THE RELATIONSHIP BETWEEN DISPOSITIONAL AND ACTUALIZED INNOVATIVENESS

According to Midgley and Dowling (1978), the effect of innate or dispositional innovativeness on actualized innovativeness (i.e. innovative behaviour) is conditional on an individual's interest in the product category and situational influences. Steenkamp and Gielens (2003) study the extent to which dispositional innovativeness explains trial of new consumer packaged goods. Based on an analysis of household-panel scanner data, they conclude that dispositional innovativeness indeed proves to be a valid antecedent of first purchases, having a significant main effect on trial of individual new products. Additionally, important interaction effects with marketing variables are established. On the other hand, Im, Bayus and Mason (2003) explore the relationships between dispositional innovativeness, personal characteristics, and actualised innovativeness using cross-sectional household-panel data in a totally different product category: namely, the consumer electronics category. Based on their findings, they question the relevance of dispositional consumer innovativeness: the personal characteristics of age and income are stronger predictors of new-product ownership than this generalized personality trait.

Empirical results on the relationship between dispositional and actualized innovativeness

First, we investigate the bi-variate correlation between dispositional and actualized innovativeness. This correlation is .264 at T1 and .280 at T2, and is thus positive, significant, and relatively stable over time.

The table below gives an overview of the results of a regression analysis using the individual consumer characteristics as antecedents of actualized innovativeness.

Table 5: Regression coefficients of individual consumer characteristics on actualized innovativeness

Independent variables		Standardized Coefficients		
		T1	T2	T''
Dispositional Innovativeness	DSI	.126*	.117*	.118*
Market mavenism	MMA	.094*	.100*	.102*
Susceptibility to normative influence	NORM	-.046	-.005	.021
Interest in the product category	IPC	.453*	.422*	.408*
<i>Adjusted R²</i>		28.8%	26.4%	25.2%

*: statistically significant relationship, .05 significance level)

The results confirm that dispositional innovativeness has a positive relationship to actualized innovativeness. Thus, it is true that innovativeness as a personality trait leads to the adoption of new products. A much stronger predictor of new product adoption, however, is interest in the product category. This means that, without prior underlying interest in the product category, a consumer is much less likely to buy new products early on in the product life cycle.

This result also shows that innovators and early adopters are not necessarily the same people for all products. The person who is an early adopter in one product category could be a late adopter in another category due to a lack of interest in that category. Actualized innovativeness is thus context-dependent.

WHO IS MOST INNOVATIVE?

In this section, we investigate the demographic profile of the consumer and the extent to which it relates to the adoption of new consumer electronics. We thus look at the number of new products the consumer has (ACTINN) and whether this differs according to the demographic characteristics of the consumer.

By Gender

There is a statistically significant difference between men and women. At T1, men owned 8.22 products, on average, while women owned 6.4. By T2, the average number of products for the men had increased to 9.78, while for the women it was now 8.02. By T3, women continued to trail men by almost 2 products.

Table 6: Actualized innovativeness by gender

	ACTINN at T1	ACTINN at T2	ACTINN at T3
Male	8.22	9.78	11.24
Female	6.40	8.02	9.73

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Undoubtedly, part of the explanation for this finding is that women are less interested in consumer electronics. Women report an average score of 4.14 for interest in the product category, while men have an average score of 4.84.

By Age

There is also a significant difference in innovativeness between age categories. The numbers reveal that the older the person the fewer consumer electronics products they own. This is especially true from 45 years onwards.

Table 7: Actualized innovativeness by age

Age	ACTINN at T1	ACTINN at T2	ACTINN at T3
18-24	8.24	10.31	11.83
25-34	7.76	9.52	10.81
35-44	7.72	9.32	11.25
45-54	7.00	8.58	10.22
55-64	5.78	7.29	9.10

By Income

We investigated the relationship between actualized innovativeness and income in a number of ways. First, there is a positive and significant correlation between disposable income and actualized innovativeness. The correlation is .241 at T1 and .235 at T2.

When we look at the net monthly family income, we also see a positive relationship with actualized innovativeness.

Table 8: Actualized innovativeness by income

Net family income	ACTINN at T1	ACTINN at T2	ACTINN at T3
0-1000 Euro	4.76	6.12	7.47
1001-2000 Euro	6.28	7.49	9.00
2001-3000 Euro	7.65	9.39	11.27
3001-4000 Euro	8.27	9.65	11.36
4001-5000 Euro	8.33	9.83	10.86
5001-6000 Euro	10.72	12.20	13.00
> 6000 Euro	11.04	13.00	15.56

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By Education

Finally, we investigated the relationship between the consumer's level of education and the number of new products. There is also a significant difference in innovativeness between education categories, but only at T1 and T2. The numbers reveal that the more educated the person the more consumer electronics products s/he owns. However, the difference between people with a university or non-university post-high school degree is non-significant. By T3, the differences between education groups have disappeared.

Table 9: Actualized innovativeness by education

Degree	ACTINN at T1	ACTINN at T2	ACTINN at T3
Junior high school	6.26	8.22	9.79
High school	7.02	8.71	10.13
Non-university degree (short type)	7.49	8.97	10.71
Non-university degree (long type)	7.74	9.62	11.44
University degree	7.92	9.08	10.43

NEW PRODUCT ADOPTION

The following table summarizes the individual adoption levels of 31 consumer electronics products. As an additional check of the truthfulness of the consumers' responses, and to protect against a social desirability bias, we also included a phantom product: 3D television. Respondents who professed to own a 3D television were filtered from the dataset.

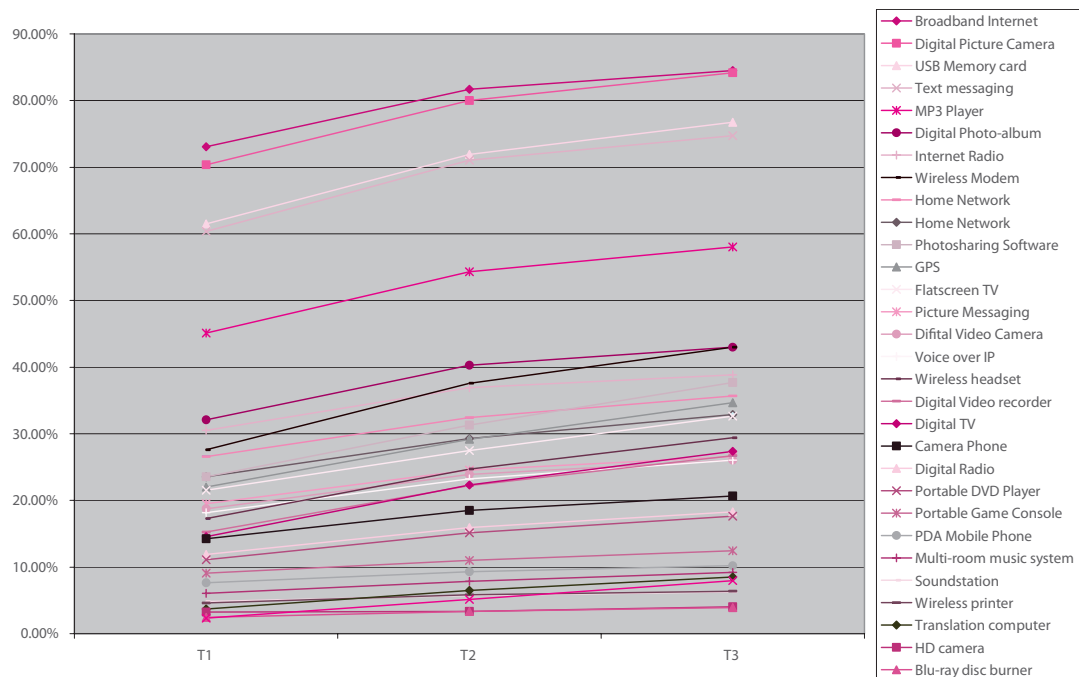
Table 10: Adoption of new products

		T1 % of adopters	T2 % of adopters	T3 % of adopters	% of new adopters between T1& T2	% of new adopters between T2 & T3
1	MP3-player	45.12%	54.32%	58.02%	9.20%	3.70%
2	Sound station	6.06%	7.86%	9.20%	1.80%	1.35%
3	Digital photo camera	70.37%	80.02%	84.18%	9.65%	4.15%
4	Digital video camera	19.53%	24.58%	26.60%	5.05%	2.02%
5	HD camera	3.70%	6.51%	8.53%	2.81%	2.02%
6	Photo-sharing software	23.57%	29.29%	32.88%	5.72%	3.59%
7	Digital photo-album	32.10%	40.29%	42.99%	8.19%	2.69%
8	Flat screen TV	22.00%	29.18%	34.68%	7.18%	5.50%
9	Digital TV	15.26%	22.22%	26.71%	6.96%	4.49%
10	Beamer	2.47%	3.37%	3.93%	0.90%	0.56%
11	Wireless modem	27.61%	37.60%	42.99%	9.99%	5.39%
12	Internet radio	30.53%	36.92%	38.83%	6.40%	1.91%
13	Digital radio	14.25%	18.52%	20.65%	4.26%	2.13%
14	USB memory card	61.50%	71.94%	76.77%	10.44%	4.83%
15	Broadband Internet Connection	73.06%	81.71%	84.51%	8.64%	2.81%
16	Portable DVD player	11.90%	15.94%	18.29%	4.04%	2.36%
17	Portable Game Console	11.11%	15.15%	17.62%	4.04%	2.47%
18	HDTV	2.36%	5.16%	7.97%	2.81%	2.81%
19	GPS	23.57%	31.31%	37.71%	7.74%	6.40%
20	Camera phone	14.59%	22.33%	27.38%	7.74%	5.05%
21	Picture messaging (MMS)	21.55%	27.50%	32.66%	5.95%	5.16%
22	Digital Video Recorder	17.28%	24.69%	29.41%	7.41%	4.71%
23	Home network	26.60%	32.44%	35.69%	5.84%	3.25%
24	Multi-room music system	7.63%	9.32%	10.21%	1.68%	0.90%
25	Voice over IP	18.74%	23.91%	26.04%	5.16%	2.13%
26	Translation computer	4.60%	5.84%	6.40%	1.23%	0.56%
27	PDA mobile phone	9.09%	11.00%	12.46%	1.91%	1.46%
28	Wireless Headset	18.18%	23.23%	26.04%	5.05%	2.81%
29	Wireless printer	4.83%	5.72%	6.29%	0.90%	0.56%
30	Text messaging (SMS)	60.38%	71.04%	74.75%	10.66%	3.70%
31	Blu-ray disc burner	3.25%	3.37%	4.04%	0.11%	0.67%

Table 10 and Figure 2 show the adoption rates for each product. Products with the highest penetration rates are digital photo cameras, broadband Internet connection, USB memory stick, text messaging, MP3 players and digital photo albums. Products that score the lowest in adoption rates are beamers, blu-ray disc burners, wireless printers, translation computers and HDTV and HD cameras. The explanation for these low rates is evidently that these are relatively new technologies.

We can also observe that the adoption speed drops significantly between T2 and T3 compared to the period between T1 and T2. A possible explanation for this is that the Christmas/New Year's holidays are included in the time period between T1 and T2 and that a lot of consumer electronics products are given as presents in that period.

Figure 2: Adoption rates at each time period



We have already established that actualized innovativeness differs by age and gender. Younger men generally own most consumer electronics products. The following tables explores whether this difference exists for each product or if there are products for which there exists age or gender equality.

Table 11: Difference in adoption of new products by gender
 “DIFF” = The demographic profile differs by gender
 “EQUAL” = The demographic profile does not differ by gender

		Gender T1	Gender T2	Gender T3
1	MP3-player	DIFF	EQUAL	EQUAL
2	Sound station	DIFF	DIFF	DIFF
3	Digital picture camera	DIFF	DIFF	DIFF
4	Digital video camera	EQUAL	EQUAL	EQUAL
5	HD camera	DIFF	DIFF	DIFF
6	Photo sharing software	DIFF	DIFF	DIFF
7	Digital photo-album	DIFF	DIFF	DIFF
8	Flat screen TV	DIFF	DIFF	DIFF
9	Digital TV	DIFF	DIFF	DIFF
10	Beamer	DIFF	DIFF	EQUAL
11	Wireless modem	DIFF	DIFF	EQUAL
12	Internet radio	DIFF	DIFF	DIFF
13	Digital radio	DIFF	EQUAL	EQUAL
14	USB memory card	DIFF	DIFF	DIFF
15	Broadband Internet Connection	DIFF	DIFF	DIFF
16	Portable DVD player	EQUAL	EQUAL	EQUAL
17	Portable Game Console	EQUAL	EQUAL	EQUAL
18	HDTV	DIFF	DIFF	DIFF
19	GPS	DIFF	DIFF	DIFF
20	Camera phone	DIFF	DIFF	DIFF
21	Picture messaging (MMS)	DIFF	DIFF	DIFF
22	Digital Video Recorder	DIFF	EQUAL	EQUAL
23	Home network	DIFF	DIFF	DIFF
24	Multi-room music system	DIFF	DIFF	EQUAL
25	Voice over IP	DIFF	DIFF	DIFF
26	Translation computer	EQUAL	EQUAL	EQUAL
27	PDA mobile phone	DIFF	DIFF	DIFF
28	Wireless Headset	DIFF	DIFF	EQUAL
29	Wireless printer	DIFF	DIFF	EQUAL
30	Text messaging (SMS)	DIFF	DIFF	EQUAL
31	Blu-ray disc burner	EQUAL	EQUAL	EQUAL

Table 12: Difference in adoption of new products by age
 “DIFF” = The demographic profile differs by age
 “EQUAL” = The demographic profile does not differ by age

		Age T1	Age T2	Age T3
1	MP3-player	DIFF	DIFF	DIFF
2	Sound station	DIFF	DIFF	DIFF
3	Digital picture camera	DIFF	EQUAL	EQUAL
4	Digital video camera	EQUAL	EQUAL	EQUAL
5	HD camera	EQUAL	EQUAL	EQUAL
6	Photo sharing software	EQUAL	EQUAL	EQUAL
7	Digital photo-album	EQUAL	EQUAL	EQUAL
8	Flat screen TV	EQUAL	DIFF	EQUAL
9	Digital TV	DIFF	EQUAL	EQUAL
10	Beamer	EQUAL	EQUAL	EQUAL
11	Wireless modem	DIFF	DIFF	EQUAL
12	Internet radio	DIFF	DIFF	DIFF
13	Digital radio	EQUAL	EQUAL	DIFF
14	USB memory card	DIFF	DIFF	DIFF
15	Broadband Internet Connection	DIFF	DIFF	DIFF
16	Portable DVD player	DIFF	DIFF	DIFF
17	Portable Game Console	DIFF	DIFF	DIFF
18	HDTV	EQUAL	EQUAL	EQUAL
19	GPS	EQUAL	EQUAL	EQUAL
20	Camera phone	DIFF	DIFF	DIFF
21	Picture messaging (MMS)	DIFF	DIFF	DIFF
22	Digital Video Recorder	DIFF	EQUAL	EQUAL
23	Home network	EQUAL	EQUAL	EQUAL
24	Multi-room music system	EQUAL	EQUAL	EQUAL
25	Voice over IP	DIFF	DIFF	EQUAL
26	Translation computer	EQUAL	EQUAL	DIFF
27	PDA mobile phone	EQUAL	EQUAL	DIFF
28	Wireless Headset	EQUAL	EQUAL	EQUAL
29	Wireless printer	DIFF	EQUAL	EQUAL
30	Text messaging (SMS)	DIFF	DIFF	DIFF
31	Blu-ray disc burner	DIFF	DIFF	EQUAL

At least three observations can be made from this table. First, the demographic profile of new product owners equalizes over time (as it starts to resemble the demographic profile of the general population). Second, some new products are adopted equally by both genders or by different age categories. Third, the gender difference exists for more products than the age difference.

Table 13: Difference in adoption of new products by income
 “DIFF” = The demographic profile differs by income
 “EQUAL”= The demographic profile does not differ by income

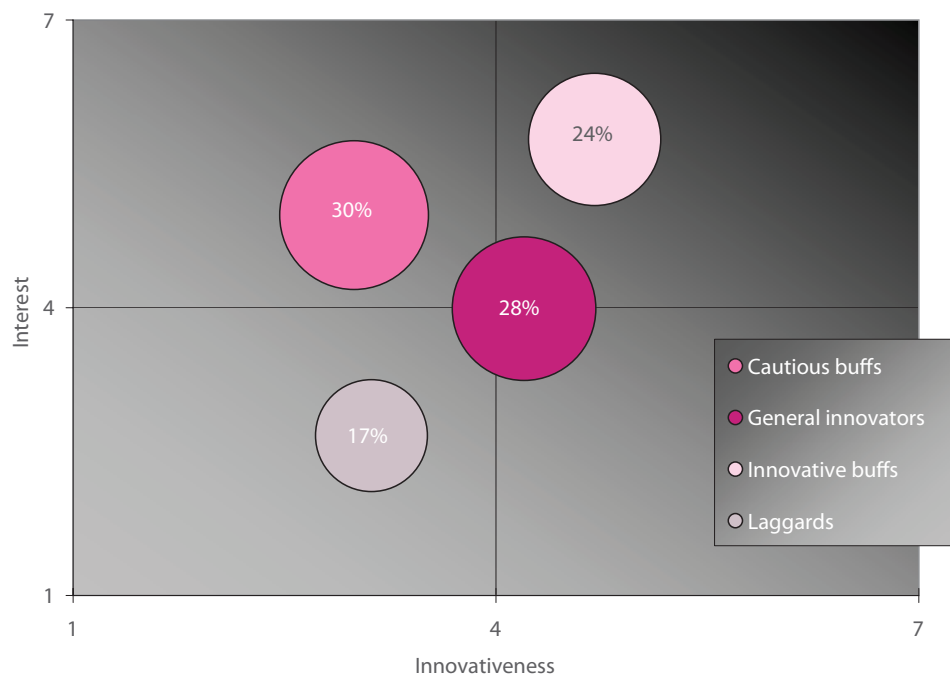
		Income T1	Income T2	Income T3
1	MP3-player	DIFF	DIFF	DIFF
2	Sound station	DIFF	EQUAL	EQUAL
3	Digital picture camera	DIFF	DIFF	DIFF
4	Digital video camera	DIFF	DIFF	DIFF
5	HD camera	DIFF	EQUAL	EQUAL
6	Photo sharing software	DIFF	DIFF	DIFF
7	Digital photo-album	DIFF	DIFF	DIFF
8	Flat screen TV	DIFF	DIFF	DIFF
9	Digital TV	DIFF	EQUAL	EQUAL
10	Beamer	DIFF	EQUAL	EQUAL
11	Wireless modem	DIFF	DIFF	DIFF
12	Internet radio	EQUAL	EQUAL	DIFF
13	Digital radio	DIFF	EQUAL	EQUAL
14	USB memory card	DIFF	DIFF	DIFF
15	Broadband Internet Connection	DIFF	DIFF	DIFF
16	Portable DVD player	DIFF	DIFF	DIFF
17	Portable Game Console	DIFF	DIFF	DIFF
18	HDTV	DIFF	DIFF	DIFF
19	GPS	DIFF	DIFF	DIFF
20	Camera phone	EQUAL	EQUAL	EQUAL
21	Picture messaging (MMS)	DIFF	EQUAL	EQUAL
22	Digital Video Recorder	DIFF	EQUAL	DIFF
23	Home network	DIFF	DIFF	DIFF
24	Multi-room music system	EQUAL	EQUAL	EQUAL
25	Voice over IP	DIFF	EQUAL	EQUAL
26	Translation computer	EQUAL	EQUAL	EQUAL
27	PDA mobile phone	DIFF	DIFF	DIFF
28	Wireless Headset	DIFF	DIFF	DIFF
29	Wireless printer	DIFF	DIFF	DIFF
30	Text messaging (SMS)	DIFF	DIFF	DIFF
31	Blu-ray disc burner	DIFF	DIFF	DIFF

MARKET SEGMENTATION

Segmenting the market by innovativeness and interest

Because there clearly are individual differences between consumers in the way they respond to innovations, it may be useful to segment the market in more homogeneous groups of people. Since 'Interest in the product category' and 'Dispositional Innovativeness' are the strongest predictors of actualized innovativeness, we use these two variables to arrive at a segmentation. All respondents are subjected to a cluster analysis. First, we use hierarchical cluster analysis to determine the optimal number of clusters. The optimal number of clusters, where within-cluster homogeneity and between-cluster heterogeneity are most favourable, turns out to be four. The final segments (based on a k-means clustering algorithm) are presented in Figure 3 in terms of their average levels of Interest in the product category and dispositional innovativeness.

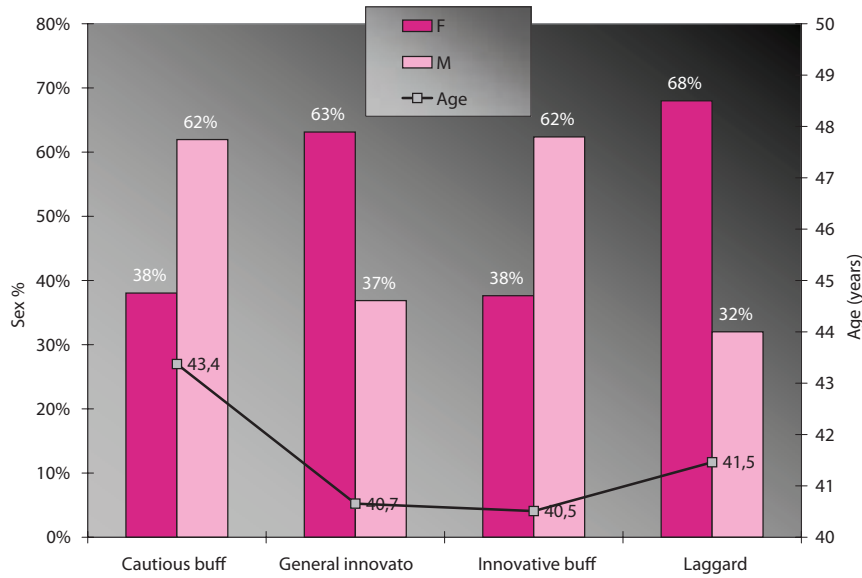
Figure 3: Mapping of the innovativeness/interest segments



Demographic profile of the segments

In terms of demographics, we find that the innovative buffs and the general innovators are the youngest segments. The former segment is predominantly male, while the latter is predominantly female. The cautious buffs are significantly older than the general innovators and innovative buffs, and are predominantly male. The laggards are mostly female. A demographic profile of the segments is given in Figure 4.

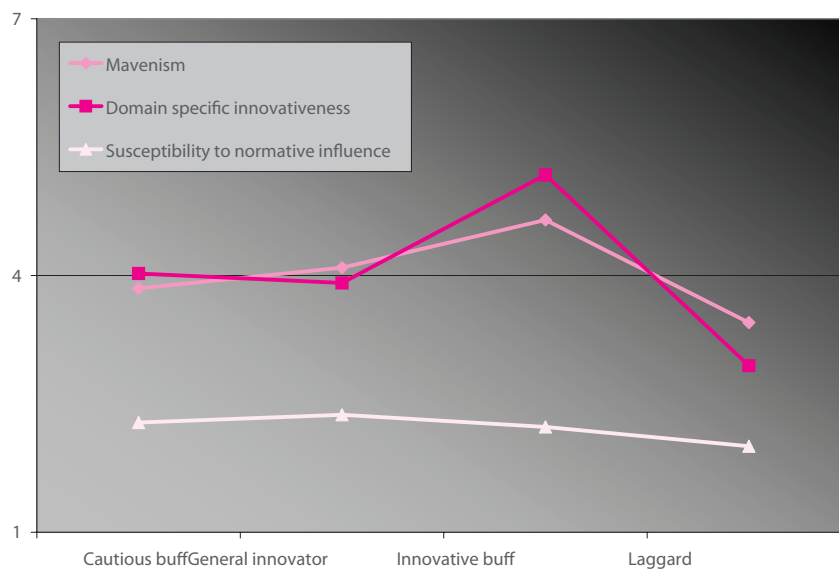
Figure 4: Demographic profile of the segments



Psychographic profile of the segments

In terms of the psychographic variables (other than dispositional innovativeness and interest in the product category), we note that the innovative buffs score significantly higher than all other segments on mavenism and domain-specific innovativeness. This makes them specialist opinion leaders who are an important reference in the market. As is to be expected, the laggards score significantly lower on all three variables. This indicates that they are not real sources of innovation-related information, nor are they open to it. These findings are shown in Figure 5.

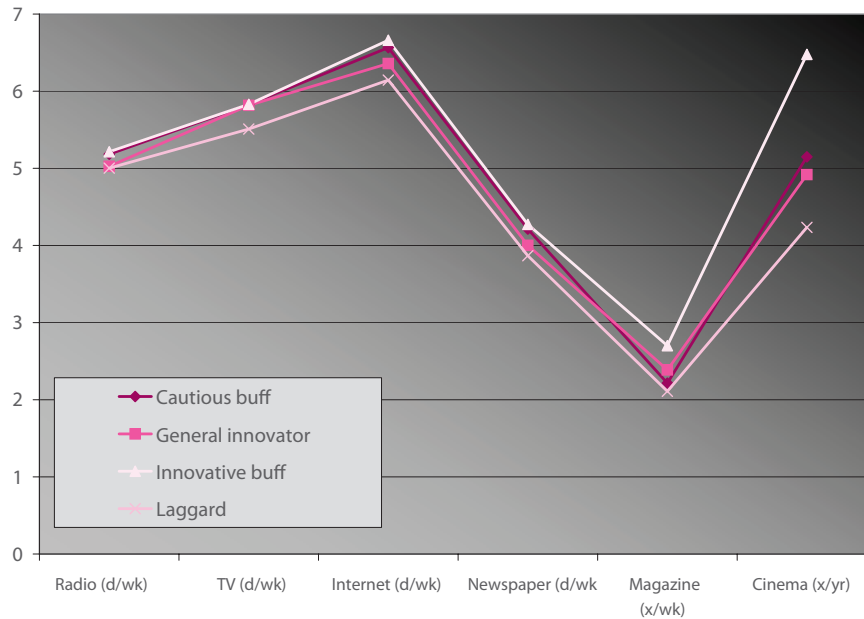
Figure 5: Psychographic profile of the segments



Media profile of the segments

We also compare the segments with regard to their media usage, as shown in Figure 6 below. The dotted lines relate to media for which no significant difference was observed.

Figure 6: Media profile of the segments



The innovative buffs are significantly more frequent users of magazines and cinema than are the general innovators and the laggards, and they are more frequent users of the Internet than all other segments. Furthermore, the laggards are significantly less frequent users of TV and the Internet than all other segments.

Adoption rates by segment

Table 14 shows the adoption levels for each innovation and each segment at the start of the study (i.e., pre-study adoption level), as well as the percentage of segment members who adopted the innovation during the study (i.e., between T1 and T3). Note that the sample is limited to the respondents that participated in all three waves. The products are ranked in such a way that those products that were most intensively adopted by the more innovative segments (respectively innovative buffs, cautious buffs, general innovators, laggards) are shown first. From this table, it appears that, overall, the innovations that are already popular at T1 are also the most intensively adopted during the study. However, this effect is strongest among the laggards (correlation between pre-study adoption in the overall population and adoption by the segment during the study, $r = 0.89$) and much weaker for the innovative buffs ($r = 0.23$). The remaining segments are situated in between ($r = 0.69$ for the cautious buffs and $r = 0.80$ for the general innovators). This indicates that all segments tend to adopt popular innovations more intensively, although the effect of popularity is much lower among the innovative buffs: they are the ones that take the lead.

Table 14: Adoption rates by segment

	Pre-study adoption level (i.e., % penetration at T1)			Adoption during study (i.e., difference between T3 and T1)						
	Total population	Cautious buff	General innovator	Innovative buff	Laggard	Total population	Cautious buff	General innovator	Innovative buff	Laggard
Sound station	6.2%	3.7%	4.7%	14.0%	1.9%	3.2%	2.7%	2.6%	5.8%	1.3%
Digital video camera	19.7%	17.2%	16.8%	35.3%	7.1%	7.0%	7.1%	5.2%	8.7%	7.7%
HD camera	3.7%	4.7%	2.2%	6.8%	0.0%	4.8%	5.7%	3.9%	7.2%	1.3%
Photo sharing software	23.5%	26.0%	13.4%	45.4%	5.1%	9.3%	10.1%	8.6%	10.1%	7.7%
Flat screen TV	22.1%	21.3%	19.0%	34.3%	11.5%	12.7%	12.5%	11.6%	18.4%	7.1%
Digital TV	15.4%	12.2%	15.5%	19.8%	14.7%	11.5%	12.2%	11.6%	13.0%	7.7%
Beamer	2.5%	2.0%	0.4%	6.8%	0.6%	1.4%	2.0%	0.4%	2.4%	0.6%
Wireless modem	27.6%	27.7%	23.3%	38.6%	19.2%	15.5%	13.2%	15.5%	21.7%	10.9%
HDTV	2.4%	2.7%	2.6%	3.4%	0.0%	5.6%	6.4%	3.0%	9.2%	3.2%
GPS	23.5%	24.7%	16.8%	38.6%	11.5%	14.3%	11.5%	16.8%	16.9%	11.5%
Camera phone	14.8%	10.1%	10.3%	32.9%	5.1%	12.7%	14.9%	11.2%	15.5%	7.7%
Digital video recorder	17.2%	18.2%	12.1%	28.0%	9.0%	12.1%	13.2%	10.8%	15.0%	8.3%
Multi-room music system	7.6%	7.4%	4.7%	13.5%	4.5%	2.6%	2.0%	2.2%	5.8%	0.0%
Translation computer	4.6%	4.7%	3.9%	8.7%	0.0%	1.8%	2.4%	1.3%	2.9%	0.0%
PDA mobile phone	9.1%	9.8%	8.2%	15.5%	0.6%	3.4%	2.4%	1.7%	7.7%	1.9%
Wireless headset	18.3%	16.6%	15.5%	33.3%	5.1%	7.9%	6.4%	8.2%	10.6%	6.4%
Wireless printer	4.9%	4.1%	4.3%	10.1%	0.0%	1.4%	1.7%	0.9%	2.4%	0.6%
Blu-ray disc burner	3.2%	5.1%	1.7%	3.9%	1.3%	0.8%	1.4%	0.0%	1.4%	0.0%
Voice over IP	18.7%	20.6%	13.8%	30.9%	6.4%	7.3%	8.4%	8.2%	6.3%	5.1%
MP3 player	45.4%	41.6%	43.5%	65.7%	26.9%	13.1%	9.8%	17.7%	11.6%	13.5%
Digital photo-album	32.2%	32.4%	23.3%	58.0%	10.3%	10.9%	11.5%	12.9%	10.1%	7.7%
Digital radio	14.4%	11.1%	9.5%	29.0%	7.7%	6.5%	5.1%	8.2%	6.8%	5.8%
USB memory card	61.4%	65.5%	52.6%	82.6%	39.1%	15.3%	15.9%	18.5%	8.7%	17.9%
Broadband internet connection	72.9%	78.4%	65.1%	84.1%	60.3%	11.5%	12.2%	14.2%	7.2%	11.5%
Portable DVD player	12.0%	10.1%	9.1%	24.2%	3.2%	6.4%	6.8%	6.9%	5.8%	5.8%
Portable game console	11.2%	10.5%	8.6%	19.3%	5.1%	6.7%	5.1%	9.9%	8.7%	1.3%
Picture messaging (MMS)	21.8%	18.9%	20.7%	38.2%	5.8%	11.2%	9.5%	13.4%	12.6%	9.0%
Home network	26.7%	26.0%	22.4%	43.0%	12.2%	9.2%	7.8%	11.2%	9.2%	8.3%
Text messaging (SMS)	60.3%	64.9%	54.7%	72.9%	43.6%	14.4%	14.5%	17.2%	10.1%	15.4%
Digital photo camera	70.4%	72.3%	64.2%	87.4%	53.2%	13.9%	12.2%	16.4%	8.7%	19.9%
Internet radio	30.5%	32.4%	21.6%	51.7%	12.2%	8.3%	8.4%	8.6%	6.8%	9.6%

GENERALIZATION TO OTHER PRODUCT CATEGORIES

The current study focuses on consumer electronics. The question arises whether our findings can be extended to other product categories and services. The answer is twofold. First: by definition, dispositional innovativeness is not specific to a product category, and therefore its effects can be generalized to any product or service. For general innovators, novelty as such is an attractive attribute of a product or service. Needless to say, novelty is only one attribute out of many, and it would be naïve to expect innovators to buy just any offering that is new.

Second: a consumer's general positive predisposition towards newness is likely to result in actual buying behaviour only in product categories in which the consumer is interested. Moreover, interest seems to exert a stronger influence than does dispositional innovativeness. Hence, an important conclusion of the current study is that a segmentation of consumers in terms of innovativeness should always be made at the product category level. For this purpose, the variables used in the current study can be translated directly to other categories: dispositional innovativeness remains unaltered in this case, whereas interest in the product category should be adapted to include a good definition of the category under study.

This being said, overall, dispositional innovativeness tends to decrease slightly but consistently with age (correlation $r = -.15$). In other words, younger consumers tend to be more innovative. However, it is also necessary to assess interest in the product category to decide which demographic segment is more innovative in a specific category.

IMPLICATIONS AND RECOMMENDATIONS

Targeting innovative consumers

Importantly, consumers show marked differences in the way they respond to new technologies. And a substantial part of these differences can be understood in terms of dispositional innovativeness and interest in the product category. Innovativeness as a personality trait is confirmed to be a significant predictor for the adoption of new products. However, whether an individual is interested in the product category itself is even more important. This means that there is some overlap between innovativeness across product categories, related to dispositional innovativeness, which is a generalized tendency, but that an important group of innovators in the domain of consumer electronics are not innovators in other product domains. The latter observation relates to the strong impact of product interest on actualized innovativeness. Innovators and early adopters are not necessarily the same people for all products. The person who is an early adopter in one product category could be a late adopter in another category.

To make this finding more actionable, we segmented the market in terms of dispositional innovativeness and product interest and found four segments: innovative buffs (24%), who are interested in technologies and generally innovative; cautious buffs (30%), who are interested in technologies but generally not very innovative; generalized innovators (28%), who are innovative but less interested in technology; and laggards (17%), who are neither.

Each of these segments can be optimally targeted based on the following profiles: Innovative buffs are the first to target with a new consumer technology. The segment consists mainly of younger men. This segment is very accessible through marketing communication efforts via cinema, magazines and the Internet. Convincing the innovative buffs is extra-effective, since they serve as an important source of information for other consumers (they score high on market mavenism). Given their high interest and high innovativeness, newness as such can be used as an argument to this segment. These consumers want to be the front-runners in adopting technologies.

The impact of the product life cycle

As the adoption rate for a new product increases, it reaches a broader audience and moves from the innovators and early adopters to the majority of the market. This evolution is a critical moment in an innovation's growth. As the majority of the market is reached, a different profile of consumers is reached. This profile no longer consists simply of the stereotypical young male first adopters, but now includes the general population. Hence, different communication channels and communication messages are needed to reach this group. The later adopters are less innovative by nature, and rely more on imitative behaviour. They are thus more influenced by others.

The second segment to target is the cautious buffs segment, since they are the second fastest in adopting new technologies. They are driven mostly by interest in technology rather than by the need to have new and stimulating experiences. In other words, technical information

is acceptable for this segment, but it is not recommended to focus on newness or to create hype. Cautious buffs are mostly men, but they are above the average age. Their media profile is less differentiated than that of the innovative buffs, although we can assume that they more actively search for information on technology (given their interest). They are not particularly mavens. They also wait for the technology to gain some acceptance before they adopt too.

The third segment in terms of actual adoption levels is the general innovator segment. This segment is interested in experiencing new products, though not specifically in the domain of technology. The segment consists mainly of women and their ages are below the average. The general innovators are not necessarily easy to reach via certain media, but they seem to be especially sensitive to the cascade effect: they adopt most readily once a product is already widely accepted.

Reaching laggards

Finally, 17% of the general population are laggards in terms of adopting innovations. The laggards are the slowest in adopting new technologies, because they lack both interest in the category and the need for newness. The profile of this segment is older than the population average and is also predominantly female. Laggards are the least frequent media users – in particular, TV and the Internet. In general, they are not opinion leaders, but not real followers either, in that they are generally less open to information about new products (low media usage) and less susceptible to social influence. Nevertheless, they adopt technologies if these become very generally accepted. When targeting this segment, it seems advisable not to focus on technical information or on newness, but to position a product as simple and reliable.

Improving acceptance rates

For someone to be interested in a new product, the interest in the broader product category plays a big role. To improve the overall acceptance rate for an innovation, a beneficial strategy would be to raise the interest of consumers in the product category itself. This means that stakeholders need to communicate about the product category and raise the general interest level of the product category, rather than emphasize the benefits of individual products or brands. We recommend a dual approach, whereby one raises the general interest level by educating the market about the category and its role in, and benefits for, society. It seems that policy makers and sector organizations can play a key role in this. At the same time, individual products need to be communicated depending on the stage of the product life cycle, according to the recommendations detailed above.

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Items used for measuring consumer characteristics

Dispositional innovativeness:

- Ik ben heel voorzichtig bij het proberen van nieuwe en andere producten.
- Als ik een nieuw product in de rekken zie, sta ik afkerig tegenover het proberen ervan.
- Algemeen genomen ben ik bij de eersten om nieuwe producten te kopen wanneer ze op de markt komen.
- Als ik een merk goed vind, zal ik zelden veranderen van merk gewoon om iets nieuws te proberen.
- Ik ben meestal bij de eersten om een nieuw product uit te proberen.
- Ik koop zelden merken waarvan ik niet zeker ben hoe ze zullen presteren.
- Ik hou ervan een risico te nemen bij het kopen van nieuwe producten.
- Ik koop niet graag een nieuw product vooraleer andere mensen dat doen.

Market Mavenism

- Ik leer mijn vrienden graag nieuwe merken en producten kennen.
- Ik praat niet tegen mijn vrienden over de producten die ik koop.
- Mijn vrienden en burens komen vaak bij mij voor advies.
- Mensen vragen zelden mijn mening over nieuwe producten.

Consumer susceptibility to normative influence

- Als ik wil zijn zoals iemand anders, probeer ik dikwijls dezelfde merken te kopen als deze persoon.
- Het is belangrijk dat anderen de producten en de merken die ik koop leuk vinden.
- Ik koop zelden iets heel modieus tot ik zeker weet dat mijn vrienden het mooi vinden.
- Ik identificeer me vaak met andere mensen door dezelfde producten en merken te kopen als zij.
- Als ik producten koop, koop ik meestal de merken waarvan ik denk dat anderen ze goed zullen vinden.
- Ik weet graag welke merken en producten een goede indruk maken op anderen.
- Als andere mensen me een product kunnen zien gebruiken, koop ik vaak het merk dat ze verwachten dat ik koop.
- Ik krijg het gevoel erbij te horen als ik dezelfde producten en merken koop als anderen.

Domain-specific innovativeness

- Over het algemeen ben ik bij de laatsten in mijn vriendenkring om nieuwe consumentenelektronica te kopen wanneer die uitkomt.
- Als ik zou horen dat er nieuwe consumentenelektronica verkrijgbaar was, zou ik geïnteresseerd genoeg zijn om die te kopen.
- In vergelijking tot mijn vrienden heb ik weinig consumentenelektronica.
- Over het algemeen ben ik bij de laatsten in mijn vriendenkring om de nieuwste consumentenelektronica te kennen.

- Ik zal geen nieuwe consumenten-elektronica kopen als ik hem nog niet geprobeerd heb.
- Ik koop graag nieuwe consumenten-elektronica vooraleer andere mensen dat doen.

Interest in the product category

- Ik hecht veel belang aan consumenten-elektronica
- Men kan zeggen dat ik geïnteresseerd ben in consumenten-elektronica
- Consumenten-elektronica is een onderwerp dat me volledig onverschillig laat.

APPENDIX 2

List of products

Nb.	Product	Voorbeeldmerken	Beschrijving
1	MP3-speler	iPod	Een mp3-speler is een apparaat dat muziek bewaart, sorteert en muziekbestanden kan afspelen. Veel mp3-spelers zijn draagbaar en ontwikkeld als een soort walkman voor het afspelen van mp3-tracks, maar de mp3-afspeelfunctie kan ook zijn geïntegreerd in een dvd-speler of autoradio. Deze laatste producten worden hier niet bedoeld.
2	Soundstation	Bose, Apple	Een compact audio systeem met daarop geïntegreerd een universele aansluiting voor mp3 muziek spelers (zie link) zoals de Apple iPod, zodat men de muziek op de mp3-speler ook in huis kan beluisteren
3	Digitale foto camera		Een digitale foto camera is een camera waarbij foto's digitaal worden opgeslagen. Voordelen van een digitale foto camera zijn dat er geen film in hoeft, en het resultaat is zeer snel te bewonderen. Digitale foto camera's zijn er in allerlei kwaliteiten; de resolutie van de foto's (uitgedrukt in megapixels), de mate waarin er optisch vergroot ('ingezoomd') kan worden en de techniek waarmee een camera aan een computer gekoppeld kan worden verschillen sterk. Voor dit onderzoek maakt het geen verschil welke foto camera u hebt.
4	Digitale video camera (Camcorder)		Een digitale video camera is een camera waarbij video beelden digitaal worden opgeslagen. Digitale video camera's zijn er in allerlei kwaliteiten; de resolutie van de beelden verschilt (uitgedrukt in megapixels), net zoals de mate waarin er optisch vergroot ('ingezoomd') kan worden en de techniek waarmee een camera aan een computer gekoppeld kan worden. Voor dit onderzoek maakt het geen verschil welke video camera u hebt.

5	HD camera		Een HD camera is een video camera die het mogelijk maakt om bewegende beelden in hoge definitie (zeer scherp beeld) op te slaan.
6	Photosharing software	Pics A GoGo, Flickr, Kodak EasyShare Gallery	Een website die het mogelijk maakt om uw foto's op het Internet op te slaan en te delen met vrienden, kennissen en familie.
7	Digitale foto-album	Picasa	Computer software die u helpt bij het beheren, opslaan, bewerken en delen van al uw digitale foto's.
8	Flatscreen		Een platte televisie, op basis van LCD- of Plasma technologie, om televisie te kijken.
9	Digital tv	Belgacom TV, Telenet	Digitale televisie is het uitzenden van digitale video, audio en data signalen. Door deze technieken verbetert de kwaliteit van beeld en geluid, en behoren "sneeuw", "ruis" en andere storingen tot het verleden. U heeft hiervoor een decoder nodig die op uw TV wordt aangesloten.
10	Beamer		Een beamer (ook wel projector genoemd) maakt het mogelijk om beelden te projecteren op een groot scherm of muur. Een beamer kan worden gebruikt voor televisie, film (dvd) en foto presentaties .
11	Draadloze modems	Netgear, Linksys	Een draadloze modem maakt het mogelijk om draadloos internet te ontvangen op uw pc, laptop, of mobiele telefoon.
12	Internet radio	VRT, Studio Brussel, Radio BemBem,...	Internet radio is een manier om radio te verspreiden via het Internet. Dit is ook bekend als audiostreaming. Bijvoorbeeld Studio Brussel, Radio BemBem zenden uit via Internet.
13	Digitale radio		Via digitale radio beluistert u digitaal radiogeluid met een DAB radio. DAB staat voor Digital Audio Broadcasting, en is een erkende standaard voor digitale radio, vrij van ruis en van hoge kwaliteit.
14	USB geheugen kaart	ScanDisk	Een USB geheugen kaart is een klein handzaam geheugen dat direct op een pc of laptop is aan te sluiten op een USB-poort, en waarop allerlei bestanden kunnen worden opgeslagen.

15	Breedband Internet Verbinding	Adsl, Kabel	Een Breedband Internet verbinding is een snelle open verbinding met Internet. Er wordt niet langer 'ingebeld' via de traditionele telefoonlijn. Echter er is een permanente connectie met het Internet. Doorgaans gebeurt dit via de kabel of via adsl.
16	Draagbare DVD speler		Een draagbare DVD speler is dvd-speler die het mogelijk maakt om dvd's te kijken door middel van een accu en een geïntegreerd LCD scherm, dat kan worden uitgeklaapt. Deze LCD schermen hebben over het algemeen een beeldverhouding van 16:9 en een doorsnede van 17 centimeter.
17	Portable Game Console	Sony PSP, Nintendo	Een portable game console is een lichtgewicht, draagbare mini computer voor het spelen van video spellen. In tegenstelling tot computerspellen (Xbox etc) zitten het beeld, geluid, en de bediening allemaal op hetzelfde apparaat.
18	HDTV		HDTV staat voor High Definition Televisie. Het is de volgende generatie televisie. HDTV-beelden bevatten meer gegevens dan de conventionele televisie. Het beeld is daardoor van zeer hoge kwaliteit, scherp, en met uitzonderlijke details. Voor het ontvangen van HDTV beelden heeft u een Hdready TV nodig.
19	GPS ontvanger	TomTom, Garmin	Een GPS ontvanger maakt een plaatsbepaling mogelijk met behulp van het Global Positioning System. Het systeem bestaat uit minimaal 24 satellieten die in zes vaste banen rond de aarde draaien en elk een eigen signaal uitzenden. Met de ontvangst van minimaal vier van deze satellieten kan een gps-ontvanger zijn positie op aarde bij benadering bepalen. Het GPS-systeem is 24 uur per dag in bedrijf, is nagenoeg overal ter wereld bruikbaar en werkt onder alle weersomstandigheden.
20	Camera phone		Een mobiele telefoon waarmee u digitale foto's kunt nemen.
21	Picture messaging (MMS)		Het versturen en ontvangen van foto's, audio, en video fragmenten via een mobiele telefoon.

22	Digitale Video Recorder		Een digitale Video recorder (DVR) is een apparaat dat video opneemt en direct digitaal opslaat op een DVD schijf of een geïntegreerde harde schijf. Er zijn dus geen video banden meer nodig.
23	Thuis netwerk	Linksys	Een thuisnetwerk is een eigen netwerk bij iemand thuis. Het werkt onafhankelijk van een Internetaanbieder. Binnen een thuisnetwerk kunnen de computers in huis gegevens met elkaar uitwisselen op een gemakkelijke manier. Computers in het netwerk zijn direct met elkaar verbonden via kabels of via een draadloze verbinding.
24	Multi-room muziek systeem	Bang and Olufsen, Sonos,	Een multi-room muziek systeem is een systeem dat het mogelijk maakt om in verschillende kamers van uw huis naar muziek te luisteren en dit vanuit 1 systeem te coördineren.
25	Voice over IP (bellen via Internet)	Skype, Google Talk	Bij Voice-over-IP (VOIP) wordt het Internet of ander computer netwerk gebruikt om spraak te transporteren. Hierdoor wordt telefonie mogelijk via computer netwerken zoals het Internet.
26	Vertaal-computer	Besta	Een vertaal computer maakt het mogelijk om direct woorden of zinnen te vertalen naar verschillende andere talen.
27	PDA mobiele telefoon	Blackberry, T-Mobile Vario	Een PDA Mobiele telefoon is een apparaat dat de functionaliteiten van een mobiele telefoon intergreert met de functionaliteiten van een 'personal digital assistent'(PDA). Met dit apparaat kan men dus bellen, een agenda beheren, Internetten, documenten lezen enzovoort. Vaak worden deze apparaten bestuurd door Microsoft software.
28	Draadloze Headset		Een headset maakt het mogelijk om te telefoneren zonder dat u uw telefoon hoeft vast te houden. U hebt dus twee handen vrij tijdens het bellen. Headsets maken regelmatig gebruik van technieken zoals Bluetooth.
29	Wireless printer		Een draadloze printer is een printer die via een draadloze verbinding in contact staat met de computer. Deze printer hoeft dus niet via een kabel op een computer te worden aangesloten.

30	Text messaging (SMS)		Het versturen en ontvangen van tekstboodschappen via een mobiele telefoon.
31	Blu-ray disc brander	LG, Philips,	Een blu-ray disc brander maakt het mogelijk om gegevens (data, media enzovoort) op te slaan op een blu-ray disc. Deze disc heeft een capaciteit die 5 maal zo groot is als de DVD. Blu-ray is daarmee in feite de opvolger van de DVD.
32	3D televisie		Een 3D televisie biedt de mogelijkheid om een driedimensionaal beeld te geven, zonder dat daar het aloude 3D-brilletje voor nodig is. Het scherm maakt het mogelijk om te schakelen tussen een 2D beeld (hetgeen nu de standaard is), en een 3D beeld.
