1 Introduction

"The supreme law of imitation seems to be its tendency towards indefinite progression. [...] It seems to impel every discovery or innovation [...] to scatter itself through the whole of the indefinitely broadened social field."

Gabriel Tarde (1890, p.397-8) The Laws of Imitation^{1}.

1.1 Introduction

This dissertation focuses on a social process of interpersonal influence, also known as 'social contagion'. The central theme is to develop our understanding of how social contagion comes about in relation to the consumer adoption of new products. Consumers generally do not make their needs and requirements explicit and then subsequently go in search of products to fulfil them. Neither do they think up novel products themselves. Instead, our thesis is that consumers are aware of which products others around them are using and they select what they want from this assortment presented to them. Firms often do not take this social process into account in their new product development activities, preferring to focus on the practicalities such as product functionality and design.

The research described here has two main objectives. Firstly, we aim to develop a new methodology for assessing to what extent a new product will stimulate social contagion within its target consumer market. We investigate how this methodology can be used to make pre-introduction predictions of the future consumer demand for a new product. Secondly, we aim to improve our understanding of the role of social contagion in the process of new product adoption by identifying which characteristics of consumers and of products drive this process and, in turn, affect the consumer demand for a new product.

This dissertation describes a modular project in which we present the results of each module in the form of an article for publication in a scientific journal. These articles link together to form the thesis and together they describe how we identify the need for new methods for pre-launch assessment of consumer demand, how we propose a new approach and develop a new instrument, how we apply it in real-world cases, test its validity and also how we investigate the determinants of social contagion and

^{1} Translated by Elsie Clews Parsons 1903
the overall effect that social contagion has on consumer demand. Once brought together these modules present a scientifically relevant body of research. The articles also focus on the practical application of our new approach, by describing the development of a new instrument and how we apply it in real-world cases. As such the managerial relevance, specifically the usefulness of our approach for those developing new products, forms a major part of this dissertation.

We start this introduction by describing our motivation for carrying out this research (1.2), we describe existing methods which can be used to predict what the consumer demand for a new product will be (1.3), we summarize relevant theory (1.4) and relevant empirical research (1.5), and we define the research questions (1.6). We conclude this introduction with a brief overview of the main chapters (1.7).

1.2 Motivation for research on social contagion and consumer demand

Many firms find themselves in a situation whereby, in order to sustain a healthy market position, they need to develop new products that people will buy and use (Hauser et al., 2006). But at the same time they know that an innovation strategy brings enormous risks with it; investments in new development projects bring uncertain returns (Dodgson et al., 2008; Stern and Henderson, 2004). Scientists have struggled to provide firms which innovate with suitable methods for predicting the market potential of really new products at the beginning of the new product development process (Kahn, 2002; Taschner, 1999). Too often enormous investments are made, both during the product’s development and also during its market introduction, based on unreliable predictions. This dissertation goes some way to alleviating this problem by proposing a new approach that can make such early estimations of market potential. It is based on an idea known as ‘social contagion’, whereby consumers copy the behaviour of those around them, which will be described below. Such a new approach is particularly relevant in the current climate of increasing global competition and economic uncertainty (Pratt and Jeffcutt, 2009) and is a potential response to the recent call for new methods for pre-test market analysis of consumers’ adoption of innovations (Hauser, Tellis and Griffin, 2006).

In this dissertation we refer to the process of new product adoption. This process encompasses a whole series of consumer behaviour, beginning by the consumer becoming aware of the new product or actively searching for information about it and includes their evaluation of the product, purchase and implementation or usage (Rogers, 2003). When we use the term ‘product adoption’ we refer to this process as a whole. A related term which we also use is ‘consumer demand’ which we use to refer to the consumers’ desire for the product as distinguished from its supply. When the consumer demand for a product is high and the supply-side issues, such as the
product’s distribution, are sufficiently organized then product adoption will actually take place.

The relevant literature on social contagion does not provide a clear definition of this concept (Marsden, 1998). Social contagion can be applied to the spread of many things from one person to another, including emotions, aggressive behaviour and product-related behaviour. We focus on behaviours related to the adoption and use of new products. “It is commonly accepted that new product diffusion is often driven by social contagion, i.e., that actors’ adoptions are a function of their exposure to other actors’ knowledge, attitudes, or behaviors concerning the new product” (Van den Bulte and Stremersch, 2004, p.530). The social contagion of products includes a number of interrelated processes, including direct behavioural imitation or mimicry (Tanner et al., 2008), informational influence (Burnkrant and Cousineau, 1975) and persuasion (Rogers, 1976; Van den Bulte and Joshi, 2007). Social contagion may affect people via direct, conscious social interactions, or via subconscious processes. Direct social interaction effects include friends’ enthusiastic stories regarding a recent purchase and recommendations about which products to buy. In the innovation literature, such processes are generally grouped together under the term ‘Word of mouth’ (Godes and Mayzlin, 2004). The subconscious effects of social contagion may be more difficult to pinpoint but include social norms, such as what people feel is expected of them (Katz and Lazarsfeld, 1955), as well as the subtle influence we experience from the vast range of behaviour that we perceive around us (Cialdini and Goldstein, 2004). In this dissertation we use the term social contagion to refer to this whole process of interpersonal influence and we assume that an interplay of conscious and subconscious contagion effects combine to stimulate people to adopt new product-related behaviours. As such, we define product-related social contagion to be:

The process by which consumers influence each other, via direct behavioural imitation, word-of-mouth, informational influence, persuasion or social norms, either consciously or subconsciously, to adopt a new product, as opposed to being influenced by other sources such as marketing communication.

The quote at the start of this chapter shows that applying the notion of social contagion to the adoption of innovations is not new. However, it would appear to be an idea which has not yet been exploited to its full potential. This provides the motive for the research described here as the social contagion concept gives us the basis for a new approach to model and predict the future consumer demand for a new product. If we can identify what it is about certain products or certain types of people that drives this social contagion process, then we can estimate the chances that the behaviour associated with a certain new product will be copied and therefore that a high level of consumer demand will develop for that product.
Chapter 1  |  Introduction

This research is of relevance on a number of levels. Scientifically, we can provide an important addition to our understanding of the consumer adoption of new products. Over the last decade there has been a surge in the number of publications on this topic (see Van den Bulte and Stremersch, 2004, for a meta-analysis of studies on the role of social contagion in new product adoption), however none of these studies has identified the drivers of social contagion or their relative importance in relation to consumer demand. On a managerial level we provide a practical method for use when developing innovative new products. In the process of new product development estimations of likely consumer demand are always made, if not explicitly then implicitly. We hope that this research goes some way to help those making such estimations by complementing existing methods with a completely new approach which is both workable and valid. On a societal level and for consumer groups, this research could provide valuable indications of how our (product-related) behaviour is governed by processes we are oblivious to. If consumers understand how they are influenced by the process of social contagion, they can take steps to assess their decisions relating to which products to buy and use and to have more conscious control over their behaviour.

1.3 Predicting the consumer demand for a new product

In this section we present an overview of existing methods for predicting the consumer demand for a new product. There are many such methods, to be applied in different ways and in different situations. In order to put forward a clear overview we categorize them on descriptive dimensions, such as “What is the source of the presumed knowledge about the future?”, “How well known is the object of the prediction?”, “At which stage of the product life-cycle does the prediction take place?”, “What is the prediction to be used for?” and “What is the time frame of the prediction?” We briefly describe each of these descriptive dimensions and we also specify where the research described in this dissertation can be placed on each dimension. In this way we aim to clearly define the focus and boundaries of this research.

At this point it may be useful to briefly explain the social contagion approach which we advocate and which is described more fully later in this dissertation. Because we focus on estimating consumer demand in a highly challenging situation, i.e. very early in the development process and when the product is dissimilar to existing products, our approach is quite different to many methods which can be applied after the product has been developed or which focus on products which are incremental improvements to existing products. In our challenging situation there is no relevant data available from the market; either directly from the product in question or from any analogous products. As well as this, we cannot assume that potential consumers are able to make reliable evaluations of the product or reliable assertions as to their
likely adoption or use of the product. This is because we expect them to have difficulty understanding the really new product and its possible impact on their daily lives. Added to this, we also expect the potential consumers to be unreliable in expressing their requirements or future needs in relation to such a new product. Because of these difficulties, we have had to make our new approach necessarily different from the standard approaches which are not intended for use in our challenging situation.

Briefly, the way we go about estimating the likely market demand for a new product is based on a theory of social contagion and comprises three steps. Firstly, we use literature and experts to specify generic social contagion effects. These model the generic link between a product characteristic and a market segment characteristic. Secondly, for a specific product-market combination, we again use experts to judge the relative strength of each product characteristic and each market segment characteristic in this case. The third step in our approach is then to combine these generic and specific effects to determine the likelihood that social contagion will take place and, in turn, the likely strength of the market demand for the product. Such a novel approach has benefits and drawbacks. Some of the benefits are that it can be applied at a very early stage of product development so that the results can be fed directly back into the development process and also that it is quick to carry out. Drawbacks include the reliance on experts, whose judgments can also be of limited reliability, and the fact that our approach provides a snapshot estimation of market demand rather than a complete prediction of the diffusion curve.

What is the source of the presumed knowledge about the future?

A number of authors have compared and grouped the various methods for predicting the consumer demand for a new product, leading to similar categorizations (e.g. Armstrong, 2001c; Kahn, 2005; Taschner, 1999). Three categories emerge: Consumer analysis, based on the opinions of potential end-users (Green and Srinivasan, 1990; Jamieson and Bass, 1989; Morwitz et al., 2007), Expert analysis, based on the opinions of those working in the relevant industry (Lawrence et al., 2006), and Data analysis, based on analogies and extrapolations linking historical data to the proposed new product (Leeflang et al., 2000; Mahajan et al., 2000; Schnaars, 2009). These categories will be described more fully in Chapter 3. Recently, the need for alternative approaches, which do not fit in the three categories of consumer analysis, expert analysis and data analysis, has been highlighted (Christensen et al., 2004). Alternatives which complement these three basic categories are needed which have different limitations and which make different assumptions. The tendency in theoretical development has been to ever deepen our knowledge within these three categories, making models and methods which make finer distinctions for highly specific situations. The need for alternative approaches calls for a broadening of our models and methods to produce new categories. Indeed the categorization described above misses an alternative category for which new methods have already been proposed. This fourth category is of methods that can be described as practical, trial-and-error approaches, which include
real-time marketing, also known as test marketing, as well as a method called ‘probe and learn’ (Lynn et al., 1996), whereby firms release an early version of their new product, perhaps into a niche market, learning from this ‘probing’ and iteratively improving the product for a wider market. A similar approach is referred to as ‘a spiral process’, whereby the product development team carries out quick iterations of the product development process, from opportunity to testing (Refered to in Hauser, Tellis and Griffin, 2006). The social contagion approach described in this dissertation does not fit easily into either category: no consumers are directly involved, no experts make any predictions, data from the past is not used and there is no trial-and-error process. Our approach does rely heavily on experts making assessments of product attributes and consumer segment characteristics but we believe that it does not belong in the expert analysis category because the source of the knowledge on which the predictions are made is not the experts themselves but a theory of social contagion. Therefore, we believe that our social contagion approach represents a fifth category of methods for predicting the consumer demand for a new product, namely theoretical approaches. As such it goes some way to answering the call to broaden the set of available methodologies.

How well known is the object of the prediction?

Some products are well known and their adoption is relatively easy to predict whereas others are unusual and their adoption is therefore difficult to predict. We know how the number of home phone users has changed over the last decades and we are likely to be quite accurate when predicting home phone usage for next year. The knowledge we have about the current situation is highly relevant to the situation to be predicted and our assumptions probably apply. In such situations a wide range of methods can be applied to estimate the future consumer demand for a product. For example, we can apply data extrapolation as our previously gathered data will be highly relevant and applicable. Alternatively we can directly measure consumers’ behavioural intentions as the consumers themselves understand the current situation well and are generally able to accurately predict any changes in their behaviour in the near future. However, when the object of the prediction is less well known it is more difficult to predict consumer demand, such as for television via a mobile phone that is being launched in Europe as we write. The knowledge we have about current television and mobile phone usage is insufficiently relevant to the new situation and any assumptions we make based on this knowledge may be weak. Various typologies have been proposed to distinguish the degree of newness of product innovations (Garcia and Calantone, 2002; Kleinschmidt and Cooper, 1991; Veryzer, 1998a; Veryzer, 1998b). Garcia and Calantone (2002) focus on different ways in which a product can be considered new, such as on a macro level (newness to the industry) or a micro level (newness to the firm or to the consumer segment), and whether the product represents a technological discontinuity or a marketing discontinuity. They propose a general scale with three levels of product innovativeness: Radical innovations, really new innova-
tions and incremental innovations. In this dissertation we focus on the side of the scale relating to radical and really new innovations because it is these products that cause new behaviours to emerge and because it is for these products that there is a lack of applicable methods (Kahn, 2005; Morwitz, Steckel and Gupta, 2007). This presents us with a considerable challenge for predicting likely consumer demand because we cannot rely on our or others’ experience from existing products or extrapolate from known data sets.

At which stage of the product life-cycle does the prediction take place?

During the development of a new product, prototypes are made and trials are carried out before the product is launched. Once the product is in the market, sales and usage can be monitored and market research can identify which product improvements are called for. Throughout this process, there is increasing feedback from the market, providing increasingly rich information. This information helps those predicting consumer demand and, therefore, the later in the development process a prediction is made, the more accurate it is likely to be. However, the further a firm goes down the path of product development and product introduction, the higher the costs accrued. An enormous body of literature has been built around product diffusion, whereby the first months or years of data are used to predict subsequent consumer demand (see e.g. Leeflang, Wittink, Wedel and Naert, 2000; Rogers, 2003). Although these diffusion models are typically applied once market feedback has been received, some diffusion models can be applied by using data from analogous products, thereby allowing for application before direct market feedback is available (Duncan et al., 2001). However, in this case the diffusion models are always applied to incremental innovations whereby product developments are incremental in nature, rather than radical, discontinuous innovations. Some authors have highlighted the lack of methods which can be applied prior to market introduction or even prior to product development (Taschner, 1999; Urban et al., 1996), particularly for radical and really new innovations. The research described in this dissertation focuses in particular on the (very) early estimation of consumer demand, at the product concept stage, which is once again a significant challenge.

What is the prediction to be used for?

Different methods provide predictions that can be used for different purposes. A sales manager may want to estimate turnover or usage figures. A product developer may be looking for information to help improve the product design. Marketing managers use predictions of consumer demand to look at the likely penetration of new product in different segments of the market and to help develop suitable communication campaigns. Company directors may want to determine their company’s future strategy by seeing a (longer term) view of the likely changes in the market and the technology. We focus on estimates of consumer demand which are to be used to guide new product development activities early in the development process. In order to do this we need
Chapter 1 | Introduction

to be able to make predictions for use in three ways: Firstly, we aim to distinguish between new product concepts which will generate high levels of demand from those that will not. As such, we do not attempt to provide (spuriously) accurate turnover figures. Secondly, we aim to determine which market segments are likely to develop a high level of demand for a new product and those which will not. And thirdly, we aim to identify what it is about a new product concept that particularly drives future consumer demand as well as identify which aspects of the product or proposition need improvement to stimulate higher levels of consumer demand. If we can do these three things, we are contributing significantly to the existing methodologies. Many authors distinguish between the supply-side issues of new product development and demand-side issues (Baumol and Blinder, 2008). The focus of this dissertation is clearly (consumer) demand-side issues. Another issue relating to the scope of this research is the product type. We focus on technological products and in particular those making use of information and communication technology as these are undergoing frenetic levels of change, with thousands of new developments including many new internet-based applications, interactive television, payment using mobile phones, and many others.

**What is the time frame of the prediction?**

Some methods for predicting the consumer demand of a new product are specifically suited to a particular time frame. For example, purchase intention surveys, whereby consumers are asked if they would buy a certain new product, are intended to give an indication of market potential in the range of a few weeks or months. Consumers are unable to visualize what they may do in five years time. Other methods have a longer time frame, such as trend-based future scenarios, whereby long-term societal trends are identified and their possible influence on consumer buying behaviour are sketched in a number of explorative descriptions. The choice of time frame depends upon the sort of result that is required, and, of course, we can expect decreasing accuracy with longer time frames. In this dissertation we focus on predicting the consumer demand for products typically when they are in the process of being developed and are intended to be launched into the market in one to three years.

To summarize, in the present dissertation the focus will be on theory-based estimates of consumer demand, to be carried out during product development, for radical innovations and really new products, which incorporate information and communication technology and which are intended for release into the market within about three years.

1.4 **Theory on social contagion and new product adoption**

Recent developments in a broad range of research fields point to the role of social contagion in the adoption of new behaviours. This includes neurology, cognitive neuroscience, developmental biology, physiology, etymology, social psychology,
Chapter 1 | Introduction

philosophy, evolutionary anthropology and economics. For an overview of this work see Hurley and Chater (2005), who conclude that “imitation remains the default social behaviour.” This work is building on earlier developments, for example from theories of social psychology, such as a theory of Social Learning (Bandura, 1977), Social Identity Theory (Hogg and Abrams, 1988; Tajfel and Turner, 1986), Social Comparison Theory (Festinger, 1954; Guimond, 2006) and research on the automatic effects of social interaction on behaviour (Bargh et al., 1996; Chartrand and Bargh, 1999; Dijksterhuis and Bargh, 2001), as well as a theory stemming from evolutionary biology termed Memetics, coined in the 1970’s (Dawkins, 1976) and later developed in the 1990’s by philosopher and cognitive scientist, Daniel C. Dennett in his book “Darwin’s dangerous idea” (1995). These theories of social contagion provide us with an understanding of the adoption of new behaviours and may give us new ways of predicting the consumer demand for a new product. The five theories mentioned above each interpret the conditions which lead to social contagion in their own way.

Each is briefly described below.

**Social Learning.** Bandura (1977) proposed that social behaviour is not innate, but is learned from “models”; appropriate other people (either real, or symbolic such as characters in a film). Also known as “observational learning”, this modelling theory has mostly been applied to studying the imitation of violent behaviour, but it is also perfectly suited to studying other behaviours, such as the adoption and use of new products. Social Learning Theory stipulates that the conditions necessary for people to learn from others are (1) attention, in which the “model” is observed, (2) retention, in which the observer commits the observed behaviour to memory, (3) motor reproduction, such that the observer is able to replicate the observed behaviour, and (4) motivation, whereby the observer wants to carry out the behaviour they have observed and remembered, as well as having the opportunity to do so.

**Social Identity Theory.** This theory proposes that groups of people develop their shared identity by adopting many beliefs and behaviours of their ‘in-group’ and purposefully seeking to differentiate themselves from other ‘out-groups’ (Hogg and Abrams, 1988; Tajfel and Turner, 1986). Social Identity Theory takes a group perspective, as opposed to many social psychological theories which describe group processes in terms of the characteristics of the individuals or their inter-personal relations. The conditions for adopting new behaviour are described by this theory in terms of three processes, (1) categorisation, whereby people classify themselves as being members of a particular group, (2) intergroup differentiation, whereby different groups exhibit behaviour to emphasise the differences between them, and (3) conformity to in-group norms, such that group members show a preference for all aspects of their own group. There is also an important role played by the perception of oneself, members of one’s own group and members of other groups in terms of relevant group stereotypes.
Social Comparison Theory. This theory proposes that in order to reduce personal uncertainty and conserve or improve self-esteem, individuals engage in comparisons (Festinger, 1954; Guimond, 2006). The basic idea is that individuals assess themselves through comparison with other people and that this has an effect on their image of themselves. Research has shown that people make particular use of these social comparisons in situations that are ambiguous. Social comparison can be directed either upward (i.e. comparing oneself to those we deem to be socially better than us in some way, e.g. opinions, emotions, attitudes, values, attributes, abilities, and performances) or downward (i.e. in the direction of those we believe to be worse than us in some way). Social Comparison Theory helps explain why people emulate or imitate models, or other types of people that they feel they could or would like to become more like.

These models may be people they know, stereotypes or images they see in the media. The conditions for adopting new behaviour are described by this theory in terms of (1) an inherent motivation to compare oneself with others, (2) the degree of similarity to those one compares oneself to and (3) the importance of the comparison group for the person in question. These conditions can vary due to situational, personality, and cultural factors (Kruglanski and Mayseless, 1990).

Automatic effects of social interaction on behaviour. Recent research in the field of social psychology shows the nonconscious effect that the behaviour of people in our social proximity has on the behaviour we express ourselves (Bargh, Chen and Burrows, 1996; Chartrand and Bargh, 1999; Dijksterhuis and Bargh, 2001; Dijksterhuis et al., 2005). These authors propose that the mechanism involved is a direct cognitive link between what we see others doing and what we do ourselves. This idea is congruent with an idea from cognitive neuroscience called the Shared Circuits model (Hurley, 2006; Prinz, 1990), which is a sub-personal model. This proposes that cognitive processes which are active during perception of the behaviour of others share neurological pathways with the processes which governing our motor actions. This model, in turn, relates strongly to the lower level neurological identification of ‘mirror neurons’ which fire both when an action is perceived and carried out (Di Pellegrino et al., 1992). According to this social psychological theory, social contagion can be the imitation of (1) direct observable behaviour, (2) inferred traits based on the observed behaviour and our unintentional and immediate interpretation of it (“If we see a person walk very slowly, we automatically infer the trait “slow,” and we automatically tend to become slow.” (Dijksterhuis and Bargh, 2001, p.14)), and (3) generalized behaviours due to the activation of social stereotypes.

Memetics. This theory takes a ‘survival of the fittest’ approach and applies it to the adoption of new behaviours. It proposes that behaviours and ideas compete with each other for attention and expression by humans (Dawkins, 1976; Dennett, 1995). It postulates that behaviours which in some way stimulate people to imitate them will become successful and will cause other behaviours, less suitable for being imitated in
a particular human environment, to die out. This theory stipulates three conditions for social contagion to occur: (1) fecundity, i.e. the number of copies which are made of a behaviour, (2) the fidelity of those copies, i.e. whether people are able to carry out the behaviour in the right way, and (3) the longevity of the behaviour, i.e. whether people keep on expressing the behaviour over a long period of time. This theory, more than the four theories described above, provides a predictive mechanism for distinguishing between the likely adoption of one behaviour, compared to a set of similar or competing behaviours. Instead of basing behavioural choices on which other people are or are not exhibiting the behaviour, memetics addresses the characteristics of the behaviour itself such as the aspects which stimulate many people to copy it. It provides us with a list of the characteristics of a behaviour through which that behaviour can get itself copied. Because of this, it allows us to assess the behaviour associated with a new product and to measure its potential to get itself copied, in comparison to the behaviour associated with alternative or competing products. And it is this ability which gives us a significant opportunity to develop a new approach to estimating the consumer demand for a new product. We discuss this theory and our use of it in more detail in Chapter 3.

As stated earlier in this introduction, relating imitation to the consumer demand for an innovation is not a new idea. Many authors have proposed that imitation plays a central role in the spread of new products (e.g. Bass, 1969; Tarde, 1890). However, most of these authors do not make use of these imitation theories, described above, or investigate what causes the social contagion. In the research described in this dissertation we aim to make some progress in this direction.

1.5 Empirical research on social contagion and new product adoption

It is only relatively recently that researchers in the area of innovation management have scientifically investigated the process of social contagion. One of the first studies to apply a quantitative approach to social contagion during new product adoption was Burt (1987a), who looked at influences on physicians’ prescriptions of new drugs. Burt identified a social contagion influence from the doctors’ personal social networks. He showed that this occurred through social normative pressures (i.e. what they felt someone in their position ought to do; in Burt’s terminology ‘structural equivalence’) as opposed to the more direct route of personal influence, such as recommendations (Burt’s ‘cohesion’). More recently, Van den Bulte and Stremersch (2004) carried out a meta analysis comprising studies of 52 consumer durables in 28 countries which applied Bass’ (1969) model of product adoption. They assessed the relative effects of internal market influence, i.e. social contagion between consumers, and external market influence, i.e. marketing communication, and linked this ratio to Hofstede’s (2001) four original dimensions of national culture. They showed that the
results are consistent with the social contagion explanation of product adoption and they provide evidence that this is driven by status concerns and social normative pressures. This is in line with Burt’s (1987a) findings and together these papers provide us with clues as to where to find consumer determinants of social contagion, albeit at a highly abstracted level.

More evidence of social contagion comes from Van den Bulte and Joshi (2007), who use 33 data series, including pharmaceuticals, music CDs and high tech products, to show the value of their model which includes two distinct segments of consumers; the influentials, who choose products independently of others but whose actions do influence others, and the imitators, who are influenced by both influentials and other imitators. More recently still, and again in the area of physicians’ prescriptions of a new drug, Manchanda, Xie and Youn (2008) observe a contagion effect based on geographical proximity and control for many other possible causes at a disaggregate level, such as targeted promotion and sales person contact. Niraj and Janakiraman (2008) show that social contagion influences consumers’ adoption of personal computers and go further to show that social contagion also influences choices of brand, retailer and channel. One other relevant study, this time looking at the uptake of an online grocery retailer, Netgrocer.com, Bell and Song (2007) again showed a “significantly positive and economically meaningful” social contagion effect, controlling for a number of consumer demographic variables at the 2-digit postcode level. None of these studies, however, assess the effects of specific consumer or product attributes on the social contagion effects they find.

In the field of Social Psychology, there has also been recent progress in investigating the role of social contagion in the adoption of product-related behaviour. Following on from initial research which demonstrated automatic and nonconscious mimicry among complete strangers (Chartrand and Bargh, 1999; Dijksterhuis and Bargh, 2001), Tanner et al (2008) showed automatic mimicry of others’ consumption. In an experimental situation, they showed that people copy the product choice behaviour of others and that this mimicry also has an effect on the mimicking person’s preference regarding that product. They also looked at the effect of being mimicked, suggesting that this increases prosociality, leading to the mimicked person having a more favourable attitude towards the mimicker’s preference.

1.6 Problem definition

Despite the growing evidence of the importance of social contagion during the adoption and diffusion of new products, as described in the previous paragraph, there remain a number of significant gaps in our knowledge on this matter. The central problem addressed in this dissertation can be summarised in two parts as:
1. To what extent can an understanding of social contagion be used to make pre-introduction predictions of the future consumer demand for a new product, particularly when that product is dissimilar to existing products?

2. Which characteristics of consumers and of products drive the process of social contagion and, in turn, affect consumer demand for a product?

The first part of our problem definition is scientifically relevant because there is a lack of models for predicting the future consumer demand for a product which, at that time, does not exist and is dissimilar to existing products. The second part is of scientific relevance as the antecedents of social contagion with respect to consumer demand have not been investigated and this can be an important step in resolving how the social contagion process occurs during new product adoption. Based on this problem definition we specify six research questions which are subsequently addressed in the following chapters:

1. To what extent are traditionally applied methods of market research applicable in situations where new product innovations are being developed?
2. How can the concept of social contagion be used to make predictions about the consumer demand for a new product?
3. How can such a method, based on social contagion, be applied in practice to answer the following product development and marketing questions prior to the market introduction of a new product:
   - Which market segments show the highest potential for the new product?
   - To what extent can we determine the focus for marketing communication in order to stimulate social contagion?
   - Which elements of the basic design of the concept need to be improved, so as to optimise social contagion?
   - What will the consumer demand be for the new product?
4. How valid are the estimations of consumer demand for a new product using this social contagion approach?
5. What are the determinants of social contagion?
6. What is the strength of the effect of social contagion on the actual adoption of new products?

1.7 Outline

This dissertation is comprised of four scientific papers, presented in the form of chapters, followed by a general discussion. The scientific papers are included in their original form and only the layout and numbering has been adapted. The rest of this dissertation is organised as follows:
In the first paper in Chapter 2 we address research question 1. We analyse a number of ways of assessing future market demand. The focus is on assessing breakthrough technologies, which lead to the development of really new products or radical innovations. Two dominant market research approaches, concept testing and needs assessment, are described and the assumptions that these methods make are identified. These assumptions form the basis of the main point made in this chapter: that there are important situations in which many of these assumptions do not hold and that, therefore, alternative approaches for estimating the likely future adoption of new products are needed. A number of such alternative approaches for estimating the likely future adoption of new products are proposed, including adapting existing methods, combining existing methods or circumventing existing methods by applying new methods. As one of the new alternative approaches, the idea of social contagion is introduced. An important point is that this new approach allows us to assess consumer demand for a new product among a population of potential consumers without asking the potential consumers to evaluate the product.

The second paper, presented in Chapter 3, addresses research question 2. We describe the development of a new instrument, which is based on the notion of social contagion. This instrument is a wholly new method for predicting the future behaviour of consumers and is based on one theory of social contagion, known as memetics (see 1.4 above). This theory is discussed and the development of the instrument is described. As this paper was written prior to 2005, the description of social contagion does not refer to more recent journal publications on the topic. This chapter presents a brief application of the new instrument in a case study where it is applied to ten new mobile telephony products.

In Chapter 4, the third paper addresses the four parts of research question 3. We describe how this imitation analysis instrument has been applied in practice in two case studies in the Netherlands. Beginning by adding more detail to the description of the model and the algorithms at the heart of the instrument, the two case studies are described from the perspective of the firm developing the new products. These cases show how product developers and marketers can be supported by the new instrument, as some of the crucial decisions they make prior to market launch can be guided by insight into the future social contagion potential of the product concepts.

In the final paper, in Chapter 5, we address the research questions 4, 5 and 6. We focus on two sides of the social contagion equation: firstly by looking into how social contagion is brought about during new product adoption and secondly by assessing how social contagion affects market demand. In this paper we adopt a different methodological approach and develop a structural equation model. Using data from a broad range of product – consumer segment combinations from two industries we investigate the determinants of social contagion as well as the strength of the effect that
social contagion has on the actual market demand, as measured by the penetration rate per market segment.

Chapter 6 is the General Discussion and here we bring together the findings and highlight the scientific and management significance of the work presented in this thesis. We also reflect on some limitations of our work and following on from these we identify opportunities for future research.

1.8 References