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Which values motivate consumers to innovate?

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Abstract

Consumer innovation is valuable not only to the innovator, but to society as a whole, and therefore modern societies generally aim to support and facilitate consumer innovation. For this purpose, it is helpful that research on the extent of consumer innovation is emerging, but there is still a lack of research on what motivates consumer innovators. In this paper, we report the first study of the value basis of consumer innovation based on a survey study with representative samples in ten European countries (N = 10000). We find that personal value priorities are significantly related to whether consumers innovate or not, providing additional detailed knowledge of what motivates consumers to innovate. First, we find that on average 7% of participants report that are engaged in innovation activities in their leisure time, which is in line with earlier, single country studies. Second, the value priorities of consumer innovators across all ten countries reflect a stronger openness to change than non-innovators. Third, we find that consumer innovators are less motivated by hedonistic goals and more by concern for other people and society (i.e., Universalism values) than non-innovators, which adds an important dimension to existing knowledge about consumer innovators. With our results, we dig deeper into understanding what motivates and drives consumer innovation, finding that consumer innovators are more concerned with the welfare of others (universalism) than with their own pleasure and gratification (hedonism). With this, we add to the conceptualization of consumer innovation, clearly differentiating consumer innovators from early adopters of innovation, with knowledge of the underlying value priorities that motivate consumers to innovate.

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Consumer innovation is valuable not only to the innovator, but to society as a whole, and therefore modern societies generally aim to support and facilitate consumer innovation. For this purpose, it is helpful that research on the extent of consumer innovation is emerging, but there is still a lack of research on what motivates consumer innovators. In this paper, we report the first study of the value basis of consumer innovation based on a survey study with representative samples in ten European countries ($N \approx 10000$). We find that personal value priorities are significantly related to whether consumers innovate or not, providing additional detailed knowledge of what motivates consumers to innovate. First, we find that on average 7% of participants report that are engaged in innovation activities in their leisure time, which is in line with earlier, single country studies. Second, the value priorities of consumer innovators across all ten countries reflect a stronger openness to change than non-innovators. Third, we find that consumer innovators are less motivated by hedonistic goals and more by concern for other people and society (i.e., Universalism values) than non-innovators, which adds an important dimension to existing knowledge about consumer innovators. With our results, we dig deeper into understanding what motivates and drives consumer innovation, finding that consumer innovators are more concerned with the welfare of others (universalism) than with their own pleasure and gratification (hedonism). With this, we add to the conceptualization of consumer innovation, clearly differentiating consumer innovators from early adopters of innovation, with knowledge of the underlying value priorities that motivate consumers to innovate.

1 Introduction

Users as innovators have gained widespread interest since von Hippel's (1976) seminal work in the 1970s. Instead of being viewed as a fairly passive group, von Hippel (1986) understood users as both heterogeneous and active, and as the source of many novel concepts and ideas.

Since then, a stream of research on users as innovators has emerged (Hienerth & Lettl, 2016). Early user innovation research focused especially on how users are important sources of innovation and how society at large, but also companies, benefit from this (Franke, von Hippel, & Schreier, 2006; Harhoff, Henkel, & Von Hippel, 2003; von Hippel, 1986)

Recently, von Hippel, de Jong, and Flowers (2012) reported the first study to empirically estimate the frequency of consumer innovation in a broad sample of UK consumers, using their leisure time to create and/or modify everyday items, like craft and shop tools, sports and hobby equipment, etc. Since then, similar studies have been carried out, identifying consumer innovators in a few other countries (Hippel, Ogawa, & de Jong, 2011; Kim, 2015). These studies suggest that, across the globe, millions of consumers are innovators, varying with gender, education attainment, and technical training. Important in itself, this research has demonstrated that consumer innovators can be identified and measured in broad samples, using screening and open-ended questions. However, apart from simple demographic characteristics and the fact that users in general innovate for non-economic reasons, such as personal needs, fun, learning or helping others (de Jong, 2016; Stock, von Hippel, & Gillert, 2016), we still know little about consumer innovators and how innovative behavior at this level can be predicted and supported. From a policy perspective, the importance of consumer innovation is illustrated by the finding that consumer innovators invest more in innovation than producers (von Hippel et al., 2012).

This study adds to prior consumer innovation research by investigating whether consumer innovators' value priorities differ from non-innovators. However, we do not want to imply that consumers' value priorities, or even their motivation more broadly, is the only factor which influence consumer innovation in a society. Cultural values, societal institutions and a host of other national and local conditions may facilitate or impede innovation (Zhu, Habisch, & Thøgersen, 2018) and might even moderate which values motivate consumers to innovate. Hence, we survey consumer innovation and value priorities in ten countries across Europe to obtain a general and precise value profile of consumer innovators. Knowing the differentiating value priorities of consumer innovators is the key to understand what motivates consumers to innovate. In addition, this study adds to the conceptualization of user and consumer innovation theory by offering evidence that 'consumer innovators' have different values priorities than 'early adopters' of an innovation (Goldsmith & Hofacker, 1991).

2 Theoretical background

For this study, we build on user innovation theory (von Hippel, 2005) and theory of human values (Schwartz, 1992). We take our point of departure in user innovation theory to define consumer innovators and use human values theory to get a better understanding of what motivates consumer innovators to innovate.

User innovation theory

Already in the 1970s, von Hippel identified users as an important source of innovation revealing that many producer/ manufacturer innovations were originally invented by users (von Hippel 1976). Although commercially successful versions of the product or service are usually brought to the market by manufacturers, the initial idea and prototype is often developed by users. Furthermore, products that originate as user innovations are generally more commercially successful than firm-generated ideas (Lilien, Morrison, Searls, Sonnack, & von Hippel, 2002).

Much of the subsequent literature on user innovators has focused on the users with the highest propensity to innovate, labelled *lead users* (von Hippel, 1986), and how they may be identified in, for example, communities of extreme sports (Franke & Shah, 2003; Lüthje, 2004), sail boats (Raasch, Herstatt, & Lock, 2008), kite surfing (Tietz, Morrison, Lüthje, & Herstatt, 2005), or among users of library and banking services (Morrison, Roberts, & von Hippel, 2000; Oliveira & von Hippel, 2011). By now, the characteristics of lead users are well researched and described. Lead users, either individuals or organizations, are ahead of the mass market with regard to needs and have high benefits from a solution to these needs (Hienert & Lettl, 2016). They have a higher level of leading edge status (Morrison, Roberts, & Midgley, 2004), create more attractive innovations (Franke, von Hippel, & Schreier, 2006), and get more novel and original ideas that lead to better performance (Lilien et al., 2002).

User and consumer innovation

With the aim of documenting the importance of user innovation (in a broader sense) for society, recent studies have established the prevalence of “normal consumers” innovating by estimating the proportion of households in a society that engages in consumer innovation (de Jong, 2016; Kim, 2015; von Hippel et al., 2012, 2011). According to these studies, between 4% and 7% of consumers in developed countries seem to be consumer innovators (de Jong, 2016; Hippel et

al., 2011). It has been estimated that, in the UK, consumer innovators actually invest more in innovation than producers (von Hippel et al., 2012). Demographically, consumer innovators are more likely to be male, highly educated and having received technical training than non-innovators (von Hippel et al., 2011).

Recently, personality traits have been identified that seem to impact the success of consumer innovations in different stages of the innovation process (Stock et al., 2016). From the “big five” personality traits, “openness to experience” is found to be positively related to ideation, while “introversion” is positively related to prototyping and “conscientiousness” to diffusion of innovations (Stock et al., 2016). However, personality traits and most demographic characteristics are only weakly predictive of consumer innovation.

Notice that von Hippel and de Jong’s *consumer innovator* concept is substantially different from the concept of *consumer innovativeness* employed in innovation adoption and diffusion research (e.g., Rogers, 2003). Consumer innovativeness refers to consumers’ willingness to adopt a new product, service or idea (i.e., an innovation that becomes available in the market). However, as we elaborate below, it seems likely that the propensity to innovate and to adopt an innovation are rooted in some of the same basic value priorities.

User innovators’ motivation

Previous research has established that, in general, both intrinsic and extrinsic motives can make users innovate. However, since users primarily aim to benefit from the *use* of the product or service, and not from its production or sale, it is generally believed that monetary earning motives are not the most important (Raasch & von Hippel, 2013; Stock, Oliveira, & von Hippel, 2015; von Hippel, 1988, 2005).

Still, a large number of studies of user (and also community) innovation have identified extrinsic motives related to the outcome of the activity. First, users may expect reciprocity from others (Lakhani & von Hippel, 2003), for example, when a developer solves problems in an open source community and in return expects that others will help solve his problems. Second, social recognition from community members or peers (Franke & Shah, 2003), as well as job market value (Harhoff, Henkel, & Von Hippel, 2003), have been found to be important motives for code developers, since the code contributions and value are clear for the community. Third, the creation of social relationships through participation can be an important motive (Franke & Schreier, 2010; Franke, Schreier, & Kaiser, 2010), for example, when consumers self-design

products. Finally, economic benefits from the commercialization of the innovation is a motive for users that end up starting their own business based on their creation, labelled user-entrepreneurs in the literature (Hienerth, 2006; Shah & Tripsas, 2007).

However, a number of studies have found that users are often highly *intrinsically* motivated, that is, motivated by the enjoyment or appreciation of the activity itself (Harhoff et al., 2003; Hienerth, 2006; Stock et al., 2015; von Hippel et al., 2012). User innovators' intrinsic motivation has been linked to learning from the problem-solving process (Raasch & von Hippel, 2013), intellectual stimulation of the task itself (Lakhani & Wolf, 2005), as well as the pleasure of helping others (Lakhani & von Hippel, 2003).

A recent study of the relationship between motives and innovation outcome found that utilitarian (extrinsic) motives, related to the use of the product, lead to high utility of the solution, while hedonic (intrinsic) motives, related more to the enjoyment of the process, lead to more novel solutions, but often solutions with a lower utility (inverted u-shape) (Stock et al., 2015). However, there is still large gaps in our knowledge of motives and other antecedents that may help to understand, predict and facilitate user and consumer innovation, and a deeper and more complete understanding is urgently needed. We add to this knowledge by identifying which value priorities distinguish consumer innovators.

Human values

People's basic value priorities are often singled out as a root cause and key motivator of behavior (Bardi & Schwartz, 2003; Schwartz, 1996; Schwartz & Butenko, 2014). Many empirical studies have demonstrated that people's value priorities predict their specific attitudes and behavior in a wide range of domains, including attitudes towards innovation (Lebedeva & Schmidt, 2012). It is widely assumed and also empirically confirmed that individuals develop their value priorities primarily through childhood socialization (Grønhøj & Thøgersen, 2009) and that value priorities are quite stable in adulthood (Inglehart & Baker, 2000). Different values are relevant to and therefore motivate different behaviors and it differs how strongly different values are related to the behaviors that reflect them, depending on the strength of other factors influencing behavior (Bardi & Schwartz, 2003).

Schwartz (1992) defines values as “desirable goals, varying in importance, that serve as guiding principles in people's lives”. Based on theorizing and value surveys in a large number of countries from all inhabited continents, Schwartz (1992, 1994) identified 10 universal value

types, or motivation domains. As a result of their mutual consistencies and conflicts, these 10 universal human values form a circumplex, which can be mapped onto a two-dimensional space with the two main dimensions representing “self-transcendence versus self-enhancement” and “openness-to-change versus conservation”.

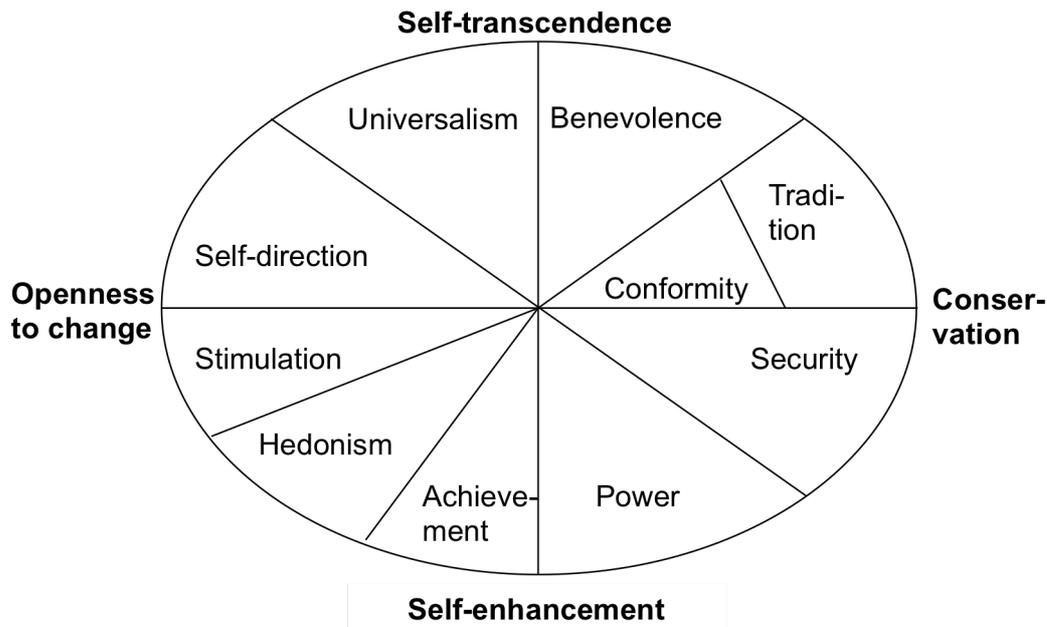


Figure 1: Schwartz’ value theory: The structure of 10 basic values

Studies in a range of fields have confirmed that values guide behavior (Bardi & Schwartz, 2003; Thøgersen & Ölander, 2002), but generally as a fairly distal antecedent that runs its course through a range of more behavior specific mental states and behavioral processes (Barbarossa, De Pelsmacker, & Moons, 2017; Paulssen, Temme, Vij, & Walker, 2014; Thøgersen, Zhou, & Huang, 2016). For example, values have been found to act as drivers for innovative and entrepreneurial behavior in a corporate entrepreneurship setting (Hemingway, 2005). Also, studies have found that the early adoption of new product and service innovations increases with the priority given to specific value domains: openness to change (valuing independent thoughts and actions and readiness for new experiences) and self-enhancement (personal achievements and getting ahead in society) values (Goldsmith & Hofacker, 1991; Steenkamp et al 1999).

Expectations regarding the value priorities of consumer innovators

The previously cited study on consumer innovators' personality traits find that 'openness to experience', including being inventive and curious, is positively related to the ideation of new solutions (Stock et al., 2016). We expect this personality trait to reflect the same type of motivation as the 'openness to change' value dimension (encompassing the values self-direction and stimulation). We expect a user who is open to new experiences and who values self-direction and stimulating experiences to be less likely to wait for manufactures to develop new or better solutions for needs that they experience and thus more likely to start innovating themselves. Consumer innovators are prone to come up with new ideas, being creative and original (the Self-direction value) and accept surprises, adventures and risk (the Stimulation value). Conversely, we expect consumers that strongly value the status quo (i.e. values of Conformity, Tradition and Security) are likely to be more content with existing products and solutions on the market and less interested in new ways of solving problems and therefore not expected to start innovating. These expectations are in line with what studies of early adopters have found (Goldsmith & Hofacker, 1991; Steenkamp et al 1999).

It is less obvious which expectations to formulate for consumer innovators regarding the second dimension of the value space outlined in Figure 1, the self-transcendence vs self-enhancement dimension. Von Hippel argues for a distinction between *lead users* and *early adopters* as lead users have needs that foreshadow the general market and thus enter the market before manufacturers do (von Hippel, Thomke, & Sonnack, 1999) and at this point, there is not a new product for early adopters to purchase.

The term *user* or *consumer innovator* refers to consumers or users that are involved in own creation of solutions (de Jong & von Hippel, 2013), regardless of the existence of current solutions on the market. Although they are in a different position in relation to the market than both *lead users* and *early adopters*, it seems reasonable to expect that some of the same values that motivate consumers to become early adopters also determine whether some become *consumer innovators*, when combined with the right needs and resources.

Since consumer innovators have been found to be motivated primarily by the *use* of the solution, in addition to any intrinsic satisfaction or enjoyment from making the innovation, their motivation is likely to depend on the *use situation* (Raasch & von Hippel, 2013). It seems most likely that users typically innovate in response to a personally felt need or want, that is, primarily serving their own self-interest, which links this activity to the self-enhancement dimension (values of achievement and power). At the opposite side of the value circumplex, the self-transcendence dimension reflects concern with the welfare and interest of others and society in general, such as peace, equality and the concern for nature (universalism) as well as

close others, such as family, friends, neighbors, the local community (benevolence). Since we expect that consumer innovation is primarily motivated by matters of a high personal interest, rather than more universal needs and wants, this suggests that the self-enhancement dimension will be positively related and the self-transcendence dimension negatively related to consumer innovation. This is similar to the findings of studies of what motivates early adopters (Goldsmith & Hofacker 1991; Steenkamp et al 1999).

3 Method

A survey study was carried out in 10 European countries: Germany, Netherlands, Denmark, Finland, Italy, Spain, Poland, Hungary, France, UK ($N \approx 1000$ in each country), covering the five regions north, south, east, west and central Europe. The survey contained questions about human values, consumer innovation activities and a range of background characteristics, as well as questions not pertinent to the present study.

The questionnaire was developed in English and translated to the nine other national languages. In order to control the translations, they were back-translated into English by the organizations doing the translation (but a different person). The authors controlled the back-translations, comparing them with the original English version and settled all uncertainties and ambiguities with the translators. Before implementing the surveys, the final, online questionnaire was further controlled by a knowledgeable, native speaker of that language, which led to a few, minor corrections.

The survey data were collected by a professional market research company (YouGov), who sampled respondents from their own and partners' panels in the different countries, administered the data collection as computer assisted web interviews (CAWI) and organized and presented the data in SPSS files. The samples from each country are representative for the age group 18-65 years old with regard to gender, age and geography. Demographic profiles of the ten country samples are reported in Table 1.

[Insert Table 1 around here]

The open responses to the consumer innovation questions were thoroughly analyzed with the assistance of native speakers to check if reported innovations are *really* consumer innovations, following the procedure and criteria developed by de Jong and von Hippel (de Jong, 2016; von Hippel, de Jong, & Flowers, 2012). As explained in more detail below, participants were classified as consumer innovators or not based on these responses. This categorization was

regressed (binary logistic regression) on a range of individual characteristics in three blocks using a stepwise procedure in each block in order to reduce unnecessary complexity and the risk of multicollinearity.

Constructs

Consumer innovation

The measurement of innovation activities by consumers is based on recent research on innovation activities at the level of individual end-consumers (von Hippel et al., 2012). The aim of this research is to identify the consumer innovators and measure how common it is for ordinary people to carry out innovation activities by creating and modifying consumer products that they use in their everyday lives.

We used the five-step survey procedure suggested by de Jong (2011) to identify consumer innovators. With reference to each of eight different domains (ranging from ‘computer software’ to ‘any other creations’) we asked if he/she has created (what we would term) an innovation, which was not job- or business-related, not a homebuilt or do-it-yourself version of a product already available on the market, not primarily developed for sales motives (but rather for a personal need), and with some kind of functional novelty (drawing on an open-ended question at the end of the sequence). An individual is considered a consumer innovator if he/she has created at least one such validated innovation within at least one of the eight domains in the past three years.

Human values

For this study, human values were measured by means of a 21-item instrument, which was developed by Shalom Schwartz for the European Social Survey (ESS), as a shorter version of his Picture Values Questionnaire (PVQ) (Schwartz et al., 2001). The ESS-PVQ includes short verbal portraits of 21 imaginary persons. Each portrait describes a person’s goals, aspirations, or wishes pointing implicitly to the importance of a value. For each portrait, respondents were asked: “How much like you is this person?” Responses were given on a six-point graded scale from “very much like me” (coded as 6) to “not like me at all” (coded as 1). The PVQ items are assumed to reflect the ten basic motivational value domains in Figure 1. Despite the short 21 item instrument only including two items to represent most the ten value domains, construct reliabilities are acceptable for most of the motivational values constructs: Universalism (Cronbach’s alpha = .70), Benevolence (Cronbach’s alpha = .67), Achievement (Cronbach’s alpha = .75), Hedonism (Cronbach’s alpha = .72), and Stimulation (Cronbach’s alpha = .69).

However, for some values constructs, construct reliability is below the normally accepted threshold: Tradition (Cronbach's alpha = .42), Self-direction (Cronbach's alpha = .53), Power (Cronbach's alpha = .57), Conformity (Cronbach's alpha = .58), Security (Cronbach's alpha = .63). The low reliability may lead to attenuation of the statistical relationship between these value constructs and the measure of consumer innovator, which is particularly problematic for Self-direction. Still, for the present analyses it makes most sense to use the mean score on the items representing a value domain as the indicator for that value in the following analyses.

4 Results

The shares of consumer innovators by country and other key background characteristics are reported in Table 2. We found that, on average, 7% of our participants reported that they engaged in consumer innovation in the past three years in at least one of the eight domains covered by the study, which is within the range reported in prior research. However, there is a substantial and statistically significant variation across countries and the range, from 2.6% in the Netherlands to 12.4% in Italy, is substantially extended compared to what has been reported previously. Besides this, our results confirm prior studies reporting that the likelihood of inventing something is unrelated to most of the usually controlled demographic background characteristics. The exception is gender, men being significantly more likely than women to report that they invented something.

[Insert Table 2 around here]

The next step is a regression analysis to identify predictors of being a consumer innovator among ordinary people. Since being a consumer innovator is measured with a binary categorical variable, binary logistic regression analysis is used for this purpose. Further, since this is the first attempt to identify the value basis of consumer innovation, and covering a substantially larger number of countries than prior studies in the field, an exploratory, stepwise approach is used to identify relevant predictors. Specifically, potential predictors were included in four blocks using a stepwise procedure in each block (see Table 3).

[Insert Table 3 around here]

First, in Block 1, dummy variables for each of the ten countries were included as predictors. Hence, the first block controls for differences in self-reported consumer innovation that can be

attributed to the national and cultural context, including possible country differences in response tendencies. As already reported in Table 2, countries differ significantly in reported consumer innovation. Using the stepwise procedure, country dummies that account for significant variation in consumer innovation across countries are included in the analysis in the order of their deviation from the mean consumer innovation across countries. This analysis led to the inclusion of six country dummies, leaving the four countries that were closest to (i.e., not significantly different from) the overall mean across the 10 countries as reference: Germany, Denmark, Finland, and Spain. In the samples from Italy and Hungary, significantly more participants reported to be consumer innovators than average for all countries (and, than in these four countries), and significantly fewer in France, UK, Poland and the Netherlands.

Next, a range of socio-demographic background characteristics are included in Block 2. This because prior research has identified both obvious (e.g., that technical education matters) and less obvious (e.g., that gender matters) socio-demographic predictors of consumer innovation. In addition to gender and education, age and occupation were also controlled in the second block. This multivariate regression analysis confirmed what was reported with regard to socio-demographic predictors in Table 2, based on bivariate analyses, except for education. After controlling for variations across countries and gender, education also significantly influences the likelihood of being a consumer innovator. Everything else being equal, consumer innovators tend to have higher education than non-innovators.

Finally, in Block 3 and 4, Schwartz's ten value domains are included. As recommended in research using Schwartz's value instruments (Fischer & Schwartz, 2011; Schwartz, 1992), a possible, general response tendency with regard to value items is controlled in Block 3. Individuals and cultural groups differ in their interpretation and use of the response scale and these response tendencies may distort findings and lead to incorrect conclusions. Hence, it is necessary to make a correction for individual differences in the use of the response scale before analyzing the relationship between individual values and outcomes, which is done by including the index "MRAT", computed as each individual's mean score over all 21 value items (Schwartz, 1992; Schwartz, Verkasalo, Antonovsky, & Sagiv, 1997; Smith, 2004). The third block shows that general response tendencies regarding values questions (the MRAT variable) have a statistically significant impact on self-reported consumer innovation. However, it is an important caveat that this variable only becomes statistically significant when individual values (Block 4) are also included in the analysis. Hence, Block 3 did *not* reveal a response bias in self-reported consumer innovation. Instead, the function of the MRAT variable is to "un-bias"

the estimates regarding individual values. In addition, when controlling for each individual's mean score over all 21 value items, the coefficients for values estimated in the fourth block reflect the priority given to that value *relative* to all other values.

Entering all ten value constructs in a regression analysis would lead to multicollinearity. However, the stepwise procedure avoids this problem (without loss of information) by entering values that make a significant contribution to predicting consumer innovation one at a time, starting with the value that makes the most significant prediction and stopping when no additional construct significantly increase prediction.

The fourth block shows that four of the ten value types contribute to characterize consumer innovators in our sample. First, the analysis reveals that consumer innovators give higher priority to Self-direction and Stimulation than non-innovators. Together, these two value types form the main dimension in Schwartz's value map that he has labelled "openness to change" (see Figure 1). Second, and perhaps more surprising, when controlling for these two values, consumer innovators give lower priority to Hedonism than other people. In the values circumplex illustrated in Figure 1, Hedonism is located between "openness to change" and "self-enhancement", but when controlling for Self-direction and Stimulation it seems that what remains is the "self-enhancement" aspects of Hedonism, which is negatively related to being a consumer innovator. Hence, from this result it seems that striving for personal pleasure is *not* in general what makes a consumer an innovator. This impression is further strengthened by the finding that consumer innovators give higher priority to Universalism values than others, suggesting that people who are motivated by making the world a better place for everyone are more likely to be consumer innovators. The positive effect of Universalism and the negative effect of Hedonism on consumer innovation are contrary to the earlier discussed finding in the literature that self-enhancement is positively related to innovation adoption.

5 Discussion

This study confirms and extends a number of findings in the emerging literature on consumer innovation. It confirms the approximate proportion of consumer innovators in western countries estimated in this literature. It also confirms that the likelihood of being a consumer innovator is linked to education and gender, but not to any other of the normally controlled socio-demographic background characteristics. It extends prior research by extending the range

of countries studied, and the range of countries included in a single study, and by investigating the basic value priorities that drive consumer innovators.

As regards countries, our study revealed a bigger variation in consumer innovation across countries than has been reported in prior research. Specifically, this analysis revealed that European countries can be classified in three groups with significantly different levels of consumer innovation, the “high innovation” group including Italy and Hungary, the “medium” group including Germany, Denmark, Finland, and Spain, and the “low innovation” group including France, UK, Poland and the Netherlands. The available data does not give any hint to why these countries differ with regard to consumer innovation, or which implications it may have for the economy or the society in general. This is a question of both great theoretical and practical importance, which should definitely be pursued in future research.

As regards the value basis of consumer innovation, we found that consumer innovators give higher priority to Self-direction and Stimulation than non-innovators, which is consistent with prior, related research. Especially, openness to change has been found to motivate early adoption of new products and a recent study found that ‘openness to experience’ as a personality trait is positively related to consumer innovation (Stock et al., 2016). The fact that consumer innovators are open to change and new experiences is not surprising. Valuing change is a logical prerequisite for taking action for creating change, including through innovating in everyday life. Prior research also found that societies whose cultural value priorities are more “open to change” are more innovative in general (Zhu et al., 2018). Hence, these value priorities seem to make for more innovative societies from the micro through the macro level.

However, the finding that consumer innovators give higher priority to Universalism values and lower priority to Hedonism than other people is new and partly contradicts prior research in related fields. Specifically, it contradicts prior studies finding that the early adopters of an innovation are driven by Achievement and Power (the Self-enhancement dimensions) (Goldsmith & Hofacker 1991; Steenkamp et al 1999). Schwartz defines Universalism as “understanding, appreciation, tolerance, and protection for the welfare of all people and for nature”, and Hedonism as “Pleasure and sensuous gratification for oneself” (Davidov, Schmidt, & Schwartz, 2008, p. 424). Hence, our findings suggest that consumer innovators are motivated by concern for their fellow beings, the wider society, and nature, and not by their own pleasure. This is consistent with prior research finding that user innovators are often willing to freely reveal their innovations for the benefit of the public good (von Hippel & von Krogh, 2003; von

Krogh & von Hippel, 2006). The motivational roots of consumer innovation in Universalism further indicates that for consumer innovators, the ‘use situation’ which the literature assumes is a central motivator for user innovators (Hienerth, 2006; Raasch & von Hippel, 2013) should be understood in a broader sense, as the use situation they are innovating for is not necessarily their own, but may respond to experienced needs and welfare of others. The positive relationship with Universalism and negative with Hedonism further suggest that, the intrinsic motivation of consumer innovators is fueled by a need for eudaimonic rather than hedonic wellbeing (Ryan & Deci, 2001).

Limitations

The main limitation of this research is that consumer innovation is self-reported, which means that there is a subjective element in reporting innovation. By asking specifically about activities in eight different domains and using a number of steps to specify the activity, the employed procedure removes a substantial amount of the potential variability in participants’ understanding of consumer innovation, but a certain amount of subjective interpretation remains and individual response biases cannot be ruled out. It especially seems probable that some of the wide variation in consumer innovation across countries could be due to different interpretation of the questions in different countries and languages and possibly also cultural variations in response styles. Future research should investigate the importance of biases such as these. Another limitation is that we analyzed relationships between basic values and consumer innovation while ignoring the paths through which values influence this type of behavior. Hence, it is a task for future research to explore the more proximal antecedents mediating the impact of values on consumer innovation.

Implications

The identified value basis for consumer innovation obviously has implications for which means should be used to promote and facilitate consumer innovation, for the benefit of the individual innovators and society. The findings suggest that consumer innovators are curious, open-minded and intrinsically motivated people and that their motivation to innovate is fueled by a striving for eudaimonic rather than hedonic wellbeing (Ryan & Deci, 2001). This basically suggests that providing extrinsic rewards, such as economic advantages, is not that important for consumer innovators. Help and support to bring their innovations to good use, for the benefit of the community or society in general, seems more valuable to them.

For example, consumer innovators may be supported by facilitating the sharing and use of each other’s innovations through platforms or virtual communities. Open collaborative innovation

settings can empower users and consumers to compete head to head with producer innovators, which would be especially beneficial in a monopoly situation or where the market is dominance of one large firm (Baldwin & von Hippel, 2011).

In this connection, one should also not ignore the importance of recognizing the consumer innovator's contribution and especially the importance of protection from being taken advantage of. The latter seems to be of key importance, as suggested by research finding that high trust makes a society more innovative (Zhu et al., 2018).

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Table 1: Background characteristics, distribution, per cent

	DE N = 1052	DK N = 1038	ES N = 1031	FI N = 1021	FR N = 1047	HU N = 1038	IT N = 1032	NL N = 994	PL N = 1064	UK N = 1034
Age	42.12	42.30	41.12	43.60	42.48	41.33	42.48	42.61	41.12	41.69
Household income	4.49	5.84 ^a	3.41	3.86	4.58	5.32 ^d	3.82	4.46	3.30 ^c	3.83 ^b
Female	52.1	50.6	48.4	52.8	50.2	50.9	50.7	50.3	49.6	50.1
Male	47.9	49.4	51.6	47.2	49.8	49.1	49.3	49.7	50.4	49.9
Married or living with a partner	57.0	63.4	62.2	57.9	59.9	61.9	61.0	60.5	68.4	60.3
No children in household	69.4	68.9	56.4	71.7	59.9	65.7	60.2	67.4	61.8	64.1
Basic general education (primary school, secondary school)	15.8	8.5	9.0	10.7	10.5	4.9	25.9	14.5	2.4	21.9
High school	35.1	13.7	22.4	37.1	21.8	25.0	42.0	10.0	14.1	23.3
Shorter/vocational continuing education	22.4	32.0	17.1	27.3	34.3	28.1	3.6	6.3	17.5	20.3
University education	26.8	45.8	51.5	24.8	33.4	41.9	28.5	69.3	66.0	34.4
Retired	9.4	10.5	5.7	14.8	12.9	13.6	5.9	3.9	9.5	7.7
Non-employed	11.6	7.4	19.2	15.3	13.0	6.8	23.2	18.7	10.4	18.1
Student / apprentice / trainee	10.8	15.6	9.5	10.5	6.4	9.6	7.8	9.8	9.0	6.2
Employed	60.7	64.4	63.3	54.9	54.1	57.9	58.2	54.5	61.0	60.3
Other	7.5	2.1	2.2	4.6	13.5	12.1	5.0	13.2	10.1	7.7
City (pop. > 200.000) ¹	28.7	42.3	44.1	48.1	18.4	29.6	25.5	23.2	36.7	33.7
Urban (20.000-200.000)	31.5	31.0	35.2	35.8	33.5	36.1	41.4	43.4	38.3	37.6
Pop. < 20.000 + rural	39.9	26.7	20.7	16.1	48.0	34.3	33.1	33.5	24.9	28.7

¹ In Denmark and Finland, the limits are 10,000 and 100,000. ^a Scale using jumps of 100000 DKK rather than 10000 Euro. ^b Scale using Sterling rather than Euro. ^c Scale using jumps of 25000 zl rather than 10000 Euro. ^d Scale using jumps of 1000000 ft rather than 10000 Euro.

Table 2: Share of consumer innovators by demographic variables

Variable	Share of inventing consumers, pct.
All	7.0
<i>Country</i>	
Germany	7.2
Denmark	6.9
Spain	8.2
Finland	7.8
France	5.3
Hungary	11.3
Italy	12.4
Netherlands	2.6
Poland	3.6
UK	4.2
X ² /df (p-value)	135.474/9 (<.001)
<i>Gender</i>	
Female	5.4
Male	8.7
X ² /df (p-value)	41.178/1 (<.001)
<i>Age groups</i>	
18-24	5.9
25-34	6.2
35-44	7.2
45-54	7.4
55-65	7.5
X ² /df (p-value)	5.506/4 (0.239)
<i>Education</i>	
Basic general education (primary + secondary school)	5.6
High school	7.2
Shorter/vocational continuing education	7.7
University education	6.9
X ² /df (p-value)	5.079/3 (0.166)
<i>Occupation</i>	
Retired	8.7
Non-employed	6.5
Student / apprentice / trainee	6.6
Employed	7.1
Other	5.6
X ² /df (p-value)	7.196/4 (0.126)

Table 3: Predicting user inventiveness, stepwise binary logistic regression analysis

	B	S.E.	Wald	Sig.	Exp(B)
<i>Block 1: Country¹</i>					
Italy	0.59	0.12	22.25	0.000	1.80
Hungary	0.45	0.12	14.46	0.000	1.58
France	-0.37	0.16	5.31	0.021	0.69
UK	-0.65	0.18	13.49	0.000	0.52
Poland	-0.92	0.19	24.71	0.000	0.40
Netherlands	-1.13	0.22	27.23	0.000	0.32
<i>Block 2: Demographics</i>					
Gender (Female = 1, Male = 2)	0.60	0.08	51.10	0.000	1.83
Education	0.10	0.04	6.39	0.011	1.11
<i>Block 3: Response tendency</i>					
MRAT	-0.39	0.09	17.07	0.000	0.68
<i>Block 4: Values</i>					
Self-direction	0.27	0.05	26.53	0.000	1.31
Stimulation	0.21	0.04	25.29	0.000	1.23
Universalism	0.17	0.05	10.09	0.001	1.19
Hedonism	-0.13	0.05	8.00	0.005	0.88
Constant	-4.51	0.33	189.65	0.000	0.01

¹ Coded as dummy variables. Reference countries: Germany, Denmark, Finland, Spain.

Note: $N = 9579$, $R^2_{CS} = .03$, $R^2_N = .07$.