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What user-innovators do that others don't: A study of daily practices

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ABSTRACT

This paper argues that innovation behavior roots in specific socio-psychological set-ups that crystallize in daily practices and routines. The latter are easy to observe and have great potential for the identification of user-innovation behavior. We study the practices and routines of Russian user-innovators around media consumption, internet and technology-usage, consumer preferences and civic engagement in comparison with a sample of mere users. The derived model correctly classified 73% of the original grouped cases of user-innovators. We conclude that a set of practices relative to the certain economic, social and cultural background explains user-innovation engagement and how support could be provided. Although some of our findings are probably specific to Russia, the results are encouraging for further research into the importance of practices and routines in identifying user-innovators in various environments.

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1. Introduction

Early works on user-innovation asked how industrial products could emerge out of customer ideas (von Hippel, 1978). Ever since, industry-specific studies showed that without user-innovation, eighteenth-century iron smelting (Allen, 1983), modern day mining (Nuvolari, 2004), advanced medical equipment (von Hippel and Finkelstein, 1979), semiconductor process equipment (Lim, 2000), library information systems (Morrison et al., 2000), embedded Linux software (Henkel, 2003), etc. would not have been possible. The importance of user-innovation has largely been argued through efficiency of product development (Hiernerth et al., 2014) and benefits for national economies. Studies estimated the aggregate spending of user-innovators to be in the tens of billions of dollars annually (e.g., de Jong et al., 2015; Gambardella et al., 2015). Especially sports enthusiasts showed a very high willingness for spending time and money in their most favorite pass of time (Hiernerth et al., 2011; Raasch et al., 2008).

To date, there is a number of studies focused largely on the demographics of user-innovators (e.g., Ogawa and Pongtanalert, 2011; von Hippel et al., 2012, 2011). Consequently, the list of countries in which studies on user-innovators have been conducted is increasing. Von Hippel et al. (2012) suggests a share of 6.1% of user-innovators among the UK's consumer population, making eight innovations (creations

and/or modifications) in three years' time. NESTA identified that 8% of UK consumers create or modify one or more products.¹ User-innovators in the US are estimated at 5.2% (Ogawa and Pongtanalert, 2011) and 5.4% in Finland (de Jong et al., 2015). Findings from Asia estimate the share of innovators lower, at 3.7% among users in Japan, or 1.5% in South Korea (Kim, 2015; Pongtanalert and Ogawa, 2015). The sample size of user innovators increases in special dedicated communities. Every fourth sport enthusiast was found to improve his or her equipment (see, for example, Franke and Shah, 2003 in four extreme sports; Lüthje et al., 2005 in mountain biking; Tietz et al., 2005 in kitesurfing, Raasch et al., 2008 on moth class sailing). The same enthusiasm was seen in other hobbyist communities, such as the Lego model building community (Antorini et al., 2012).

Another stream of research on user-innovators studied their motives (e.g. Stock, 2015). Especially for volunteer users, there is a drive to develop and improve their own skills (Hertel et al., 2003; Lakhani and Wolf, 2003; Lerner and Tirole, 2002; von Hippel and von Krogh, 2003). A new and emerging stream of literature now studied the personality traits of user-innovators (e.g. Stock et al., 2016). Although the findings are still rather rudimentary, this field holds exciting opportunities for future research. A specific aspect of user-innovation studies paid great attention to the diffusion channels that user innovators choose to share with peers or to commercialize their findings (de Jong

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¹ The UK surveys, though, covered user innovation at both individual and firm level, while the others focus only on individual's user-innovations.

et al., 2015; Ogawa and Piller, 2006; von Hippel et al., 2012). The share of user-innovators that diffuse their innovation has been estimated to be low, at around 12% (de Jong et al., 2015; von Hippel et al., 2011, 2012). This has been related to possible entrepreneurial opportunities the innovators intended to pursue. Others suggested that personality characteristics also have an influence on knowledge sharing (Matzler et al., 2008).

Contrary to these findings, data out of Russia revealed a much higher rate of sharing (Fursov and Thurner, 2017). These findings were argued to root in long-established practices in the day-to-day lives during the late Soviet Union, when goods supply in large parts of the country was at a sub-optimal level and user-innovation activities could play a role of a compensatory mechanism for non-market economic relations. This observed variation in sharing practices raises the question to which degree innovation-related actions are rooted in learned behavior more than in the psychological set-up of a person. Practices and routines form part of the life-world (Habermas, 1987), which defines the social and material “background” for action and represents the part of the public space a person can structure and influence. The concept of practice allows studying experiences of meaningfulness; as daily practice and routines are the processes through which humans interact with the world around them. Hence, sociological theories have paid great attention to such practices. For example, Bourdieu (1977, 1990) identified daily routines in the domestic space as socialization mechanisms into particular rules and orientations. Foucault (1980, 1982, 1984) looked at practices through a lens of a structural theory and considered ordering daily routines as an instrument to form permanent dispositions of human bodies and allow permanent social control. Garfinkel (1967) studied shared meanings that allowed smooth performances of everyday life, while Giddens (1984) studied the production and reproduction of social order through everyday routines. Practices can be considered as attributes to a certain social layer or community. Shove (2003) for example demonstrated that the practice of bathing turned into an elite marker and signalized membership of “ordinary society”. In relation to science and technology, daily practices have been conceptualized in terms of agency and actor-networks (e.g. Latour, 2005) and has been studied as particular characteristics of innovative behavior (Chernovich et al., 2015). Still, studying practices and routines as a phenomenon in its own right is relatively new (Highmore, 2002). If the topic of practices and routines is in the focus of academic research, the question is mostly about how such practices can be alternated in order to be more environmentally sustainable or socially acceptable.

1.1. Motivation of research and research question

In this paper we study a group of variables derived from daily practices of media consumption, social networking, internet usage, civic engagement and some others to test their discriminatory power between Russian user-innovators and a group of non-innovating consumers. This comes from previous findings showing that information and skills for user-innovation are task-dependent (De Jong et al., 2015; Lüthje et al., 2005; von Hippel et al., 2011) and user-innovators are to be close followers of important market trends (Von Hippel, 2005a, b). Also they are sophisticated users of technologies and related products (Lüthje et al., 2005; Morrison et al., 2000; Tietz et al., 2005). A specific interest rests on the use of Web 2.0 technologies through social networking sites, bulletin boards and online communities (Franke and Shah, 2003; Kietzmann et al., 2011; Ritzer and Jurgenson, 2010).

This paper follows the increasing interest in learning more about user-innovators in Russia and asks if practices of user-innovators considered as daily routines not directly related to innovation activities separate them from their non-innovating peers. As this study is based on a large data-set, our results also feed back into the ongoing debate about the characteristics of user-innovators. Previous studies on the demographics of user-innovators have already revealed striking differences between user-innovators in western countries vs Russia. For example,

data out of a Russian context suggest the presence of 9.6% of user-innovators, which far exceeds findings from other countries (Fursov and Thurner, 2017). This has been argued to be a consequence of the country's recent history and its geographic conditions. Life in Russia is greatly influenced by the country's harsh climate conditions and geographic distance between settlements. Providing supply to all Russians has been difficult and often Russians had to make ends meet. Furthermore, Russian user-innovators are actively sharing their ideas. Almost 50% of the user innovators engage in such sharing activities. If the older cohort is taken out, the number would be even higher (Fursov and Thurner, 2017).

Russia is also an interesting case as its user-innovators act largely outside classical commercialization channels. Despite 20 years of reforms and attempts of modernization, Russia's economy suffers from poor framework conditions such as low regulatory quality, questionable quality of institutions (Polischuk, 2013) or wrong incentives and stimuli resulting from flaws in Russia's corporate governance models (Enikolopov and Stepanov, 2013). This puts the experience of Russia in stark contrast to other developed economies, where the focus rests greatly on entrepreneurship (e.g. Franke and von Hippel, 2003; Shah and Tripsas, 2007). This absence of easily accessible entrepreneurial routes makes the Russian experience even more interesting as they serve as a guideline for the many other countries in the world that find themselves in a similar situation.

This paper studies people in urban and rural community environments that modify or develop goods or services for their own benefit. Thereby, the study follows ideas developed by von Hippel (2005a) and goes beyond conventional statistical frameworks which require a connection to market-based activities. As the debate on whether the current definition is suitable to accommodate users that share knowledge with a peer group or community of practice is ongoing, we believe that further insights also support including user-innovators (not only individuals) to the measurement framework (Gault, 2012).

1.2. Methodology

The data for this paper was derived from a large-scale survey in November 2014 within the framework of the HSE Monitoring Survey of Innovative Behavior of the Population (<http://www.hse.ru/en/monitoring/innpeople/>). The overall stratified sample consists of 1670 participants of 16 years and older, representative for Russia's population by age, sex, education level, region (at federal district level), and city size (Table 1). The sample excludes the Chechen and Ingush republics, five sparsely populated and hard-to reach regions (mostly Far North), very small settlements (<50 inhabitants), military, imprisoned and homeless people (around 4% of the total adult population). Data was gathered through face-to-face interviews with all of the 1670 participants. Selection bias for controlled social groups is not exceeding 0.03%. (Range of weight coefficients: from 0.295 to 2.224, total sum of weight coefficients 1670 on the overall sample size).

The interviews were followed-up by phone calls and logical controls of the final dataset to ensure consistent high quality. We targeted user-innovation on an individual level but not for ‘household sector innovators’ or unincorporated businesses (as suggested by Ferran, 2000).

The questionnaire covered the respondents' experience in user innovation. Following Von Hippel et al. (2011, 2012), Von Hippel (2017) we

Table 1
Survey summary.

Total number of contacts	5528
Did not agree	1670
Did not fit	1650
Did not speak Russian	35
Could not respond	38
Ceased interviews	519
Successful interviews included to the initial dataset	1670

asked participants whether they created new or significantly modified existing products adopting them to their needs in the last three years. We did not distinguish between the creation of new and the modification of existing products (unlike [de Jong and von Hippel, 2009](#) or [Pongtanalert and Ogawa, 2015](#)) and classified as innovators those of the respondents who gave an affirmative answer to the core question. The questionnaire further captured, among other information, respondents' motivation for innovation, areas of innovative activities and a list of daily practices, which we used as independent variables.

We separated the respondents into user-innovators and non-user-innovators and applied a discriminatory analysis to study statistical differences between the groups. For a survey summary and demographics, please see [Tables 1 and 2](#).

2. The description of variables

2.1. Media consumption

Media consumption has become a daily practice, and many feel left out without regular news updates. Today, the channels which can be used are plentiful, and so are the different behaviors of media consumers. In increasingly complex societies with interests in discourses on knowledge-intensive topics, the role of the media goes beyond mere information diffusion. Media coverage converts complex scientific findings into a sequential series of events ([McComas and Shanahan, 1999](#)).

Table 2
Sample demographics.

	All (n = 1670)	Innovators (n = 160)	Non-innovators (n = 1510)
Mean age [years]	44.0	41.9	44.2
Age class [%]			
≤24 years	16	13.9	16.2
25–34 years	19.5	22.6	19.2
35–44 years	17.2	19.9	16.9
45–54 years	17.2	19	17.1
55–64 years	17	18.6	16.8
≥65 years	13.1	5.9	13.9
Higher educational background [%]			
Lower than high school degree	7.6	7.1	7.7
High school degree/college degree	66.3	64.6	66.4
University degree	25.9	28.2	25.7
Ph.D	0.2	0.0	0.2
Educational background [%]			
Humanities	9.8	7.5	10.1
Natural science	5.6	7.5	5.2
Medicine	6.9	8.1	6.5
Agriculture	6.0	6.3	6.0
Social sciences	12.1	14.4	11.9
Technology	33.7	36.3	33.4
Other	3.1	6.9	3.0
No specialization	22.8	13.1	23.9
Gender [%]			
Male	45.3	51.0	44.7
Female	57.4	49.0	55.3
Available family monthly income [\$ PPP 2014] ^a			
<1300	31.1	29.7	32.1
1300–2600	41.3	45.1	41.9
2601–3900	18.7	19.1	19.1
3901–5200	4.3	5.3	4.3
>5200	2.4	0.9	2.6
Social class (self-defined)			
Upper class	0.9	3.2	0.6
Higher middle class	5.1	10.5	4.5
Middle class	50.8	51	50.8
Lower middle class	30.1	27.8	30.3
Lower class	13.1	7.5	13.7

^a Calculations based on the World Bank Data.

This story telling translates complex developments into a more approachable and more memorable style. Due to this important role the media plays, unbiased news coverage is seen as highly valuable and the basis of functioning democracies. The instrumentalization of the media for political objectives has a long history in Russia. After the success of the Communist revolution, Lenin established the Communist party as a gate keeper to all media channels, and the situation did not change much throughout the following decades ([Markham, 1967](#)). A far-reaching freedom of press came after 1985 with Mikhail Gorbachev, when he introduced 'glasnost' – 'openness' or 'transparency' ([Brooks, 2000](#)). Journalists were free to choose what to report while still enjoying the economic security provided by subsidies ([Hagstrom, 2000](#); [Ryabov, 2004](#)). Gorbachev introduced more transparency to help modernize the Soviet Union's political and economic institutions ([Sakwa, 1990](#)). Critique against the regime was not part of the deal and the party continued to hold the information monopoly.

The media in Russia is protected by a restrictive law that forbids censorship but limits certain areas, like the disclosure of state secrets, the incitement of national, religious or class intolerance, etc. In today's Russia a public sphere has been established which allows for a vivid public discourse ([McNair, 2000](#)). This is especially true for the field of science, an area of great public interest in Russia.

Russian science-pop magazines have a long history of covering technological developments. Already during Soviet times, popular journals like "Do It Yourself", "A Young Technician" were preferred channels to share user-innovations. Furthermore, popular science journals, like "Science and Life" connected existing amateur communities, supported DIY and sparked a knowledge sharing culture. These publications functioned as an important channel for communication and dissemination of best practices of creative works and therefore as a possible explanation for the relatively high number of user-innovators in Russia ([Fursov and Thurner, 2017](#); [Hyysalo and Usenyuk, 2015](#)). Since the 1980s though, the circulation of most science popular journals decreased by 90% ([Vaganov, 2007](#)).

In Russia – like in most countries – television is the most preferred channel to consume media programs. In a study on preferred information sources for science and technology, 80% of the respondents mentioned TV programs ([HSE, 2011](#)), while other sources are much less popular.

We introduce the media consumption through TV, Radio or Magazines as variables of practices. Furthermore, we ask if the respondents might refer to media outside of Russia, that is, if they consume media in English or any other language.

2.2. Internet use

Although the internet penetration of Russia's immense territory is not very intense, the greater part of Russians use the internet intensively. In 2014, over 65% of Russian households enjoyed internet connection on a daily basis or at least once a week ([HSE, 2016](#)). The intensity of IT use varies among different social groups. 75 to 85% of inhabitants of bigger cities and among younger groups go online daily. The value drops to 50% among villagers and among the elderly population. The biggest growth in internet access happens in rural areas. According to the recent survey on households conducted by Federal State Statistics Service (Rosstat), for the last 5 years the share of Russian households with internet access increased from 48% in 2010 up to 71% in 2014, mainly due to increases in village households ([HSE, 2016](#)).

The internet is seen as an important source of information, along with maintaining personal contacts ([Brodovskaya and Dombrovskaya, 2014](#)). Following the findings from surveys on internet usage ([Information Society, 2015](#)) key internet practices include (by order of popularity) social networking, entertainment and gaming, business and personal communications, search for information, e-commerce and banking operations. The most active users in Russia are younger generations still in education (core are Russians aged 15–24 years)

and middle and high-income residents in capital regions and major cities. Russians that don't use the internet are predominantly men and women older than 64 years, pensioners and low-income families. The typical Russian without internet has limited social and economic resources (Brodivskaya and Shumilova, 2013). Among the reasons for refusal to use internet most of the respondents reported 'no need or interest' (70% in 2014), then comes a shortage of skills for internet usage (18%), and only in third place (10%) rank the cost of internet access (HSE, 2016).

2.3. Social networking sites

Over the last decade, internet and especially the Web 2.0 technologies have turned into preferred means of communication. In the center of this development stand social networking sites – SNS (Kaplan and Haenlein, 2010; Moore and McElroy, 2012). Russians are enthusiastic users of social networking sites (Vkontakte, Odnoklassniki, Facebook, etc.): almost 74% of Russian internet users have used them for the last 3 months (HSE, 2016), and this practice is similar between cities and villages as well as between different age groups. A social networking site is especially useful for sharing ideas with dispersed communities. Various studies have shown a strong drive for innovation and knowledge spillovers through the use of SNS and improving them through comments and insights from others. Previous research has discussed opportunities that social networking sites offer through creativity and idea-sharing of various stakeholders (Kaplan and Haenlein, 2010; Kietzmann et al., 2011).

Access to the network of communities and engaged individuals is especially interesting for a rather inward oriented country like Russia. According to comScore, Russian SNS users spent on average 10.3 h monthly in 2011, which was a world record in 2010, and second place in 2011 (comScore, 2011). The use of SNS has attracted attention from Russian scholars. Sapargaliyev (2014) studied social media in Russian Higher Education. Klimanova and Dembovskaia (2013) are working on the role of language in social networking use among Russian users. The most popular SNSs are Vkontakte and Odnoklassniki (Ellison and Boyd, 2013). Facebook with 25 million users in Russia in 2014 ranks as Russia's third most used SNS. Twitter currently has 8.4 million users in this country (Brand Analytics, 2014). We introduce the usage of SNS as a variable of practices.

Online media channels are not used universally in the same manner and research has pointed out great differences in the use of online services among different countries (Enoch and Grossman, 2010; Gretzel et al., 2008; Lee and Gretzel, 2014). A report of e-commerce activities in Russia showed that about 30 million Russians shopped online in 2013, representing 23% of the population 18 and over. Around 39,000 internet shops offered their services, but very few earned more than \$100,000 a year. Still, the market is growing at a staggering 20% a year (East-West digital news, 2016). While the share of internet access shows relatively small differences between city dwellers and villagers, the use of e-commerce and internet-shopping differs dramatically: while in city's households 28% use e-commerce, only half as many do in villages (only 14.4%) (Rosstat, 2014). As much as 40.1% of e-commerce orders in 2014 came from consumers living in Moscow (11.5% from St. Petersburg), according to InSales. The categories of physical goods most in demand are apparel and footwear, household appliances and home items, consumer electronics and computer hardware, as well as car parts and children's goods.

E-commerce services were hard to establish in Russia as users found these offerings to be untrustworthy. In her account about her experience as senior manager in Ozon and Gavet (2014) describes the difficulties in overcoming these suspicions and the enormous possibilities of e-commerce in Russia – once they got the logistics right.

We include internet practices like buying goods over the internet, selling goods or services on internet platforms like auction houses, making an appointment with a doctor or filing documents and applications

online as internet practices. Also, we ask if respondents use e-banking for payments.

With web 2.0 technologies, users found it increasingly easy to share their experiences with products or services with others. Online user reviews posted on company or third party websites are becoming more and more popular with customers as they offer inspiring and credible first-hand feedback from usage experiences and create a sense of community on websites (Benlian et al., 2012; Mudambi and Schuff, 2010).

2.4. Consumption preferences

In the next set of questions, we asked for preferred information sources for buying decisions. Previous research has long paid attention the varying levels of attention certain actors receive in this process. Earlier works for example stress the importance of trade news, and trade shows (Dempsey, 1978; Kelly and Hensel, 1973). Especially personal experiences from friends, relatives and others have moved into the center of attention (Kline and Wagner, 1994). We asked which product characteristics are most important for respondents when buying convenient goods or household goods. These sets of questions should reveal insights into preferences that users have when making buying decisions.

User-innovators have been described as very technology savvy and keen users of technologies. We chose to focus our study on the practices around transportation. For travelling with a car, we asked if our respondents use hardware like a GPS navigator. Also, we ask if they are using services like online maps or online information about traffic condition. Previous studies have pointed out that user-innovators tend to be ahead of market trends and are keen users of the latest innovative products. Hence, we include buying any good or services earlier than others. We asked which product characteristics are most important for respondents when buying convenient goods or household goods. These sets of questions should reveal insights into preferences that users have when making buying decisions.

2.5. Civic engagement

In a final set of questions, we ask if respondents are active in different types of civic engagements. Next to memberships in clubs and associations, we are specifically interested if the respondents show active participation in events around their community or are communicating regularly with the local/city government. Technologies have been associated with social behavior and community engagements. Especially with the rise of the Web 2.0, the internet has become a vital tool for social and environmental movements (e.g.: Kavada, 2005, 2007; Van Aelst and Walgrave, 2004). User-innovators might well choose different modes of community engagement strategies, among which can be different stakeholder groups. Individuals may choose to seek closer community of practices, like a club. There, members would meet regularly (local) or choose certain communication tools, like a SNS (national or global). Alternatively, user-innovators might choose to interact with their local community, either through engaging in problem-solving activities or through engagement with political representatives in their community.

As noted above, the respondents were separated into groups of user-innovators and non-innovators. Then a discriminatory was applied to study statistical differences in practices between the groups. The derived model correctly classified 73.5% of the original grouped cases. The summary of equality of group means are given in Table 3, for the general means comparison see Appendix.

2.6. Findings

In a first step we check for the influence of different social characteristics. User-innovators are on average younger, better educated – and

Table 3
Tests of equality of group means.

Variables		F	p-Value	Mean (innovators)	Mean (non-innovators)
	Gender ^a	2862	0,091	1,49	1,56
	Age	3062	0,080	42,43	44,92
	Education ^b	3132	0,077	5,92	5,64
	Income ^c	0,021	0,884	30,153,84	29,832,84
Media consumption	In Russian	0,005	0,946	0,99	0,99
	In English	24,552	0,000	0,10	0,03
	In other languages	0,175	0,676	0,01	0,01
Frequently used media sources	Russian TV channels	7200	0,007	0,82	0,90
	Foreign TV channels	0,436	0,509	0,04	0,05
	Russian radio	3633	0,057	0,19	0,14
	Foreign radio	12,646	0,000	0,03	0,00
	Print media (newspapers, magazines)	8322	0,004	0,33	0,22
	News and analytical review internet resources	2166	0,141	0,30	0,25
Social networking	Russian SNS	1465	0,226	0,21	0,17
	International SNS	7196	0,007	0,09	0,04
IT-practices	Buy goods online	3779	0,052	0,23	0,17
	Make an appointment with a doctor online	10,556	0,001	0,18	0,10
	E-government	10,833	0,001	0,11	0,05
	E-commerce	5950	0,015	0,09	0,05
	E-banking	1861	0,173	0,19	0,15
Technology practices	Use GPS-navigator	4688	0,031	0,18	0,12
	Consult maps, routes, transport schedules, information about traffic jams online	3737	0,053	0,27	0,20
Consumption attitudes	Buying any new goods or services earlier than others	0,261	0,609	0,09	0,08
Important sources of information when choosing new goods and products	Advertisement	1917	0,166	0,26	0,21
	Relatives, acquaintances and friends	0,018	0,893	0,63	0,63
	Sales personnel	6080	0,014	0,19	0,28
	Website of the manufacturer	0,602	0,438	0,15	0,13
	Consumers forums	12,979	0,000	0,29	0,17
	Analytical reviews and independent experts' opinions	6998	0,008	0,22	0,14
Important criteria of choosing convenient goods	Brand, trademark	0,108	0,742	0,21	0,20
	Specifications, characteristics, contents	3050	0,081	0,38	0,45
	Price	1264	0,261	0,52	0,56
	Energy efficiency	3091	0,079	0,29	0,23
	Environmentally friendly	4503	0,034	0,29	0,21
Important criteria of choosing household appliances	Brand, trademark	0,687	0,407	0,30	0,27
	Specifications, characteristics, contents	0,506	0,477	0,47	0,50
	Price	2757	0,097	0,50	0,56
	Energy efficiency	4606	0,032	0,42	0,34
	Environmentally friendly	5507	0,019	0,16	0,10
Civic engagement	Membership in clubs	4641	0,031	1,89	1,93
	Problem solving in local community	7726	0,006	2,56	2,93
	Communication with local government	10,495	0,001	0,65	0,77

Classification results.

73,0% of original grouped cases correctly classified.

0,26 canonical correlation.

0,000 Wilks' Lambda (Sig.).

^a 1–male, 2 – female.

^b 1–Primary education, 2–Lower secondary education (General), 3–Lower secondary education (Vocational), 4–Upper secondary education (General), 5–Upper secondary education (Vocational), 6–Short-cycle tertiary education, 7–Non-completed bachelor or equivalent level (no <3 years of education), 8–Bachelor or equivalent level, 9– Master or equivalent level, 10– Doctoral or equivalent level.

^c Total monthly income of household in rubles.

more likely to be male (at 10% significance level, see Table 3). These findings are in line with earlier studies. We also asked for income levels as different behavior and practices might be linked to higher income and social status. Our data shows though that income levels as a proxy for social status (or 'class') has no significant discriminatory power between the two groups.

Subsequently, we tested targeted media consumption and their predictability of user-innovators vs mere consumers. Mastering the English language is often an entry point to connect to a wider spectrum of topics and areas of interest outside the focus of Russian media coverage. Indeed, our data supports our assumption and shows a high and significant difference between user-innovators and others.

Earlier works already stressed the importance of TV as a communication channel for science and technology. Our data supports this view and shows that user-innovators are watching less Russian TV channels than non-innovators, however, we find it surprising that watching foreign TV channels is not significantly discriminating between the groups.

This is probably due to the low sample size as in many parts of Russia, foreign TV channels are not available. Interestingly from all other groups of media, user-innovators consume much more than non-innovators. Innovators listen more often to radio (both Russian and foreign channels) and read more often newspapers and magazines.

Our next variables targeted the use of social networking sites. While the use of the most popular Russian SNS did not show any significant difference between user-innovators vs non-innovators, using an international SNS like Facebook did. The clarity of these findings is surprising. Firstly, Facebook provides most of its content in English, although the use of Russian is possible. Social network enthusiasts with limited language skills will probably revert to the Russian offerings. Those who do master English as a second language have also enjoyed a better education, which has already been connected to user-innovation by previous studies.

The next five variables target internet practices. User-innovators are much more acquainted with e-commerce practices and offer their own

goods and services on more advanced platforms like internet-auctions. The greatest discrimination power was shown as the interaction with public administration like applying for a passport or other public services. Also, user-innovators more actively use the internet as a communication tool for arranging services like appointments with a doctor. Online banking as a payment practice shows no significant difference between user-innovators and their non-innovating peers. E-banking and online purchases of goods have meanwhile become a daily practice of most Russians. User-innovators – our data suggests – are more engaged in practices that are still seen as novel.

Furthermore, we asked if the use of technologies in daily practices do successfully discriminate between user-innovators and mere users. We chose for our study the practices around transportation. For travelling with a car, we asked if our respondents use hardware like a GPS navigator. Also here, using GPS navigators indeed varied between the two groups. Interestingly though, using services like online maps or online information about traffic conditions have a lesser discriminatory power but are still significant.

All of the above might well point towards tech-enthusiasts that are greatly interested in the newest products and seeing what their new toys are actually able to. Hence, as a kind of control measure we ask the respondents if they seek to have new goods or services earlier than others. Surprisingly, the enthusiasm for new goods and services showed no difference between the groups. There are, however, interesting differences in the choice of information that influence the buying decision. While non-innovating users prefer the advice of sales personnel, user-innovators look for shared experiences on internet forums, product reviews or other independent experts' opinions. While both groups are equally paying attention to the price of a product or its brand, user-innovators are much more interested in whether a product they purchase is in fact environmentally friendly or is energy efficient in its use.

All three variables on civic engagement show significant differences between the two groups. User-innovators are to a lesser extent engaged in their communities and report fewer instances of communication with local or city governments. Interestingly, our results also show that the user-innovators hold to a lesser degree memberships in clubs.

3. Discussion

Attempts to separate user-innovators from mere users have revealed interesting insights, but empirically supported statements are still few. Empirical analyses of consumer's motivations for example at times fail to produce statistically significant results due to the required degree of data aggregation. Roberts et al. (2014) provided an extended conceptual model for the structure of consumers' motivation engaged in innovation through co-creation activities distinguishing between its orientations. Also, separating motives for individuals who innovate, motives to contribute to innovation activities, and motives to collaborate with firms has helped (Jawecki, 2008). Still, von Hippel et al. (2011) note that motivation characteristics explain a rather small part of the variance, and probably other variables may be found to be more important. Our study on daily routines directly connects to such claims and points into a promising direction. As our data showed, well connected users who engage in a greater variety of practices related to the interaction with wider communities are more likely to become innovators.

Previous studies were connected to practices only in a very specific manner. Some contributions (e.g. Von Hippel et al., 2011) studied whether user-innovators would regularly patent their innovations. Such practices though happen after an innovation has been made, and are very dependent on the legal environment and on trust in the national IPR systems. Von Hippel et al. (2011) further used innovative-related practices to eliminate true innovations from other activities, like DIY activities around housing. The importance of users as sources of innovation from a manufacturer's perspective is widely recognized (e.g. Franke and Shah, 2003) and interest of firms to identify and inform

user-innovators is increasing (Franke et al., 2006). Still, to this day there are no studies on the importance of sources of information for user-innovators and how relying on different information channels can in fact tell a lot about user-innovators. Routines related to regular search and verification procedures can be considered not only as an indicator for reflecting critically on obtained information, but also as one of the skills related to problem-solving, i.e. generation of innovations.

This paper also furthers the understanding of the role of technologies in the user-innovation process. Previous studies pointed to the role of advanced computer hardware and software as a facilitator of user innovations (Von Hippel, 2005a,b). Still, connecting the different usages of these technologies with user-innovation requires more fine-grained analyses. Our study on different practices around media consumption – also through different information technologies – relates these technologies to actual user-innovators.

Such facilitating technologies have had a great influence on user-innovation in certain industries. Open source developments have few boundaries for users to engage in the development of e.g. their favorite computer game, and participating firms learn quickly how to best provide support to such active users. The situation though is somehow different from a manufacturer's perspective. Due to the capital requirements, most user-innovators cannot compete against established manufacturers. There are examples of user-innovators that started a new industry (e.g. mountain bikes and kayaking (Lüthje et al., 2005; Hienerth, 2006), but these instances are few. Therefore manufacturers who want to connect with user-innovators as a vital source of innovation, struggle to separate user-innovators from mere pirates. Hence, it might well be beneficial for manufacturers to identify user-innovators in their field through such processes and routines to connect with them at a very early stage. Here, we refer to interesting findings of user-innovators in sports equipment (e.g. Franke and Shah, 2003; Morrison et al., 2000).

Various authors, among them Von Hippel (2005a,b), claim that giving access to such innovation-support to only a few individuals (e.g. certain employees of a company) is highly insufficient. As it is very difficult to know who these people are before they develop an innovation, support is better to be applied to everybody (the basis of the concept of democratic innovation). Likewise, we argue, providing support to every user might again be insufficient. Hence, such insights into practices and routines as provided by our study support a better resource allocation. Knowing and deeper understanding what people regularly do may provide a better understanding of their needs and therefore lead to more successful innovation development.

Another important stream of research studies emotional and cognitive aspects on user engagement in innovative activities (Payne et al., 2008; Füller et al., 2008). The present paper connects with this body of literature mainly through a common interest in communities and immaterial benefits user-innovators derive from participation (Nambisan, 2002). We extended in our research though through a focus on a wider understanding of communities and included not only clubs and associations, which have already proven to be a hotspot for user-innovation (Roberts et al., 2014). We included activities around engagements with the local communities in which one lives and ask for communication practices with local authorities and policy makers (e.g. major's office). The strong correlation with amateur clubs and associations was confirmed by previous findings, but the high values for local community practices demonstrate how insightful such a larger focus can be.

Our findings connect to the literature on communities-of-practice (e.g.; Brown and Duguid, 1991; Lave and Wenger, 1991). Here, members of the community follow same practices often codified in manuals, regulations, rules, etc. or incorporated in tacit knowledge and passed on through colleagues.

4. Conclusions

To our knowledge, this is the first paper that studied user-innovators through their practices. Our research was especially motivated by

remarkable differences in the willingness to share information and innovations between empirical findings from western countries and Russia. Previous studies suggest such differences are rooted in long-established practices from the country's soviet past. Based on these findings, we further delved into practices and routines as explanations for user-innovation. Studying these practices and routines holds a great advantage over other approaches like psychological variables or personality profiles etc. This is especially true as practices can be interpreted as observable intermediaries between personal values and psychological attributes on one side and the phenomenon of user-innovation on the other.

The practices we included are largely connected with the use of certain technologies. One may argue that such practices would only hold true for user-innovators in technological areas, and especially software development would be an easily accessible field of user innovation. However, such skills surely are necessary to provide user-innovations in any technology-oriented field. On the other hand, using online information sources enables connecting with larger groups of likeminded enthusiasts. Previous findings from Russia revealed though a strong group of rural-based user-innovators that focus their attention on innovations around gardening and home decoration (Fursov and Thurner, 2016). Still, also for this group, the identified practices do in fact connect with their creative innovations. For creative minds in rural Russia, the internet often provides the only access to a greater pool of ideas that can inspire new thinking.

Previous papers have pointed out certain aspects of user-innovators, like the higher education, their willingness to connect with like-minded individuals or their keen use of the latest gadgets. The present findings though are characterized by the high quality of our suggested model based on a set of practices in distinguishing user-innovators from non-innovators. Our paper shows that no individual practice, but instead a set of practices has a high likelihood to correctly identify the user-innovators. 73.5% of original grouped cases were correctly classified. Given the high interest in identifying user-innovators, the practices and routines we identified could serve as a promising starting ground for further investigation and holds the chance to spark further research. We suggest that further research could look for specific 'bunches (bundles/clusters) of practices' in different economic, social and cultural environments and how innovation growth could be supported through a wider dissemination of facilitating technologies. For user-innovators, the most important basic requirement is access to materials and tools for innovation. Access to online shops helps a great deal to overcome limited availability of goods and services in rural territories. Hence, we stress the importance of available and affordable internet-connections for as many people as possible. Connecting to the global flow of ideas and actively exchanging information is vital for user-innovators who see internet-based technologies as a preferred means of communication. Ideas to ripe require a selected group of knowledgeable peers who voice concerns if there are any. These demands are especially important as good parts of developing countries especially in Africa still struggle with providing internet access.

Another very promising research question could target the origins of these practices. Are these practices rooted in earlier socialization phases, like families or schooling, or have they been acquired at a later stage, e.g. through socialization processes at the workplace or amateur communities and memberships in clubs? A good deal of research on user-innovation has studied knowledge-sharing in such amateur communities. These findings could be strengthened by deeper insights into the underlying practices of communities or sub-cultures respectively the larger cultural environment in which they are happening. However, as important as practices and routines are, individuals cannot always follow their routine ways. The question arises what are possible 'breaking routines', and how are these breaks interfering with innovative behavior?

Some of the practices we have identified will only have the identified explanatory power in the Russian context. See for example the usage of international vs national social networking sites. Also other variables

might be less important in other countries. There could very well be practices that relate to certain cultural settings and spread over national boundaries, but loose significance elsewhere. To find out about practices of a national and regional importance, culturally bound practices and those with international significance, we rely on further studies on practices and routines.

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