

Prosumer behaviour in online communities: national and regional features in Hungary

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Online communities have transformed patterns of communication and now constitute an important part of the everyday life of many individuals. Such communities enable individuals to produce and consume information at the same time, becoming prosumers, which has potential implications for sustainable lifestyles and sufficiency-oriented consumer behaviour. The motivations and behaviours of online community members have received widespread scholarly attention internationally, however, there is limited evidence from Hungary and little understanding of the ways that motivations relate to sustainability-oriented impacts at the regional level.

This study explores the characteristics, motivations, and perceived impacts of participation in online communities in Hungary, with attention paid to regional variation. Building on established typologies of intrinsic and extrinsic motivation and on the concept of peer-to-peer prosumption, a two-stage quantitative survey was conducted in 2022–2023. A nationally representative sample of 2,511 respondents reported on general prosumption activities, and a subsample of 540 regular online community members completed a detailed questionnaire on their activities, their motivations, and the perceived behavioural impacts.

A factor analysis of 13 motivational variables identified three underlying dimensions: (1) getting useful ideas (e.g., time- and cost-savings and quality-of-life improvements), (2) recognition and contribution (status, belonging, and usefulness), and (3) entertainment and pleasure (enjoyment, relaxation). The first two dimensions combined intrinsic and extrinsic drivers, confirming recent findings that these motives often operate together.

Cluster analysis of these factors yielded four participant types: pleasure-driven (15.2%), motivated by enjoyment; uninterested (15.0%), having low scores across all factors; prosumption-driven (46.3%), motivated by contribution, recognition, and belonging; and utilitarian (23.5%), focused on practical benefits. Engagement intensity and activity diversity did not vary significantly by region, but cluster membership did: Eastern Hungarian respondents were more often pleasure- or prosumption-driven, and Central and Western Hungarian respondents were more frequently utilitarian or uninterested.

Perceived impacts on prosocial and pro-environmental behaviour differed by motivation type. Pleasure-driven members showed the strongest positive changes, including increased openness to others, environmental awareness, and sense of societal usefulness. Prosumption-driven members had the highest awareness of their producer-consumer role and exhibited strong intention to remain active. Utilitarian members valued the information that they received, but they showed a lower willingness to contribute, whereas uninterested members perceived little change. Eastern Hungarian participants had greater environmental awareness and more conscious information consumption; they were more motivated by positive feedback than those from other regions.

These results confirm that the motivation for participation in online communities is multifaceted and linked to behavioural outcomes, with intrinsic drivers that are strongly associated with sustainable and prosocial impacts. They extend the literature by showing the coexistence of intrinsic and extrinsic motives, identifying pragmatic utilitarian prosumers, and highlighting subnational variation in culture.

Keywords:

online community,
extrinsic and intrinsic motivation,
prosumption,
sustainable development,
regional differences

Introduction

Wang–Fesenmaier (2003: p. 33) write that it is “generally accepted that computers and computer networks are transforming the ways in which society functions”.

One manifestation of this phenomenon is the growing abundance of online communities, which allow people who are living anywhere in the world and have access to basic internet services to share information with each other on any topic of interest to them.

Online (or virtual) communities have been a topic of study since their emergence more than three decades ago. According to an early definition given by Rheingold (1993), online communities are social aggregations emerging from the net when enough people have carried on public discussions for long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace. Hagel–Armstrong (1997) defined online communities as computer-mediated spaces having potential for an integration of content and communication, with an emphasis on member-generated content (Hagel–Armstrong 1997), while, according to Jones–Rafaeli (2000), online communities are symbolically delineated and computer-mediated spaces that allow groups of individuals to contribute to and consume a similar set of computer-mediated interpersonal interactions.

Through the provision of a platform to share and evaluate content, online communities provide space for an emerging type of consumer behaviour, namely, prosumption (Toffler 1980). Prosumer behaviour could encompass a wide array of activities that are undertaken by individuals, such as producing food items, renewable energy, and handicrafts; in addition, members of online communities produce and consume a special type of product: information.

It is often theorized that prosumption plays an important role in the achievement of more resilient and sustainable societies, as prosumption options open new perspectives and facilitate a change in traditional production and consumption patterns of society and thus may enhance sustainable lifestyles and sufficiency-oriented consumer behaviour (Stoltenberg et al. 2024).

Thus, it is imperative to better understand online communities and the interactions of the members of these communities. Hence, our research investigates the most important characteristics of participation in online communities, providing a special focus on participants’ motivations to engage in them; on the different clusters of participants; the impacts of participation on the members; and regional patterns of engagement in online communities in Hungary.

First, the authors introduce the most important findings of the relevant literature concerning participation in the online communities available to date. Next, the research questions and the empirical survey conducted are introduced. Finally, the results and draw conclusions for future research are discussed.

Literature review

Features of engagement in online communities

Members of online communities can undertake various activities ranging from passive forms (e.g., reading other members' posts), to expressing simple opinions and emotions (e.g., liking and disliking posts), and active engagement (e.g., contributing posts, moderating and setting up new communities, etc.). Engagement with online communities takes up a considerable amount of time for many individuals, and variations with respect to the frequency, time spent, and actual activities among participants are significant. These facts, along with a lack of relevant research, justify the need for a better understanding of this new form of human behaviour.

According to a representative survey of the National Media and Infocommunications Authority of Hungary (NMHH [2]), which included 15,000 respondents 16–75 years of age in 2022, 80% of Hungarian inhabitants use the internet daily [2]. The most frequent activities are e-mailing, information seeking, participation in online communities, and connecting with relatives and friends.

Hung et al. (2015) distinguish “posters” from “lurkers” based on the frequency and type of their knowledge sharing: “lurkers” were found to generally share knowledge only once per month on average, while “posters” could do so “many times per day”, “many times per week” or “more than one time per month”.

In Hungary, the communication patterns of online communities have been analysed in detail by Vályi (2004), while Háló (2022) provided a broad literature review of online communication research in Hungary for 1995–2021.

Szalóki (2006) discusses the main success factors that make virtual communities work: she emphasizes the role played by the level of participation (how many active members are present within an online community), reciprocity (forming a balance between providing and receiving information within the community), and the support of presence and hence, the sense of belonging.

Study of individual intentions and behaviour and the motivations for seeking and sharing knowledge has gained importance recently (Lai et al. 2014). Bernard et al. (2018) analysed a large online community using data collected about members' posts, comments, frequency and types of activities, as well as regarding the language and discourses used. The authors developed the “index of interaction” to provide quantified information regarding users' activities, finding that online community members could gain several types of benefits from their participation in communities.

Mailizar et al. (2022) focused on intensity of communication at different time slots, revealing the importance of the most active members in community life.

Gutiérrez-Páez et al. (2023: p. 104828) analysed the role that incentives play in the behaviour of online community members and found that “behaviour and contributions' quality are affected by the incentives and the features implemented in the supporting platform of the online community”, especially through the provision

of self-awareness indicators concerning the actions of participants and the quality of their contributions.

Motivation for participation in online communities

Typical activities and the motivations in the background of participation in various online communities have recently been widely discussed (especially from the 2010s on); however, few publications have discussed them in the broader context of prosumption. Chan et al. (2022: p. 2698) analysed online platforms in terms of prosumer communities, finding that “high-quality review content is the result of collaborative prosumption” Alhashem et al. (2021) investigated the example of an online do-it-yourself community (*Instructables*) that could be considered a case of “double prosumption”: the participants engage in both online and DIY activities at the same time, forming a close connection between the two. They identified several personal benefits that are provided by prosumption: the hedonic elements of enjoyment and fun, the functional elements of monetary savings and self-sufficiency, and cognitive benefits, such as problem solving and learning. Beyond personal advantages, other benefits were also identified, such as community-, environment-, market-, family-, and friends-oriented benefits (Alhashem et al. 2021). In addition, they introduced the concept of peer-to-peer prosumption, a form that emphasizes collective peer-to-peer use and social value over exchange value.

These perceived benefits and values could function as factors motivating participation in online communities. Ridings et al. (2006: p. 330) state: “regardless of the technology, the essence of the community is the member-generated content produced by the communication”. Thus, the active participation of members is a basic prerequisite for the success of an online community (Ardichvili et al. 2003, Wang–Fesenmaier 2003), which makes the investigation of motivating factors highly relevant.

As the authors of one of the earliest empirical studies on online communities, Wang–Fesenmaier (2003) distinguished five motivation constructs: instrumental, efficacy, status, quality assurance, and expectancy. Instrumental motivations include items such as seeking emotional support, finding friends/peers, relationship building, group attachment/commitment, expressing your identity, and increasing self-esteem/respect. Efficacy motivations cover satisfying other members’ needs, being helpful to others, and providing advice. The quality-assurance motivation is captured by controlling product/service quality, enforcing service excellence, and product suggestions/evaluations, whereas status motivation is expressed through gaining prestige and attaining status in the community. In later studies, this motivation is referred to as the motivation to maintain and improve one’s reputation (Chang et al. 2020, Zhang et al. 2017). Finally, expectancy motivation includes seeking future exchange from others in the community and seeking future exchanges from those

whom one helps – this construct is equivalent to the motivation of reciprocity in later studies (Chang et al. 2020, Zhang et al. 2017). The authors identified a significant positive effect of instrumental, efficacy, and expectancy motivations on the level of active contribution to the online community.

Yang–Lai (2010) analysed motivation in the case of contributors to the largest online encyclopedia, Wikipedia, focusing on the behaviour of knowledge sharing. They distinguished conventional intrinsic and extrinsic motivations (based on Deci 1975) as well as internal self-concept-based and external self-concept-based motivations (based on Leonard et al. 1999). “Intrinsically motivated individuals engage in a behaviour for enjoyment rather than to obtain an extrinsic outcome or reward”, while extrinsic motivation is regarded as “a goal-oriented motivation that refers to performing an activity in anticipation of obtaining a return such as pay or reputation” (Yang–Lai 2010: p. 1378). Intrinsic motivation included the following statements: “I enjoy sharing my knowledge with others”, “Sharing my knowledge with others gives me pleasure”, and “It feels good to help someone else by sharing my knowledge”.

Regarding intrinsic motivation, Zhang et al. (2017) distinguish “knowledge self-efficacy”, “altruism” and “empathy” in the case of online health communities (OHCs), while Chang et al. (2020) distinguish “enjoyment in helping” and “hedonic motivation” in the case of online travel communities. Park et al. (2014) also identified entertainment value as a crucial factor in sharing information. In addition, motivation to learn (or “intrinsic curiosity” by Harter 1981), “to accomplish” (or “mastery motivation” by Harter 1981, and “need for achievement” by McClelland 1961), as well as motivation “to experience stimulation” (linked to the concept of flow by Csikszentmihalyi 2000) are relevant intrinsic motivational constructs in the case of online communities.

Yang–Lai (2010) explored extrinsic motivations using the following statements: “Sharing my knowledge through Wikipedia improves my image”, “I earn respect from others by participating in Wikipedia” as well as “I feel that sharing knowledge in Wikipedia improves my professional status” (Ibid.: p. 1382). Park et al. (2014) also stressed the role of perceived usefulness and reputation seeking in the intention to share information online.

Because material rewards are not common in online communities (Yang–Lai 2010), extrinsic motivations can only take limited forms: they usually extend to gaining nonmaterial rewards. Chang et al. (2020) as well as Zhang et al. (2017) distinguish “reputation” from “reciprocity” within extrinsic motivation. Reputation (or “image” according to Kankanhalli et al. 2005 or “status” according to Wang–Fesenmaier 2003) indicates that a participant’s position in the community is strengthened by their active participation, whereas reciprocity refers to an intention to participate actively for the sake of providing useful content and receiving information from other members.

In addition to the two extrinsic factors of motivation discussed above, “indirect (or hidden) material rewards” can be identified and measured in terms of statements that regard the importance for a participant to obtain information from the community, which helps them save money and/or time or improve their quality of life.

Since intrinsic and extrinsic motivations have limited ability to explain the diversity of behaviours (Leonard 1999), they are suggested to be extended by self-concept-based motivations building on the perceived self, competencies, and abilities of the individual (Yang–Lai 2010). Internal self-concept-based motivations inspire individuals to meet their internal standards, where positive feedback increases confidence and the feeling of self-efficacy. They include personality-related traits: “I try to make sure that my decisions are consistent with my personal standards of behaviour”, “I consider myself a self-motivated person” and “I like to share knowledge, which gives me a sense of personal achievement” (Yang–Lai 2010: p. 1382). External self-concept-based motivations further relate to congruency with the expectations of a reference group, in which positive feedback has an affirmative character, providing a strengthened feeling of belonging to the group (Yang–Lai 2010: p. 1378). These can be expressed with the following statements: “It is important to me that others approve of my behaviour”, “I share the specific knowledge if public recognition is attached to it”, and “I give my best effort to share knowledge when I know that it will be seen by the most influential people” (Ibid.: p. 1382).

Further, according to Park et al. (2014), the sense of belonging is an important motivation factor, a significant antecedent of both intentions to share and of intention to seek information.

While some earlier studies also analysed the role of “ease of communication” (Wang–Fesenmaier 2003), this factor seems to be of lesser relevance, as the level of technological development enables efficient communication among any members of a group.

In the most comprehensive model that has been developed so far, commitment to online travel communities (OTC) was assessed by a simultaneous analysis of three groups of factors: personal, social, and community characteristics (Zhou et al. 2020). The authors found that the following factors have a significant impact on OTC commitment: entertainment, trust, and experience from personal influences, shared rituals and traditions, moral responsibilities from social influences, and information quality, as well as system quality, from OTC characteristics. Interestingly, the authors found that rewards had no significant effects on OTC commitment.

Gutiérrez-Páez et al. (2023: p. 2) concluded that intrinsic and extrinsic motivation factors are not exclusive in inspiring individuals to undertake activities in online communities: mixed motivations are possible, and “each member of the community may be motivated by several factors at a time”.

Table 1 summarizes the most important types of intrinsic and extrinsic factors of motivation to engage in online communities that have been identified in the literature.

Table 1

Examples of intrinsic and extrinsic motivation factors assessed in literature

Publications	Intrinsic motivation	Extrinsic motivation		additional categories
		reputation	reciprocity	
Yang–Lai (2010)	(No subcategories defined) I enjoy sharing my knowledge with others. Sharing my knowledge with others gives me pleasure. It feels good to help someone else by sharing my knowledge.	(No subcategories defined within extrinsic but belonging here.) Sharing my knowledge through Wikipedia improves my image. I earn respect from others by participating in Wikipedia. I feel that sharing knowledge on Wikipedia improves my professional status.		External self-concept-based motivation It is important to me that others approve of my behaviour. I share specific knowledge if public recognition is attached to it. Internal self-concept-based motivation I try to make sure that my decisions are consistent with my personal standards of behaviour. I consider myself a self-motivated person.
	Entertainment value I visit the stock message board because of this. It is enjoyable. It is exciting to see what others have to say. I have fun participating in this stock message board.	Seeking reputation I post my opinions on the stock message board to earn respect from others who participate on the message board.	Sense of belonging I visit the stock message board to interact with people who have opinions like mine. I visit the stock message board to receive emotional support for my trading decisions. I visit the stock message board to confirm that others have similar opinions as mine. When I share knowledge in this OHC, I believe that my own questions will be answered in the future. I believe that other members I interact with would help me if I was in need. When I share my knowledge in this OHC, I expect that some other members to respond when I am in need.	
Zhang et al. (2017) (based on several earlier authors)	Knowledge self-efficacy I have confidence in my ability to provide knowledge that other members in this OHC consider valuable. I have the expertise, experience, and insight needed to provide the knowledge that will be valuable for other members in this OHC. Altruism I am willing to help other participants in this OHC. I like to help other participants in this OHC. I feel happy to support other participants in solving problems in this OHC. I enjoy helping other participants in this OHC since it results in my own achievements. Empathy It is necessary for an OHC member to be able to comprehend someone else's experiences. I can express my understanding of someone's feelings.	I earn respect from others by participating in this OHC. I feel that participation in this OHC improves my status in the profession. I participate in this OHC to improve my reputation in the profession.		
	Enjoyment in helping I enjoy sharing my knowledge with other members. I like to help others by sharing my knowledge. It feels good to help someone by sharing my knowledge. Hedonic motivation Sharing my knowledge with others is pleasurable. Pass the time away when I feel bored. Feel less tense when I am in this community. Keep me company when my family and friends are unavailable.	I earn respect from others by participating in this community. I feel that participation improves my status in the profession. I participate in this community to improve my reputation in the profession.	I strengthen ties between existing members of the community and me when I share knowledge with others. I expect to receive knowledge in return when necessary. I believe that my future requests for knowledge will be answered when I share knowledge with others.	
Chang et al. (2020)				

Intention to stay in an online community for a longer period and to be an active member is closely related to the level of trust in the reliability of the community as a source of information, especially in an environment where fake news is becoming increasingly widespread (Stupavský et al. 2023).

The research of [2] found that 24% of respondents trusted information that comes from online communities, while 74% trusted their family, friends, and colleagues as information sources. Young respondents (younger than 30 years old) and elderly people (at least 60 years old) reported trusting online communities as information sources at significantly higher rates than middle-aged people did.

Spatial and cultural characteristics

Online communities may be as limited as local interest groups or as large as global communities recruiting members from all over the world. Another topic of great importance, therefore, is whether meaningful spatial patterns can be identified in such communities and how the different cultural backgrounds of community members affect their attitudes, motivations and behaviours.

The literature often focuses on spatial patterns of participation in online communities at the country level; however, regional-level analysis is less frequent.

Gallagher–Savage (2013) examined 36 articles that were published between 2004 and 2011 and discussed national differences and the specific features of online communities. The authors focused on the concept and scope of comparison of different cultures and examined the research methodology of the reviewed papers. They found that the most frequently analysed countries were the United States (25) and China (13), followed by South Korea (9) and France (6) (France was the most analysed European country), and no research addressing the characteristics of online communities in Hungary was identified. The authors found that, in the reviewed studies, the comparisons were either comparisons of two (or more) cultures within the same online community or of at least two online communities from different countries or cultures (Gallagher–Savage 2013), the latter case being more common. In the cross-cultural online community research, the most popular research methods were surveys (17 papers), followed by content analyses (8), mixed-methods approaches (5), qualitative-interview studies (3), and ethnographies (3). The authors emphasized the methodological challenges (e.g., sampling in different countries) as a major outcome of their work.

Zhang et al. (2014) analysed the ways that cultural values influence knowledge sharing in the case of a special online community, namely, virtual classes. They examined Beijing, Hong Kong and the Netherlands and identified differences in knowledge sharing and motivation. For example, relative to students from Beijing and Hong Kong, participants from the Netherlands were less motivated by rewards (extrinsic motivation). However, the study only examined a temporary online

community, but in permanent, long-term groups, regional and cultural differences may appear differently.

Recently, Mawhorter et al. (2019) analysed a very special segment of online activities, namely, regional trends in avatar customization in a comparison of the US and Japan, revealing detectable cultural differences in the manifestations of realistic, idealistic and creative self-expression. Again, this study compared countries and not regions within one country.

Mierzecka–Łaczyński (2022) compared online board-game communities from Poland, France and the UK. The dataset analysed included 764 posts (185 from the UK, 229 from France and 350 from Poland), and the authors found that both information-seeking and information-sharing activities showed high information richness in the community. The discourse of collectors' practices and the discourse of practitioners' practices were characteristic, but no country-specific patterns could be identified.

Zhang et al. (2017) also focused on online community members having different backgrounds, distinguishing two types of participants in OHCs: professionals (doctors) and lay users. Reputation is important for professionals as peer-to-peer communication includes expert content in OHCs. (Zhang et al. 2017). Thus, in this case, extrinsic material motivation was confirmed as atypical.

In Hungary, the most extensive study of the spatial characteristics of online networks analysed the geographies of the now defunct iWiW social network, which functioned between 2002 and 2014 and engaged about 40% of the country's population (Lengyel et al. 2015). The focus was on distant and proximate connections and their geographical distribution in Hungary.

Research objectives and methods

The main objective of our study is to explore the characteristics of individual participation in online communities and the way that it affects behaviour with regards to sustainability. We explored the different types of activities that were undertaken and the factors that motivated individuals to engage in online communities, including a special emphasis on uncovering regional differences among individuals in Hungary.

To address these objectives, we developed the following hypotheses:

- H1a. Participation in online communities is widespread in Hungary.
- H1b. Engagement in online communities shows a regional pattern within the country.
- H2. Extrinsic and intrinsic factors of motivation provide a good explanation of participation in online communities.
- H3a. Individuals engaged in online communities can be grouped into clusters based on their motivations.
- H3b. Clusters oriented towards different motivations show regional characteristics within the country.

- H4. Members of online communities perceive a positive impact on their attitudes and behaviour regarding their social roles because of their active participation.

To test the hypotheses, a quantitative survey was developed and conducted in Hungary in 2022–2023. The survey included two questionnaires. First, each respondent completed a survey of the various prosumption activities that they engaged in, including participation in online communities. This questionnaire was completed by 2,511 individuals and was representative of the Hungarian population with respect to age, gender, level of education and type of settlement. Second, a subsample of those who indicated that they participated in online communities were asked to complete a second, more detailed questionnaire concerning their activities and motivations in the online space. This sample of 540 respondents was representative according to age, although women were overrepresented. The distribution of women to men in the age groups of 18–69 years in Hungary was 50.2%:49.8% in 2023, according to [1]. Relative to the official country statistics [1], Eastern Hungarian respondents were somewhat underrepresented (35%, instead of 38%) in the subsample, whereas respondents from Western Hungary were somewhat overrepresented (33.7%, instead of 30.2%). The ratio of Central Hungarian respondents (Budapest and Pest County) corresponds to the country statistics. Regarding settlement type, respondents living in villages were a bit underrepresented, whereas those living in towns were a bit overrepresented. Respondents with primary school education were somewhat underrepresented, and those with a higher education degree were somewhat overrepresented. The representativeness of monthly household per capita income rates was hard to verify because the income was given on a scale (see Figure 1). Calculating with the mean value of each range, the sample is close to being representative.

Figure 1

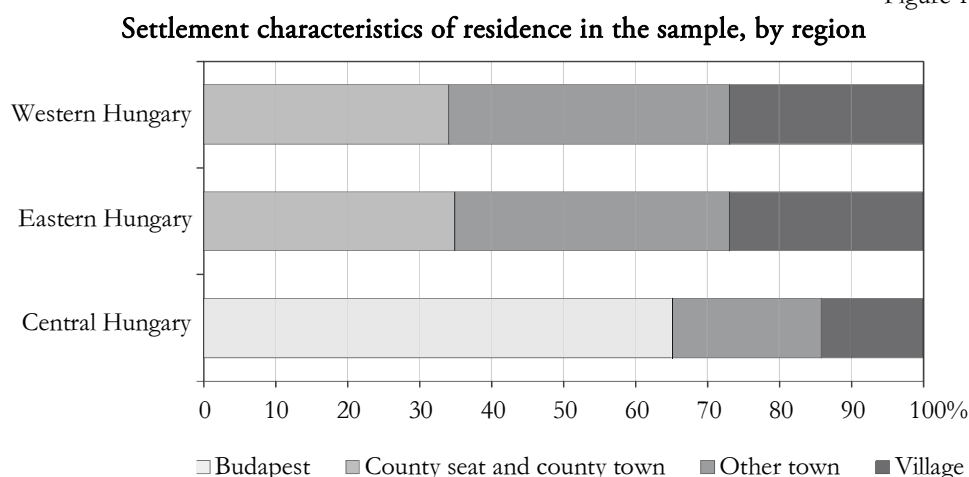


Table 2 shows the demographic and regional profiles of the respondents of the subsample.

Table 2

Demographic and regional profiles of respondents*

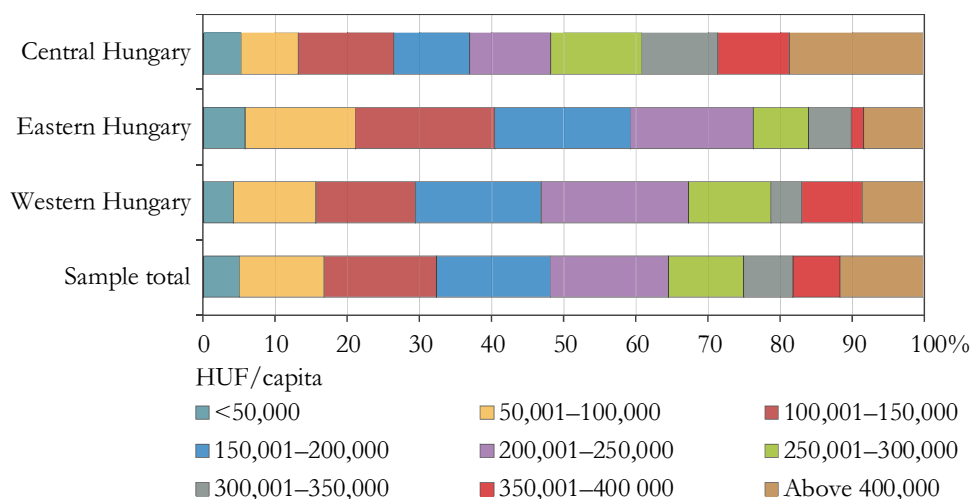
Variable	Frequency	%
Gender		
Male	227	42
Female	313	58
Education		
Primary school to the 8th grade	14	2.6
Secondary school without a high school diploma, with professional qualification	84	15.6
High school diploma	259	48.0
College or bachelor's degree	117	21.7
University or master's degree	63	11.7
Postgraduate training (doctoral degree)	3	0.6
Age		
18–29	93	17.2
30–39	111	20.6
40–49	117	21.7
50–59	97	18.0
60–69	122	22.6
Regional distribution		
Central Hungary	169	31.3
Eastern Hungary	189	35.0
Western Hungary	182	33.7

* N = 540.

Settlement characteristics reflect the fact that respondents who live in villages number about 70% of those living in smaller towns in each region (see Figure 1). With respect to its size and population, Budapest has a much higher share in the Central Hungarian region than the county seat and county towns do.

As shown in Figure 2, Central Hungarian respondents have significantly higher monthly per capita household income on average than Eastern Hungarian respondents. In addition, 64% of Central Hungarian respondents have more than 200,000 HUF/month/capita. This rate is 41% for Eastern Hungarian respondents and 51% for Western Hungarian respondents. This feature corresponds with country statistics.

Figure 2

Regional distribution of monthly household per capita income in the sample**Results of the survey****General characteristics of prosumer behaviour in online communities**

Engagement was measured using the amount of time spent per week (on average) by participants in online communities (Wang–Fesenmaier 2003) and the number of activities performed.

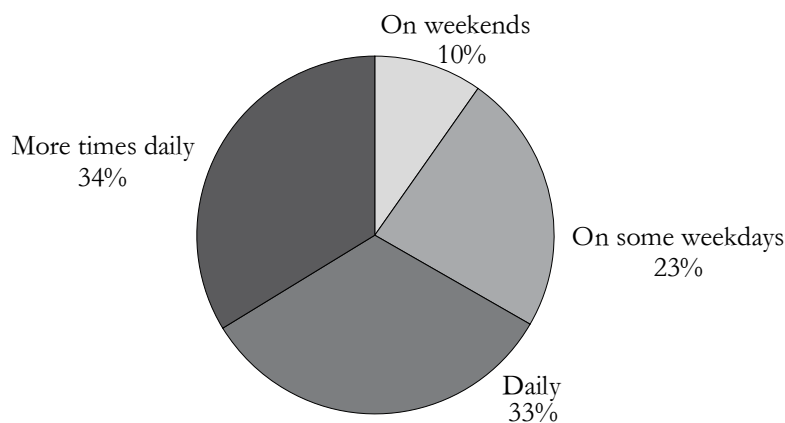
In all, 76% of respondents (78% of women and 74% of men) of the large, representative sample (2,511 respondents) reported that they engaged in online communities on a regular basis. The age groups differed significantly: 81% of young people under 30 were present in online communities, compared to 72% of the 50- to 59-year-old respondents. Regional features are also characteristic: the participation rate of Eastern and Western Hungarian respondents was significantly higher (79% and 77%) than the engagement rate of Central Hungarian respondents (Budapest and its surrounding areas, 72%) (at a significance level of 0.01).

The subsample of 540 respondents, all of whom participated in online communities, allowed for a more detailed analysis. Two-thirds of these individuals participated in online communities at least daily (see Figure 3). 39% of respondents reported spending less than 10% of their free time in their online community, whereas another 32% spent more than 50%. There is a significant relationship between intensity of participation in online communities and the time spent on this activity. Two-thirds of those who spend more than half of their free time with online prosumer (and consumer) activities do it at least once per day. On the contrary, almost half of those who spend less than 10% of their time with online communities participate less frequently (on some days each week or on weekends).

The frequency of engagement is also significantly correlated with the number of communities that the respondents are part of (at a significance level of 0.001). In all, 50% of those who deal with online communities only on weekends are part of only one online community (the total sample is 29%). On the contrary, almost 40% of those who do it daily or more often than daily are part of at least three online communities (sample total is 22%).

Figure 3

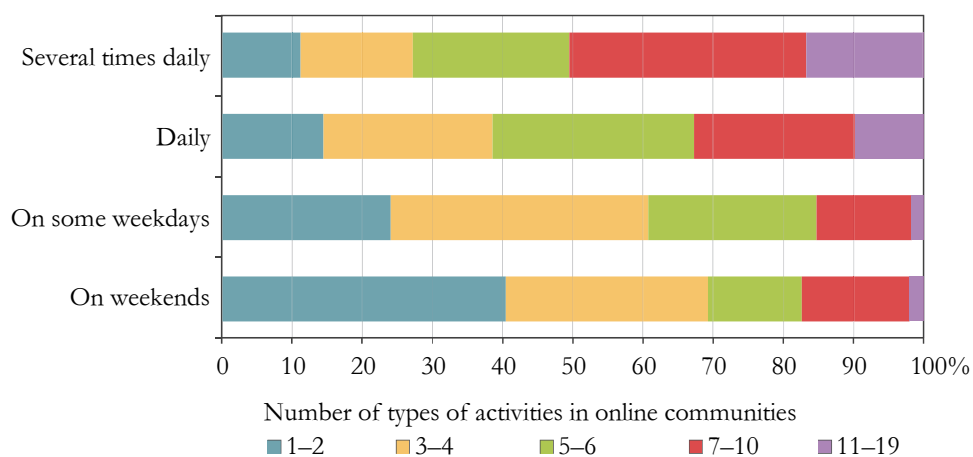
Frequency of engagement with online communities in the subsample



Moreover, a significant relationship (at a significance level of 0.001) can be observed between the frequency of engagement and the number of types of activities that respondents pursue in online communities.

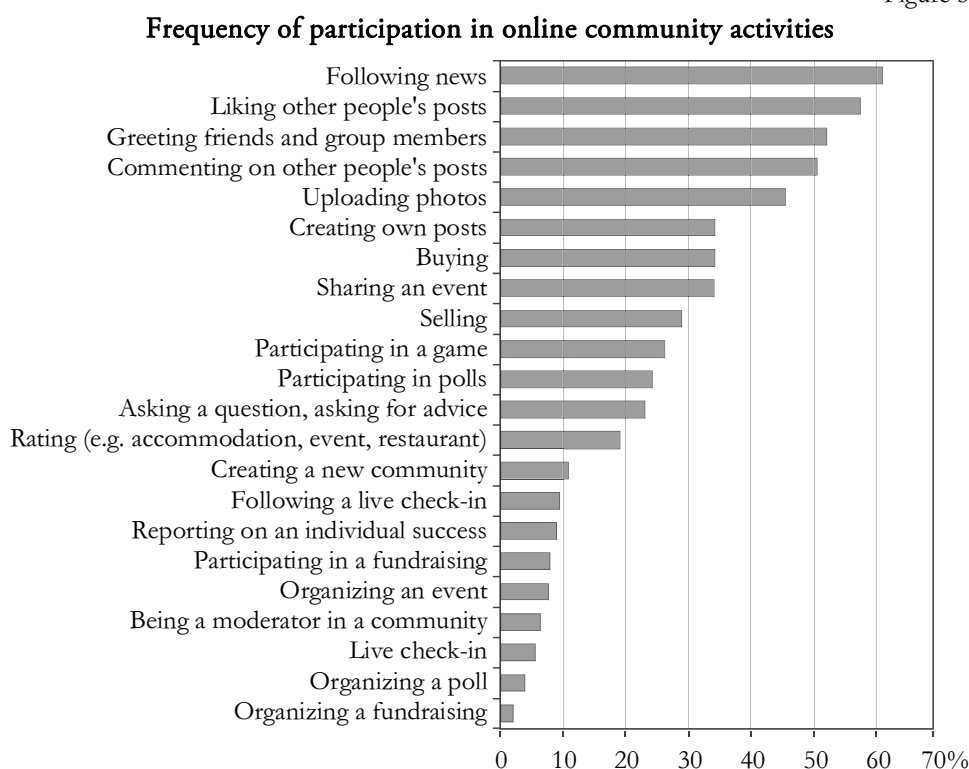
Figure 4

Number of types of activities in online communities based on the frequency of engagement



According to Figure 4, 73% of the most active cohort pursued at least five types of activities (the sample total was 57%), while 69% of the least active respondents pursued a maximum of four types.

Figure 5



As Figure 5 shows, following news, liking and/or commenting on others' posts, greeting friends, and uploading photos are the most common activities related to the online community in the sample, while organizing events, polls, fundraising, moderating a community or following/creating live check-ins are much less popular. The survey also enquired concerning the actual online communities that respondents participate in, revealing a large diversity of community themes from local interest groups (e.g., the community of a school or club) to communities that appeal to much wider audiences (e.g., certain hobbies or professions).

It is interesting, however, that we found no region-specific differences in crucial prosumer behaviour features of respondents in online communities. The frequency of respondents' engagement in online communities (see Figure 3), the number and types of activities pursued, and the proportion of the individual's free time spent with online communities, show similar patterns across the entire sample in all three regions. This suggests that access to online activities and presence in online spaces do not correlate with the socio-demographic characteristics of the three regions.

Motivations of prosumer behaviour in online communities

To explore the motivations of prosumer behaviour in online communities, a factor analysis was conducted for the relevant 13 variables using the extraction method of principal component analysis. The rotation method was varimax with Kaiser normalization. Rotation converged into five iterations. Three factors had an eigenvalue over one; those factors explain 69.99% of the total variance. The KMO value (Kaiser–Meyer–Olkin measure of sampling adequacy) is 0.917, the Bartlett’s test of sphericity has an approximate chi-square of 4,121.518, and it is significant (<0.001). Table 3 illustrates the rotated component matrix.

Table 3

Rotated component matrix

Variables	Factor 1: getting useful ideas	Factor 2: recognition and contribution	Factor 3: entertainment and pleasure
I participate because I get ideas in the community that can save me money.	0.824	0.215	0.103
I participate to collect ideas and inspiration.	0.816	0.103	0.293
I participate because I get ideas in the community that can save me time.	0.802	0.220	0.196
I participate because I get ideas in the community that improve my quality of life.	0.777	0.320	0.195
I participate to get useful information – in return for the content I share – from the community.	0.644	0.237	0.273
I participate in achieving a certain status and recognition in the community.	0.092	0.831	0.002
I participate to belong somewhere.	0.156	0.722	0.318
I participate because I can contribute to the life of the community in a useful and quality way.	0.335	0.705	0.305
I participate because I enjoy sharing my opinion in the community.	0.306	0.704	0.296
I participate because I enjoy sharing my knowledge in the community.	0.389	0.676	0.224
I participate because it is relaxing for me.	0.262	0.217	0.825
I participate because it is entertaining for me.	0.311	0.134	0.807
Time passes quickly when I’m involved with the community.	0.154	0.355	0.700

The factors distinctly capture the primary types of motivations driving participation in online communities. Factor 1 encompasses variables related to “receiving,” Factor 2 represents motivations associated with “giving,” and Factor 3 reflects motivations centered on “entertainment and pleasure.” Factors 1 and 2 include a mix of intrinsic and extrinsic motivations (see Table 1), whereas Factor 3 consists solely of intrinsic motivations.

This finding that intrinsic and extrinsic motivations coexist within Factors 1 and 2 is particularly noteworthy. It suggests that the motivational structure that underlies online community participation is organized around personal attitudes toward receiving, giving, and the enjoyment that is derived from the activity itself.

Based on the outcome of the factor analysis, hierarchical cluster analysis was performed using Ward's method, and a range of solutions from three to five clusters was analysed. The four-cluster solution proved to have the most explanatory power, reflecting the distinct features of clusters. Factors are significant in clusters, and group means differ significantly, as shown by the ANOVA test (between-group significances are below 0.001) and Welch's robust test of equality of means (which was also significant for each factor). As part of the post hoc analysis, the Games–Howell test of multiple comparisons indicated that almost all the cluster means were significantly different from each other. Table 4 presents the means table.

Table 4

Means table of the cluster analyses

Ward method		REGR factor score		
		1: getting useful ideas	2: recognition and contribution	3: entertainment and pleasure
Cluster 1: pleasure-driven	mean	0.3440956	−0.3793602	1.2061469
	N	82	82	82
	standard deviation	0.84436891	0.64948884	0.47040049
Cluster 2: uninterested	mean	−1.5605815	−0.6425178	−0.2838671
	N	81	81	81
	standard deviation	0.55008262	0.78147379	1.39441399
Cluster 3: prosumption-driven	mean	−0.0198058	0.7991843	−0.0197245
	N	250	250	250
	standard deviation	0.58670122	0.57409752	0.60371774
Cluster 4: utilitarian	mean	0.8121473	−0.9184614	−0.5588952
	N	127	127	127
	standard deviation	0.79925574	0.70068135	0.93088007
Total	mean	0.0000000	0.0000000	0.0000000
	N	540	540	540
	standard deviation	1.0	1.0	1.0

In Cluster 1, the factor score for Factor 3 is very high, indicating a strong motivation for pleasure and entertainment. We referred to these 82 respondents as “*pleasure-driven*”. In Cluster 2, the factor scores for each factor were negative: these 81 respondents were “*uninterested*”. In their case, other factors that were not explored in the current survey may have contributed to their participation in online communities (e.g., peer pressure). Cluster 3, which was a large cohort with 250 respondents, is “*prosumption-driven*” in the online space: these cluster members were motivated by making contributions to the community; they perceived a strong sense of belonging by doing so and were also motivated by being recognized. Finally, the 127 members of Cluster 4 were “*utilitarians*”, who were clearly motivated by ideas

that helped them save time and money as well as improving their quality of life. The “reception” part of reciprocity (to obtain useful information in return for shared content) appeared here as well.

Women were somewhat overrepresented in the pleasure-driven cluster (65%, compared to their rate of 58% in the sample) and in the utilitarian cluster (64%), while men were somewhat overrepresented in the uninterested cluster (52%, compared to their rate of 42% in the sample). This gender imbalance corresponds to the sample rates in the presumption-oriented cluster.

The elderly respondents (60–69 years old) were somewhat overrepresented in the pleasure-driven cluster (32%, compared to their sample rate of 23%) and the uninterested cluster (30%), while 30- to 39-year-old respondents were underrepresented in the uninterested group (15%, compared to their sample rate of 21%). The distributions of different age groups in the utilitarian and presumption-driven clusters corresponded with the sample average.

The structures of the four clusters did not differ from each other in terms of the education level of respondents and the average per-person net monthly income of the family.

Perceived impact of online community participation on prosumer behaviour and on individual sustainability

To analyse the impact of participation in online communities, we asked the respondents to determine whether their membership made them more susceptible to social problems; whether it made them more open to other people; whether they felt that online communities made them more useful as members of society; whether they paid more attention to environmental issues and were more aware of their energy and water consumption; and whether engagement made them more open to try new things in general. We also asked whether their online membership had made an impact on their awareness regarding the consumption of online content.

Examining these different clusters, we found that pleasure-driven, intrinsically motivated respondents (Cluster 1) who enjoyed participating in online communities perceived the highest positive impact on their mindset. They reported a strong reassuring effect of positive feedback, which motivated them to further activity in the community. Most reported that they considered very carefully the content that they shared, and they believed the most in the trustfulness of information that they received in the community. Members of this cluster were significantly more positive and supportive when commenting on others’ posts, and they perceived that they received typically positive feedback from other community members at a significantly higher rate than other clusters. Most reported being in online communities with people of similar interests. They reported that they were quite active, and two-thirds pursued at least five types of online activities, and they expressed a high willingness to be even more active in online communities in the future.

Related to the impacts of participation in online communities on individual sustainable behaviour, in relation to the respondents in other clusters, significantly more pleasure-driven respondents perceived a high or very high impact on their pro-environmental behaviour, their openness to new things, to other people, and dealing with social problems, as well as on their consciousness of being a useful member of society.

These results strongly support the hypothesis that intrinsic motivation evokes positive, self-stimulating impacts on attitudes, behaviour patterns and activity in online communities, as well as on individual sustainable pro-environmental and pro-social behaviour.

The other extreme of impact-related perceptions can be represented by the reactions of uninterested respondents (Cluster 2): the majority of these reported no positive impact on their behaviour patterns and consciousness at all, as described above. Most of them are not active members of any online communities, 64% pursued less than five types of online activities (39% only one or two types), and most (83%) do not plan to become more active in the future. They are consistent in their lack of interest and their often-refusing behaviour, which reflects their low motivation.

Prosumption-driven respondents (Cluster 3) normally appear between Clusters 1 and 2 in terms of how strongly they perceive the positive impacts of online community-related activities on their attitudes and behaviour. One important result is that they reported perceiving the highest level of consciousness of prosumption, which is reflected in the strongest agreement (of all clusters) with the following two statements: “I think that participation in online communities makes me the producer and consumer of some content at the same time” and “I think that I have become a more conscious “consumer” of information because I actively participate in content generation”. In addition, a significantly higher percentage of this group reported being among the most active members of the online community are part of than respondents of other clusters. They are also the most determined in their willingness to become even more active members of the online communities that they are part of. As with pleasure-driven respondents, almost two-thirds pursued at least five different types of activities in online communities. These results are in line with their contribution-focused prosumer drive.

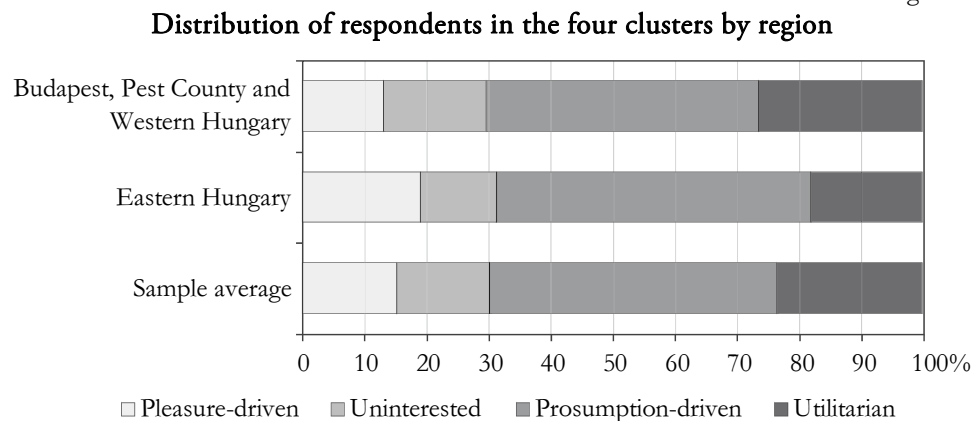
Finally, the utilitarian respondents (Cluster 4) were significantly less motivated to engage in higher activity through positive feedback than either pleasure- or prosumption-driven cluster members. They are quite conscious of considering the contents they shared carefully, which is an important feature when expecting reciprocal behaviour (to get useful information from the community in return for the shared content). The perceived impacts on their attitudes and behaviour are normally somewhat less positive than in the case of prosumption-driven respondents but are far more positive than what is reported by the uninterested group. Although 54%

pursued at least five online activity types, they reported being less or only moderately active online community members, and 72% did not want to become more active in the future. These features are in line with their utilitarian drive, focusing mainly on what they obtain from the community (rather than on what they contribute).

Regional features of prosumer behaviour in online communities

In the next step, cluster membership was analysed in the regional context. Because Western Hungarian and Central Hungarian respondents showed similar features in terms of their motivation for participating in online communities, a united variable was created for them. Regional differences were then analysed between the Eastern Hungarian and Western and Central Hungarian respondents.

Figure 6



Acting as a prosumer motivates almost half of the respondents, followed by utilitarian drives (getting useful ideas) and entertainment. In all, 15% of respondents seemed uninterested and not motivated by any of the factors. Eastern Hungarian respondents tended to be driven by acting as a prosumer and by entertainment, whereas there were significantly more utilitarian and uninterested Western and Central Hungarian respondents (based on Pearson chi-square test, at a level of significance of 0.021).

We tested the distribution of respondents within regions according to socio-demographic variables. We found one demographic variable, gender, which has a significant relationship with cluster membership, but only in one region. In Eastern Hungary, men were significantly overrepresented in the uninterested cluster (73.9%, compared to the subsample average of 40.7%). In contrast, female respondents were significantly overrepresented among Eastern Hungarian members in the utilitarian cluster (73.5%, compared to the subsample average of 59.3%). Representation of Eastern Hungarian male and female respondents in the pleasure- and prosumption-driven clusters corresponds with their distribution in the Eastern Hungarian

subsample. Other socio-demographic variables do not affect cluster membership in the regional context.

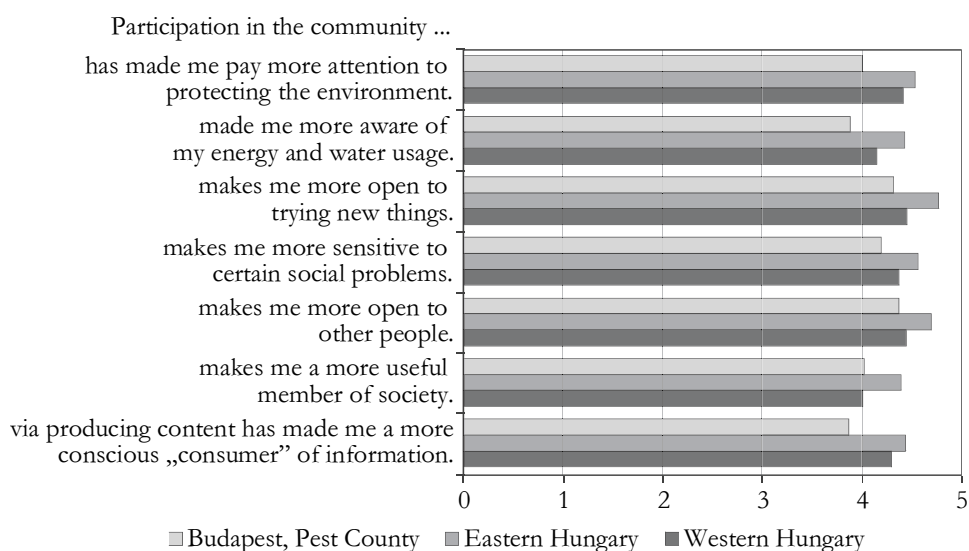
Social and environmental awareness-related questions were measured on a 1–7 scale. The mean values of responses in the sample were around 4.1–4.5, with standard deviations of 1.6–1.8, with significant regional differences. Participation in online communities had a significantly larger positive impact on the environmental awareness of respondents in Eastern Hungary than on respondents from other regions, particularly those from Budapest and its surroundings (see Figure 7).

The same is true for the awareness of how to “consume” information during activities in online communities. Eastern Hungarian respondents reported a significantly higher impact in this sense than respondents from the other two regions did.

In most cases of perceived impact on consciousness and openness in the social and environmental behaviour of the respondents, regional differences were significant at a level of significance of 0.05 (see Figure 7). The two exceptions were openness to certain social problems and openness to other people, where the difference between the answers of Eastern Hungarian respondents and Central Hungarian respondents was peculiar, but in terms of all three regions, the differences were not significant statistically.

Figure 7

Perceived impact of participation in online communities on respondents' social and environmental behaviour, average values by region (scale of agreement: 1–7)



Eastern Hungarian respondents also stand out regarding their perceptions and the motivating power of their positive feedback. They reported receiving mainly positive

feedback in a significantly higher proportion (at a significance level of 0.018) than respondents from the other two regions, and they are significantly more motivated by positive feedback to take further action (at a significance level of 0.01).

Discussion

Our research confirmed and extended several well-established findings on online community participation while revealing new insights into the Hungarian context and identifying links between presumption and sustainability-oriented behaviour.

Our results demonstrate that, in line with previous studies (e.g., Wang–Fesenmaier 2003, [2]), engagement in online communities is highly prevalent in Hungary, and individuals spent a large portion of their free time undertaking various types of activities in these communities. About three-quarters of the respondents reported engagement with online communities, with significant differences appearing between regions: more Eastern and Western Hungarian individuals reported that they participated in online communities than Central region individuals. Thus, we accept both H1a and H1b.

Consistent with earlier evidence finding that engagement is shaped by frequency and diversity of activities (Hung et al. 2015, Bernard et al. 2018), our results show that higher participation intensity is associated with belonging to multiple communities and with undertaking a broader range of activities.

Second, our factor analysis supports the multi-dimensional nature of the motivations identified in prior research (Wang–Fesenmaier 2003, Yang–Lai 2010, Chang et al. 2020), but with an important nuance. We found three distinct motivational dimensions, namely, “getting useful ideas”, “recognition and contribution”, and “entertainment/pleasure”, where the first two contain a blend of intrinsic and extrinsic drivers. This co-occurrence of motivational types confirms Gutiérrez-Páez et al.’s (2023) finding that intrinsic and extrinsic motives often operate simultaneously rather than in isolation.

Based on these results, we argue that the distinction between extrinsic and intrinsic factors of participation in online communities has only limited value when describing individual behaviour, and thus, we reject H2.

Third, based on the factors identified, cluster analysis revealed four participant profiles: pleasure-driven, uninterested, presumption-driven, and utilitarian, which echo but also refine earlier typologies, such as “posters” vs. “lurkers” (Hung et al. 2015) and reputation-driven vs. altruism-driven actors (Zhang et al. 2017). The presumption-driven cluster reflects the “peer-to-peer presumption” described by Alhashem et al. (2021), whereas the utilitarian cluster highlights a pragmatic, benefit-seeking participation style that is less emphasized in earlier models.

Considering the regional characteristics of online communities, we found that Eastern Hungarian individuals are more often driven by entertainment and pleasure,

whereas Western and Central Hungarian individuals have more utilitarian motives. From these results, we accept H3a and H3b.

Fourth, and most notably, our findings underscore the relationship between motivation type and perceived personal and societal impacts. Echoing the literature on intrinsic motivation and pro-social behaviour (Park et al. 2014, Zhou et al. 2020), pleasure-driven participants, those most intrinsically motivated, reported the strongest positive changes in openness, environmental awareness, and perceived societal usefulness. By contrast, the uninterested cluster exhibited minimal engagement and negligible perceived benefits, aligning with prior observations that low intrinsic motivation limits contribution and community impact (Ardichvili et al. 2003). The prosumption-driven cluster reported the greatest awareness of their dual producer-consumer role in reinforcing the conceptual link between prosumption and more conscious online content consumption (Toffler 1980, Chan et al. 2022).

Based on these findings, we accept H4.

Conclusions and limitations of the research

Overall, our study confirmed that motivations for online community participation are multifaceted and interlinked, where intrinsic drivers are strongly associated with sustainable and pro-social behavioural outcomes. By situating these findings in a national context, we contribute to the global understanding of prosumption and to the emerging literature on spatial variation in online community behaviour.

The results of this study have several theoretical and practical implications for the study of online communities, prosumption, and sustainability-oriented behaviour.

Theoretical implications

First, our evidence reinforces the contention that intrinsic and extrinsic motivations are not mutually exclusive in participation in online communities (Gutiérrez-Páez et al. 2023) but rather coexist within broader motivational structures oriented toward “receiving”, “giving”, and “entertainment”. This challenges earlier dichotomous models (e.g., Yang–Lai 2010), suggesting that future theoretical frameworks should explicitly integrate mixed-motivation configurations. Second, the identification of distinct participant profiles – particularly the “prosumption-driven” and “utilitarian” clusters – extensions typologies in the literature (Hung et al. 2015, Zhang et al. 2017) by recognizing pragmatic, benefit-oriented prosumers as a separate category. Finally, our within-country regional analysis shows that spatial-cultural variation exists below the national scale, adding nuance to previous cross-national comparative studies (Gallagher–Savage 2013) and opening new avenues for regional-level cultural analysis.

Practical implications for community management

Our results are invaluable for platform designers and community managers, providing information concerning the motivating factors of online community participation and giving a methodology for surveying and classifying community members. These insights can be adopted in segmentation and positioning, supporting the development of specific measures for increasing the attractiveness of the communities, the level of commitment and activity of the members, as well as to shape the identity of the community. The link between intrinsic motivation – especially pleasure and recognition – and positive behavioural spillovers highlights the value of fostering social connection, enjoyment, and the sense of belonging. Community features that provide positive feedback, recognize contributions, and facilitate diverse activity types will enhance engagement and sustainability-related impacts. For “utilitarian” members, emphasizing the tangible benefits while gradually integrating opportunities for their contribution could increase reciprocity and deepen commitment. Conversely, the “uninterested” segment may require an entirely different outreach strategy, such as targeted engagement prompts or offline–online integration, to activate participation.

Policy and societal implications

The strong association between intrinsic motivation and pro-social and pro-environmental outcomes justifies online communities in promoting sustainability awareness and behaviour change. Policymakers and NGOs could leverage presumption- or pleasure-driven communities to fuel environmental campaigns, social inclusion programs, and civic engagement initiatives. The stronger impacts that were observed in Eastern Hungary suggest that regional cultural contexts should be considered in intervention design; strategies that resonate locally may yield higher behavioural returns than uniform, nationwide approaches.

In summary, these findings develop a shift from purely participation-based metrics toward understanding the ways that people engage with online communities and how motivational structures influence both community health and wider social and environmental outcomes.

Although it provided interesting results, our research also features several limitations. First, while the large sample was representative of the Hungarian population, the sample of respondents who filled in the more detailed questionnaire may not have been perfectly so. Second, we managed to identify three large regions within the country but could not identify more minute regional differences, which may nevertheless be present. A comparison of engagement by the type and size of settlements could provide more interesting results in the future. Finally, our survey provided results for Hungary alone, which should not be generalized for other countries in the region or further afield.

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