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Participatory Innovation and Diverse Users

Results of a Targeted Literature Review

Abstract

The aim of this paper is to explore the basic concepts and various conceptualisations of participatory innovation processes. This analysis is part of a multi-stage research project within the disciplinary framework of Disability Studies and Innovation Management.

Through targeted and integrative literature analysis, I examined how the literature defines participatory innovation and what benefits and challenges can be identified in applying this method. I analysed 8 studies deductively along the following predefined categories: theoretical concept and topic of innovation; stakeholders; methods; benefits and challenges.

The results show that the implementation of a participatory innovation generates sustainable results that are responsive to user needs. The impact can be both transformative and productive regarding the entire community. A challenge is that the process is time-consuming and can lead to difficulties if stakeholders are not motivated or even actively oppose the process. To ensure that no one experiences involvement as a constraint or as another empty concept to be ticked off, roles, tasks and objectives need to be clearly defined and understood by all.

In the light of my findings, I introduce a new concept of participatory innovation that may be suitable for the involvement of disabled users in development processes.

Keywords: *participatory innovation, participation, „Nothing about us, without us!”, responsible science, user involvement*

Participatív innováció és felhasználói sokszínűség

Egy célzott irodalomelemzés eredményei

Absztrakt

A tanulmány célja a participatív innovációs folyamatok alapfogalmainak, illetve különféle koncepcióinak feltérképezése. Ez az elemzés része egy több lépcsőből álló kutatásnak, melynek diszciplináris kerete a fogyatékoságtudomány (Disability Studies) és az innovációmenedzsment.

Célzott és integratív irodalomelemzés módszerével azt elemeztem, hogy a szakirodalom hogyan definiálja a participatív innovációkat, és megvizsgáltam, hogy a rendelkezésre álló tanulmányok milyen előnyöket és kihívásokat azonosítanak a módszertan alkalmazása során.

Elemzésem igazolta, hogy a participatív innováció alkalmazása fenntartható, a szükségletekre jól reagáló eredményeket hoz létre. Bevezetése a teljes közösségre transzformatív és produktív hatással lehet. Hátrány és kihívás azonban, hogy ez a folyamat időigényes, és a megvalósulást megnehezítheti, ha a szereplők nem motiváltak, vagy akár aktívan opponálják a terveket. Annak érdekében, hogy senki ne kényszerként vagy újabb kipipálandó, üres koncepcióként élje meg a bevonást, a szerepeket, feladatokat és célokat pontosan, mindenki számára érthető módon meg kell osztani.

Eredményeim tükrében bemutatom a participatív innovációnak egy olyan definícióját, ami alkalmas lehet arra, hogy fogyatékos felhasználók részt vegyenek fejlesztő folyamatokban.

Kulcsszavak: *participatív innováció, részvételiség, „Semmit rólunk, nélkülünk!”, felelősségteljes tudomány, felhasználók bevonása*

Participatory Innovation and Diverse Users

Results of a targeted literature review

1. Introduction

The aim of this paper is to explore the basic concepts and different conceptualisations of participatory innovation processes. This analysis is part of a multi-stage research project within the disciplinary framework of Disability Studies and Innovation Management. The goal of the research is to analyse the methodology of involving disabled users in participatory innovation.

The topic is novel because there is currently little literature on disabled users available in this interdisciplinary theoretical and methodological framework. The conceptual overview and the development of a methodological map can contribute to a more informed planning of further research and innovation.

Over the past years, my colleagues and I have built a complex brand of higher education methodology based on the idea of disabled and non-disabled people working together on an equal basis at university. Its three pillars are *participatory research, teaching and innovation*. *Participatory research* means that disabled people participate in our studies as research collaborators from research design to dissemination (see Kunt, 2019; Katona, 2014; Heiszer, 2017; Könczei et al., 2019). In *participatory teaching*, courses are designed together with disabled people, classes are taught together, and students' work is assessed together (Katona et al., 2022). Finally, *participatory innovation* involves service development with disabled users (Sándor et al., 2021). A common feature of these three types of activities is that the disabled participants are not professional researchers and teachers, but activists committed to human rights advocacy. By sharing their life experiences, they enrich the theoretical knowledge generated at the university.

Our participatory work in higher education is itself innovative, because it deconstructs the dominant academic structures. Not only does it analyse the power relations between disabled and non-disabled participants, but it also actively works to equalise these power relations using the tools of Critical Disability Studies (Brown & Ramlackhan, 2022). Our methodology responds to what Dolmage defines literally and metaphorically as “steep steps to Ivory Towers” (Dolmage, 2017: 44). But it is not only disabled students who find it difficult to gain access for physical and social reasons. A significant proportion of curricula, research and development on disabled people are produced by non-disabled professionals.¹ This phenomenon reinforces

¹ Although the sociology of special education does not study this phenomenon within the framework of disability studies, its creator, Csaba Bánfalvy has been dealing with the problem of social differences between special educators and the children they teach for decades: “What is even more important is that **the subculture of special educators rarely coincides with the subculture of their clients**” (Bánfalvy, 2006: 127, emphasis added by the author). He also draws attention to the fact that the incongruence of different social status and subcultural affiliations can be a potential source of conflict in the interaction between the two groups.

the inherent tendencies towards ableism, elitism and exclusion in academia (Sándor, 2021; Hoffmann et al., 2023, Yerbury & Yerbury, 2021), which lead many people working in academic settings to hide their disabled or chronically ill identities (Brown & Leigh, 2018; Lindsay & Fuentes, 2022).

Our methodological reflections on participatory teaching and research have been presented in several publications (Sándor, 2018; Sándor et al., 2023; Sándor et al., in press), and in our methodological book published in 2019 we have already referred to the importance of value-creating co-productive, co-design and social innovation projects (Katona et al., 2019). In the current phase of our work, we focus on the latter: the development and innovation component (see Cserti-Szauer et al., 2022). The aim of this paper is to analytically explore user-centred, collaborative participatory innovation concepts and to highlight the aspects that will enable the inclusion of disabled people as users in innovation processes. Using a targeted literature analysis method, I will examine two main questions: *How does the literature define participatory innovation? What are the benefits and challenges that the available studies identify in applying the methodology?*

2. The democratisation of innovation and science

Schumpeter's (1939) starting point is that innovation is the creation of a *new commodity* which may be based not only on a new scientific discovery or technological development, but also on a *new type of commercialisation* of a product. Innovation is also the opening up of *new markets* or the finding of *new sources of supply*. Finally, a *new form of organisation* that is different from the previous one may also be innovative. According to the author, anything that manifests itself economically in "doing things differently" (Schumpeter, 1939: 80) is innovation. It can be deduced from the above that innovation is not the same as invention. Although Schumpeter's concept does not yet mention user involvement, his open, broad approach provides a good basis for it.

The inclusion of vulnerable, marginalised groups, such as disabled users, can be approached through Chikán's definition. In his view, innovation is also when a development is able to meet consumer needs at a new, higher level of quality (Chikán, 2008). Involving users of a product or service in the development can help to achieve this higher level of quality.

The current literature on participatory innovations does not always consider the user of the product or service as the involved participant, but the common value of the studies analysed is that they build on the *meaningful participation* of relevant actors at different stages of the process and on their *joint knowledge generation*. In this respect, they are similar to the values of participatory teaching and research in the field of Disability Studies. Furthermore, the overarching value of collaborative product or service development is *ethical operation* and *responsibility*. However, this goes beyond traditional corporate social responsibility (CSR), where beneficiary groups are passive recipients or objects of the company's charity. The focus shifts to stakeholders and citizens being active participants and equal actors in firms' co-

creation processes (Osborne et al., 2016; Ryan, 2012; Katona et al., 2019; Ramaswamy & Ozcan, 2014) and their responsible, purpose- and value-driven innovations (Grant & Grant, 2016; Stilgoe et al., 2013). In the academic field, similar developments are described by the concepts of citizen science and responsible science (Buchner et al., 2016). These stakeholders are linked in a quadruple helix ecosystem (see Figure 1. below), which makes the resulting innovations more sustainable. Whereas previously the triple helix model only involved the government, academia and business, in the quadruple helix system, the government, academia, business and civil society develop and create together (Carayannis & Campbell, 2009; Plattner et al., 2014; Castiaux, 2016; Bugarszki, 2019; Taratori et al., 2021).

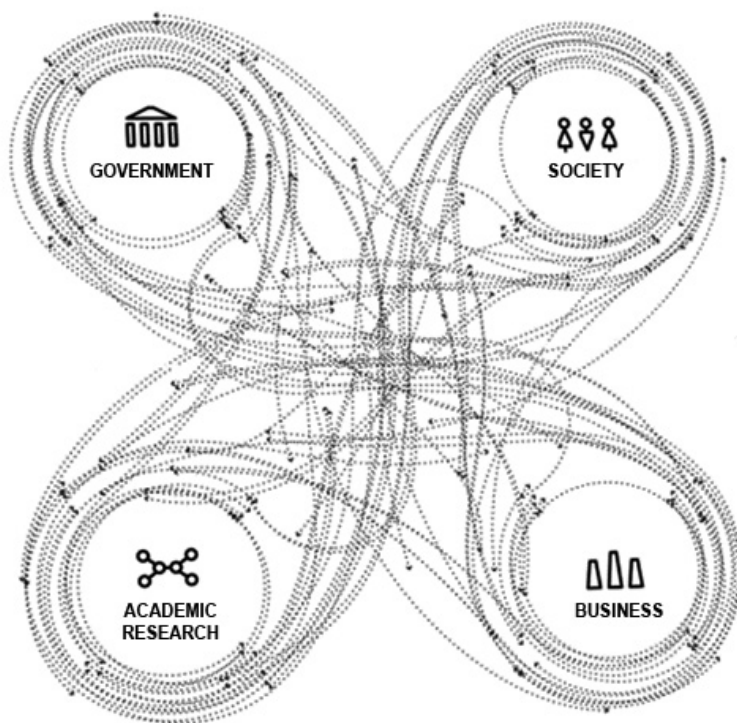


FIGURE 1. THE QUADRUPLE HELIX MODEL (ADAPTED BY FRAUNHOFER, 2016, ORIGINALLY DEVELOPED BY CARAYANNIS AND CAMPBELL, 2009, PUBLISHED BY SCHÜTZ ET AL., 2019: 129)

While there are many benefits of participation and democratisation, they also present methodological challenges for developers and researchers. They need to explore how best to understand users' views and translate them into results. After all, many users find it difficult to articulate their needs or do not even recognise them. What they experience is a problem situation that hinders their daily life. Therefore, the user's need is called "sticky information" (von Hippel, 1994), which means that it is difficult to reveal it. It logically follows from the above problem that a new methodological toolbox is needed to "extract" user knowledge. This has led to the emergence of design-centred participatory models that engage users: *user-led innovation* and *user involvement* (Barnes & Mercer, 2006; Priestley et al., 2010; Munn-Giddings et al.,

2009; Bühler 2001), *citizen involvement* (Creighton, 2005; Pivik, 2002; Jurkowski et al., 2002), *user-centric* and *consumer-centric innovation* (Gamble et al., 2016; Selden & MacMillan, 2006), *co-creation* and *experience innovation* (Brandsen et al., 2018; Rill & Hämäläinen, 2018, Walcher & Leube, 2017), as well as *co-production* (Hunter & Ritchie, 2007; Roberts et al., 2011; Cserti-Szauer, 2019).

Following Anttiroiko's (2016) model, the level of participation in participatory innovations can range from nominal to transformative. The level of involvement is proportional to the potential for user freedom and creativity to unfold. The example of urban planning shows that the methods used can range from passive informing actions to active, self-organised urban planning and hacktivism (Figure 2). Urban hacktivism is a grassroots action that can provide solutions for local challenges, although its ability to change structural barriers might be limited (Maalsen, 2022).

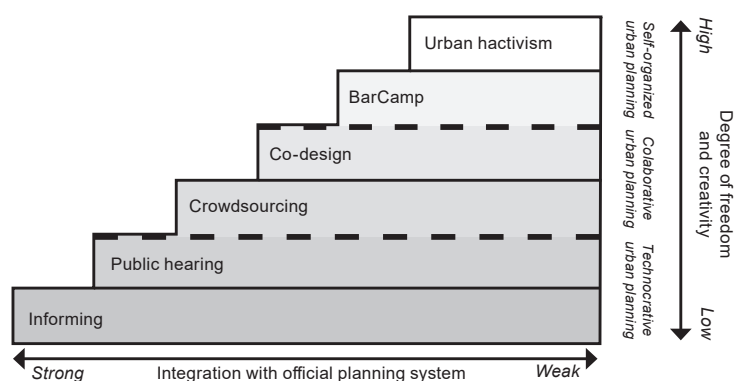


FIGURE 2. DEGREE OF INTEGRATION, FREEDOM AND CREATIVITY IN URBAN PLANNING (ANTTIROIKO 2016, 9)

Research has shown that participation is not always about individuals on behalf of a particular group. Often, the best solutions are not necessarily found by seeking out the most experienced specialist in the field. The involvement of groups can add value to the innovation, because collectively people are wiser than the most informed member of their community would be: this is the wisdom of crowds (Surowiecki, 2005). Following this idea, Davidson argues that it is not worth leaving innovation to designated individuals within an organisation, but the goal is rather to involve the whole organisation. The community not only generates quantifiably more ideas, but also more creative and qualitatively better ideas (Davidson, 2022).

Finally, we need to take into account the economic and technological context in which our societies operate and our daily lives are shaped. Development and science become more democratic not only because of the need for corporate actors to act responsibly and create value, but also because they are profit-driven. Highly dynamic and increasingly accessible technological developments allow users to become developers themselves, in their own homes, using their own computers (von Hippel, 2005). Companies that are not open to incorporating these ideas may be left behind in a fiercely competitive market.

After this brief overview of the democratisation process in innovation and science, I introduce the theory and practice of participatory innovation.

3. Participatory innovations

Participatory innovations combine the pillars of the *lead-user approach* (von Hippel, 2005), *design anthropology* (Jaffari et al., 2011) and *participatory design* (Dell'Era & Landoni, 2014) (Buur & Matthews, 2008). They aim to generate knowledge about users that inspires members of the organisation to redefine a product, role or corporate identity. They also aim to create corporate opportunities that respond to the market through product and service concepts (Figure 3.).

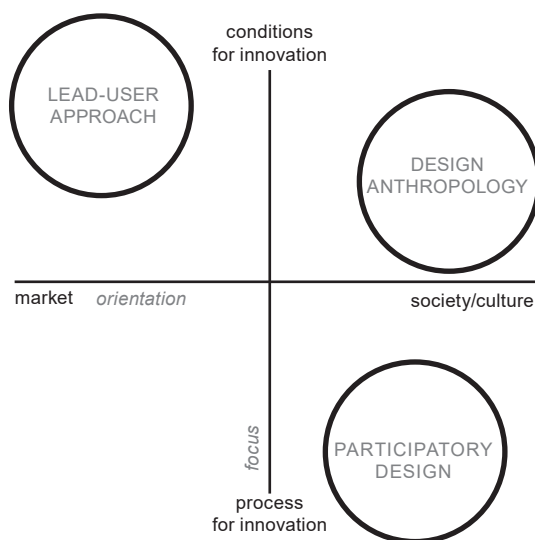


FIGURE 3. THE FOCUS AND ORIENTATION OF PARTICIPATORY INNOVATION PILLARS
(BUUR & MATTHEWS, 2008: 261)

Participatory innovation can be defined by the following 5 steps:

1. field study: mapping the people and practices that the organisation wants to develop and strengthen;
2. sense-making: analysis and interpretation of the observed events, people, practices with the relevant stakeholders of the process (internal and external partners, users, etc.);
3. co-ideation: brainstorming with the different stakeholders involved (internal and external partners, users, etc.);
4. business modelling: co-modelling of the concrete concept of products/services resulting from the ideas with the relevant stakeholders (internal and external partners, users, etc.);
5. co-design: joint development of products and services with relevant stakeholders (internal and external partners, users, etc.) (Buur & Matthews, 2008).

The studies analysed below all build on Buur and Matthews' theory and demonstrate its applicability in practice.

4. Methodology

The methodology of the study is a targeted, or also known as focused (Huelin et al., 2015), and integrative literature analysis (Snyder, 2019). It aims to use qualitative content analysis to examine the theoretical and practical experiences available on participatory innovations that can support the process of involving users with disabilities. By properly understanding and adapting participatory innovation concepts, frustrations due to difficulties in collaboration and inaccurate expectations can be avoided. As a result, not only the services, but also the service development processes are better able to respond to the needs of the stakeholders.

From September 2022 to January 2023, I collected relevant results from Google Scholar, EISZ and EBSCO for the keyword „participatory innovation” in English. After an initial review of the literature found, I developed a concept map of the terms that appear: participatory innovation, lead-user, co-production, co-creation, stakeholder/user/citizen involvement, user-centric/consumer-centric innovation. I organised the literature using the literature matrix technique to support the classification of the literature. This procedure also allows for a qualitative analysis to avoid the random selection of literature (Klopper et al., 2007; Goldman & Schmalz, 2004).

After pre-selection, the categorised collection contained 55 texts of various genres (journal articles, books and conference papers were included). During the pre-selection process, I discarded any literature that did not show a meaningful connection to the narrow research area based on the initial review. This step is essential because Google Scholar alone finds more than 4000 texts for the term “participatory innovation”. Due to scope limitation, in this article I only analyse journal articles narrowly related to the topic of participatory innovation.

I have included in the analysis only studies that were published in or after 2000, are empirical in nature and are primary sources, i.e., the author(s) are the same as the person who conducted the research. I have used findings from other texts on the subject only to provide theoretical context in the first two chapters of this article.

Studies on participatory innovation are typically interdisciplinary, combining fields such as medicine, agriculture, political science, innovation management and design. To ensure that my work supports subsequent developments and research in the field of Disability Studies as effectively as possible, I have not included articles that are more difficult to relate to disabled people (see Borgen & Aarset, 2016 for an example of agriculture or Ewens & van der Voet 2019 for a financial case study). I have not limited the search to specific geographical regions. Thus, the selected articles represent the United States of America, Finland, Denmark, Iran and Germany.

After sorting out the redundancies (I only considered several publications of the same research once), I finally analysed 8 studies deductively along the following predefined categories:

- theoretical concept and topic of innovation;
- stakeholders;
- methods (given that participatory research tends to blur the boundaries between research and the actions, I have included both dimensions);
- benefits and challenges.

Table 1. below summarises my findings (detailed references are given at the end of the paper):

TABLE 1. SUMMARY OF THE ANALYSED ARTICLES (AUTHORS' TABLE)2

	Authors	Theoretical concept and topic of innovation	Stakeholders	Methods	Benefits	Challenges
1	Abed et al. (2000)	stakeholder involvement; comprehensive cancer control	cancer patients	action research	innovation is more effective when stakeholders are involved from the start	time consuming
2	Anttiroiko (2016)	participatory innovation; citizen involvement; urban planning	citizens	field study	participatory innovation has a positive impact on the economy, decision-making processes and local communities	the concept can lose meaning; it's difficult to involve lay persons
3	Boer & Donovan (2012)	participatory innovation; Interaction Design; provotypes; indoor climate	companies, university researchers, families	field study	provotypes represent a good platform for participatory innovations	-
4	Buur & Larsen (2010)	participatory innovation; communication	company employees, entrepreneurs, designers	field study; improvisative theatre	conflicts and crossing intentions can enrich the concept of participatory innovation	an attempt to reduce complexity or control conflicts between perspectives may impede innovation
5	Buur & Matthews (2008)	participatory innovation; a new concept of user involvement; wastewater control	company employees	field study; action research	participatory innovation can generate new knowledge and opens up new business opportunities	recognition of users' expertise and implementation of their ideas can lead to conflicts
6	Buur, Ankenbrand & Mitchell (2013)	participatory innovation; business modelling	company employees	action research; tangible value network mapping, staging	participatory innovation can encourage participants to question conventional concepts and to co-construct new meaning	-
7	Sadabadi & Rahimi Rad (2021)	social innovation; participatory action research	marginalised people living in poverty	participatory action research	innovation is more sustainable when people are involved in solving their own problems	inclusion of marginalised groups can be a challenge, so conscious empowerment processes are needed
8	Schütz, Heidingsfelder & Schraudner, M. (2019)	participatory research and innovation	citizens	participatory design methods	lay people do not want to take on the role of researchers, but want to engage in meaningful debate and communication about developments that affect them	if there is a lack of clarity of purpose, roles and responsibilities among the stakeholders, cooperation may lead to frustration

5. Results

5.1 Theoretical concept and topic of innovation

The concept of participatory innovation cannot be limited to specific subject areas. It is broadly applicable: the content of the examined case studies found ranges from better coordination of cancer prevention programmes (Abed et al., 2000) and the management of wastewater in companies (Buur & Matthews, 2008) to the phenomenon of smart city urban development and platformisation (Anttiroiko, 2016).

I have already discussed the challenges of engaging users and citizens. It is therefore not surprising that several articles focus on effective communication and interaction between the stakeholders involved. Interaction Design investigates how tensions between actors can be transformed into provocative types (so-called provotypes). In applying provotypes, researchers do not explain the use of

a product in detail, but observe how the involved participants struggle to use and understand it (Boer & Donovan, 2012). Combining elements of participatory design and design anthropology, Buur and Larsen (2010) tried the improvisational theatre technique with corporate employees. Since everyone within a company has their own working methods, goals and competences, role-playing can be used to observe and subsequently manage conflicts with better results. In their case study, Schütz et al. (2019) wondered what the preferred and effective forms of interaction between stakeholders might be.

Participatory innovation can also be understood as design moves, referring to shifts in perspective that allow participants to interpret concepts or roles in ways that are different from how they have approached them in the past (Buur, Ankenbrand & Mitchell, 2013).

Also deserving special attention is a project that accompanies social innovation with participatory action research and focuses on empowerment processes. This study is the closest to the objects of Disability Studies, because it explains a labour market project (Sadabadi & Rahimi Rad, 2021).

5.2 Stakeholders

The groups involved in the case studies are all somehow relevant to the topic or process. However, as participatory innovation is not inherently a social field but an economic concept, the participants are not always users of the service or product. I divided the solutions presented in the articles into three groups.

The first group is characterised by the involvement of company employees and researchers. In Buur and Larsen's example, actors perform scenes and the audience consists of company employees, entrepreneurs, designers who have had co-design experience (Buur & Larsen, 2010). Another study works with company employees (engineers and designers) and university researchers (Buur & Matthews, 2008). In a third example, Buur and their team also involved company employees and university students (Buur et al., 2013).

Another sub-type is when so-called "lay people" or people with relevant life experience in a particular topic are involved. These include projects with city residents (Anttiroiko, 2016), citizens (Schütz et al., 2019), and action research with marginalised people and communities that experience poverty (Sadabadi & Rahimi Rad, 2021).

A third type of articles are those which involve company employees, researchers, but also users of the product or service. The cancer prevention project, for example, involved programme managers, public actors and users. Together, they defined what comparative cancer control means (Abed et al., 2000). The indoor climate project gathered the knowledge of relevant companies, academics and families (Boer & Donovan, 2012).

5.3 Methods

Participatory and arts-based research is characterised by the blurring of the boundaries between research and development (Horváth, 2019; Dezső, 2022), so

where appropriate, both dimensions are discussed. To summarise, the method used in essentially all articles is qualitative case study even though they not always label their work as such.

The range of research and development tools used is rich. Workshops, conference calls, conferences, literature reviews, case studies can support the refinement of definitions and objectives, the visualisation of the process, the incorporation of experiences and the development of guidelines (Abed et al., 2000). Field research with families (interviews and observations) can be used as a basis for workshops, which can be reflected upon collaboratively by the stakeholders (Boer & Donovan, 2012). Typically, interdisciplinary methodologies are used, for example, drawing on participatory design tools such as participatory prototyping, workshops, audio and video materials and semi-structured interviews (Schütz et al., 2019).

Two working groups interpret their work as action research. In one, Sadabadi and Rahimi Rad work with participatory action research and a so-called social innovation circle (Sadabadi & Rahimi Rad, 2021), in the other one they jointly analyse photo cards of video segments and organise workshops to develop new ways of collaboration (Buur & Matthews, 2008). They also use arts-based techniques in a project that involves discussing organisational situations through tangible objects and making video observations. Participants work with post-it notes and interactive staging techniques (Buur et al., 2013). A similar genre is the improvisational theatre method, which analyses communication situations within the enterprise and the reaction of the audience to these situations (Buur & Larsen, 2010).

Finally, the urban development project that reviews the strategy and innovation documents of the cities of Helsinki, Tampere and Oulu can be defined as a theory-oriented case study. It also applies the interview technique with development and project managers involved in local innovation (Anttiroiko, 2016).

5.4 Benefits and challenges identified

5.4.1 Benefits

In participatory research and teaching, we have found that users of our findings are more motivated to engage with our topics if they are given the opportunity to express their views early in the process (Katona et al., 2019).

A similar trend can be observed in participatory innovation. When participants are given the opportunity to participate in defining a common theme and goal right from the start, they are more motivated to support innovation. It can also make development more effective, as problems do not emerge the first time when the project is over and the results have to be utilised (Abed et al., 2000). Critical feedbacks also support the development of the process and methodology itself. An interesting finding is that for lay users the key component is not the need to understand the whole process. Transparency is more important to them. They do not necessarily wish to take on the role of a researcher, because they understand the responsibility of this job. But their opinion is that science should not happen in an inaccessible bubble. Citizens are most motivated to participate by the fact that something interesting and enjoyable is happening, and that the researchers appreciate and value their contributions. Further

research is needed to explore why women want to participate more in development than man (Schütz et al., 2019).

Inclusion in urban development implies democratisation of policy decisions and urban planning processes at the local government level, and this promotes inclusiveness. Inclusion has a positive impact on the economy, because citizens can strengthen entrepreneurship, create jobs and help projects that develop small communities. Once such innovation is launched, it has the ability to transform the whole city (Anttiroiko, 2016). In addition, new participants and methods can generate new knowledge and open up new business opportunities (Buur & Matthews, 2008).

With democratisation, the inclusion of community experience and the transparent communication that this requires, conflicts can be amplified. Different competing or intersecting interests may come to light. But it is precisely the communication of these conflicts that provides the space to redefine goals and try out new ideas (Buur & Larsen, 2010). The tools mentioned, such as the technique of provocation, can be used to generate tension in a deliberate and targeted way. With appropriate support, the tension can have a positive effect on the design process (Boer & Donovan, 2012).

If participants are given a role in interpreting the objects of the innovation, which may even be tangible objects (Buur et al., 2013), they can support the generation of shared concepts. Concepts that were previously accepted as fact can change and stakeholders can take on the perspectives of others.

To summarise, development is more sustainable when people are active in solving their own problems. Meaningful participation can be achieved, social communication and entrepreneurial skills can be developed, the service provider's perspective often changes, and social awareness is strengthened (Sadabadi & Rahimi Rad, 2021).

5.4.2 Challenges

As with all participatory work, a fundamental difficulty is that the processes are more time-consuming than planned (Abed et al., 2000). Furthermore, if the right conditions for cooperation are not clarified, the concept becomes empty and only legitimises political interests, reinforcing existing oppressive practices. As citizens often lack the necessary expertise, direct involvement can be difficult and often only takes place through representatives (Anttiroiko, 2016).

As mentioned above, one of the main advantages of the methodology is that it can reveal conflicts of interest and differences of opinion. Trying to reduce or control this complexity and conflict can hinder innovation (Buur & Larsen, 2010).

According to Buur and Matthews (2008), it can be a challenge within an organisation that not all employees want to hear the honest opinions of experienced users. In this case, this can be interpreted not only as users of products or services, but also as the different experiences of those working in different units within the organisation. Perceptions of improvements may differ and opinions may clash, for example, if a construction worker proposes a practical and simple solution, but the design engineer refuses to help with the development because he considers it to be an outdated technology. In addition, scheduling innovation meetings and implementing the ideas that emerge can be challenging (Buur & Matthews, 2008).

If stakeholders within the triple or quadruple helix do not define clear goals, roles and tasks, cooperation is likely to lead to frustration. Researchers may perceive the need to involve users as a restriction of their freedom.

Participants may be self-critical, thinking that they are not qualified in the subject. They are aware that they might reject or oppose ideas that are otherwise very useful because of a lack of professional knowledge. In addition, there are groups that are not interested in participating or do not have the time to engage more intensively. They prefer to spend their free time with their own families. The results suggest that money and contribution to science do not motivate most people. Those who are interested in participating are rather interested in the discussions and conversations about developments and do not want to directly influence knowledge creation (Schütz et al., 2019).

In addition to the challenges that are derivable from the process, researchers also experience difficulties at the individual level. Marginalisation can lead to the lack of self-confidence and previous bad experiences, poverty-dominated ideologies and habits can affect the quality of the cooperation. In purpose-driven social projects, difficulties can be caused by dependence on charitable organisations and local conflicts of interest (Sadabadi & Rahimi Rad, 2021). Early results from our participatory service development projects identified the same challenges. If we want to apply the methodology with disabled persons, the (self-) education and empowerment element is essential (see Csángó et al., 2022).

Two studies do not mention aspects that can be assessed as challenges or difficulties (Boer & Donovan, 2012; Buur et al., 2013).

6. Conclusion

The aim of this study was to explore the concepts of participatory innovation processes. As a first element of a multi-stage research, I conducted a targeted and integrative literature analysis of 8 peer-reviewed journal articles. My research questions were: *How does the literature define participatory innovation? What are the opportunities and challenges that the available studies identify in applying the methodology?*

The study of participatory innovations and their adaptation to disabled users is an important step in the democratisation of science and innovation. One of the key goals of Disability Studies is to deconstruct practices that oppress disabled people and to find novel responses that react to unequal power relations. As we have seen, higher education generates knowledge about disabled people in a way that is predominantly not engaged with disabled people themselves. Access to research projects is extremely difficult not only because of physical barriers, but also due to social barriers. Thus, disability or chronic illness becomes an identity that few academics openly acknowledge.

The paper presented different approaches, which have in common that they rely on the *meaningful participation* of relevant stakeholders at different stages of innovation processes and on the *collaborative generation of knowledge*. They are also characterised by *ethical operation* and *responsibility*. The users of products and

services, the lay citizens themselves become developers and researchers in the quadruple helix ecosystem.

I then analysed in more depth the phenomenon of participatory innovation, which is in fact the umbrella concept of the approach presented. The aim of participatory innovation is to generate the kind of knowledge about (and with) users that inspires members of an organisation to redefine a product, role or corporate identity. It is a series of steps that starts with *field study* (1) and qualitative data collection, and then concludes with *business modelling* (4) and *co-design* (5), after a joint analysis of the data and a joint brainstorming, which are called *sense-making* (2) and *co-ideation* (3).

This participatory methodology produces sustainable results that are responsive to user needs. It can have a transformative and productive impact on the whole community if conflicts, conflicting interests, diverse opinions and competences are brought to the surface during the development process and not only after the product or service has been created. Once these have been identified, it is possible for an organisation or community to change previously established routines.

A disadvantage and challenge, however, is that this process is time-consuming and can be difficult to implement if stakeholders are not motivated or even actively oppose the plans. To ensure that no one experiences involvement as a constraint or as another empty concept to be ticked off, roles, tasks and objectives need to be clearly defined and understood by all.

In the light of our findings, we will further interpret the concept of participatory innovation as a *development process that cuts across participatory approaches in Disability Studies, innovation management and their co-disciplines and cross-disciplines. In participatory innovation, a product, service or methodology is developed with the active participation of disabled users with the aim of meeting their needs more efficiently and to a higher standard than before.*

7. Future plans

Based on the above results, the next step of the research will be to further examine the methodology of participatory innovation. Two initiatives identified as participatory innovations are the co-design seminars at the Moholy-Nagy University of Arts and the supported employment participatory service development of Jamba Hungary.

We will also analyse the functions of the Disability Studies and Social Innovation Lab (DSSI Lab). By better understanding the role of the DSSI Lab and the innovation experiences of its members, we will gain further knowledge about participatory development with disabled people in Hungary.

Another important task will be to develop the ethical foundations of our participatory methodological work based on all three pillars (research, teaching and innovation). This will support inclusive teams in working more consciously, but it will also be an essential quality assurance tool.

Acknowledgements

The research was funded by the Ministry of Culture and Innovation, National Research, Development and Innovation Office and the New National Excellence Programme.

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