Well-Being in a Sustainable Product–Service System

Subjects: Green & Sustainable Science & Technology

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To regain overall well-being in the post-pandemic era, the priorities should not be only economic growth but also human physical and mental health.

Keywords: well-being ; circular economy ; peer-to-peer platform ; collaborative consumption ; product–service system

1. Introduction

In the past few decades, a growing number of studies regarding sustainability and well-being have been published, and the design of the product–service system (PSS) has also attracted much attention [1][2][3]. Due to the advancement of information and communication technologies, the possibilities of sharing and reuse have expanded from offline to online and from acquaintances to strangers worldwide [4]. During the 1990s, sharing online, consisting primarily of digital items, allowed people to share information and collaborate in digital spaces, such as Craigslist and Wikipedia. In recent decades, many successful PSS platforms that utilize online communities to connect off-line resources have emerged, including Couchsurfing, Airbnb, Uber, and Freecycle. In 2010, the book What's Mine is Yours: The Rise of Collaborative Consumption shed light on this novel socioeconomic model which provides individual satisfaction, social benefits, and environmental advantages compared to traditional industries. Moreover, a sustainable PSS enables the broad use of company-owned or privately shared products and facilitates a new collaborative lifestyle [4].

However, alongside the increasing interest in the well-being perspectives of the circular economy, there are also criticisms and debates associated with it. The exact social and ecological impacts of a sustainable PSS are complicated and difficult to determine [5]. Several studies indicate that users participate in a sustainable PSS platform more for their own benefit (e.g., cost and reward) than for social and environmental benefits [6]. The issues related to well-being in a sustainable PSS are still challenging; therefore, more research on sustainability and well-being is required for future development.

2. The Peer-to-Peer Sharing and Reuse Platform

The peer-to-peer (P2P) sharing and reuse platforms, a type of two-sided platform that enables direct interactions between two different groups of participants (providers and consumers), can provide opportunities for social interaction [7]. In this research, the researchers refer to consumers as receivers, who can receive goods or services from providers with or without money exchange. P2P sharing and reuse platforms can be characterized as follows: (1) exchanges occur between two sides of users through online platform mediation, (2) the two sides of users act as peers without hierarchy, (3) access on platforms is based on an equal exchange or through market mechanisms, and (4) the exchanged assets can be tangible or intangible and can be underutilized, such as idle space or skills (more details in [8][9][10]).

In a P2P sharing and reuse platform, providers and receivers are the most important actors, who exchange goods and co-create value. The platforms serve as the "matchmakers", who intermediate the matching of users, facilitate the exchange of goods or services and social relationships, and establish common norms within the network [11][12]. Three major interactions take place in a P2P sharing and reuse platform (**Figure 1**): information exchange, objects (or services) exchange, and currency exchange [11]. Accordingly, the researchers propose that information exchange can be further divided into three different features: user profile, object description, and communication, which may influence trust, pricing, perception of reciprocity, and sharing intentions [13][14][15][16]. In general, providers build their user profiles and list their shared or reusable objects (services), while receivers search that information and interact with providers to gain objects or services on the online platform. Following the completion of the deal and payment through the platform, they share and access the assets offline. However, the exact interaction steps are determined by the platform design and the service they provide.

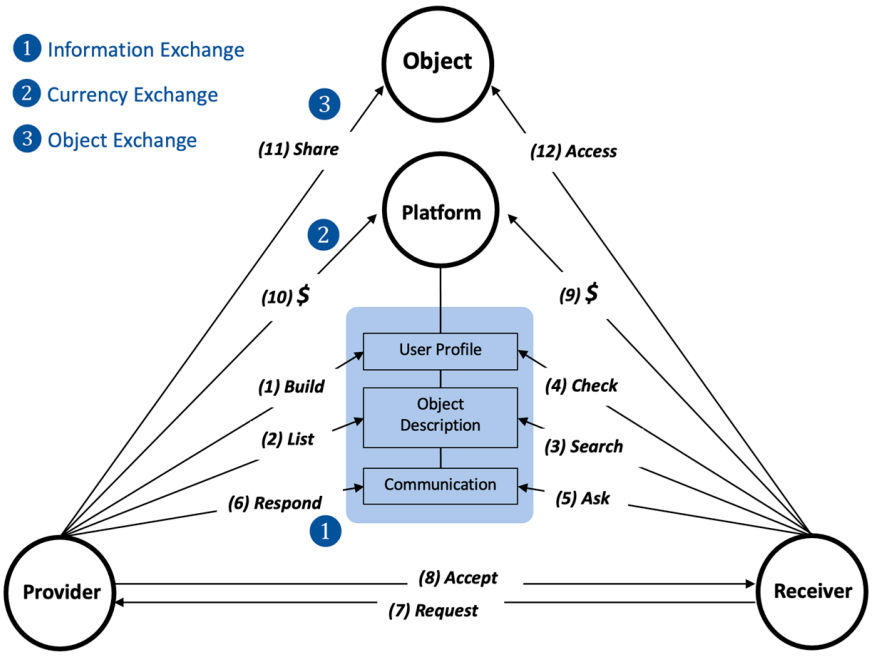

Figure 1. The main behaviors among actors in the P2P sharing and reuse platform.

3. How the Concept of Well-Being Works in Sharing and Reuse Contexts

The definition of well-being is still being explored, and no unified perspective has been achieved from different disciplines. According to the mainstream research on well-being, it can be mainly divided into hedonic well-being and eudemonic well-being, which are rooted in different aspects of human nature. Hedonic well-being is concerned with increasing positive emotions and decreasing negative emotions, while eudemonic well-being is concerned with fulfilling one's human potential and achievements [17]. Some researchers structure well-being according to its dimensions or elements. Ryff [18] summarizes well-being into six dimensions of life: self-acceptance, positive social relationships, autonomy, individual growth, environmental mastery, and purpose in life. Moreover, Seligman [19] proposes that well-being is measured in terms of flourishing, specifically a set of elements for a flourishing life: positive emotion, engagement, relationships, meaning, and accomplishment (PERMA). In contrast, some studies propose the multi-level nature of well-being. According to Nelson and Prilleltensky [20], well-being consists of the personal (e.g., self-esteem, independence), inter-personal (e.g., supportive relationships and engagement in society), and collective levels of well-being (e.g., ability to acquire community resources). They emphasize that well-being involves not only an individual's own well-being but also how that individual interacts with others and lives in a particular environment. In the researchers' view, well-being is correlated with human needs and motivations. Maslow [21] states that people fulfill various needs according to a hierarchical structure, which includes physiological needs, safety, love and belonging, esteem, cognitive needs, aesthetic needs, self-actualization, and transcendence. Additionally, Maslow's hierarchy of needs illustrates the hedonic and eudemonic perspectives on human needs.

In this research, the researchers intend to integrate and simplify the various perspectives and explore three aspects of well-being, namely, intra-personal, inter-personal, and extra-personal aspects [22], to integrate well-being components into a sustainable PSS. Based on the perspectives of Nelson and Prilleltensky [20], and Calvo and Peters [22], the researchers exemplify the intra-personal, inter-personal, and extra-personal aspects of well-being in a sustainable PSS and connect them with Maslow's hierarchy of needs [21]; see **Figure 2**.

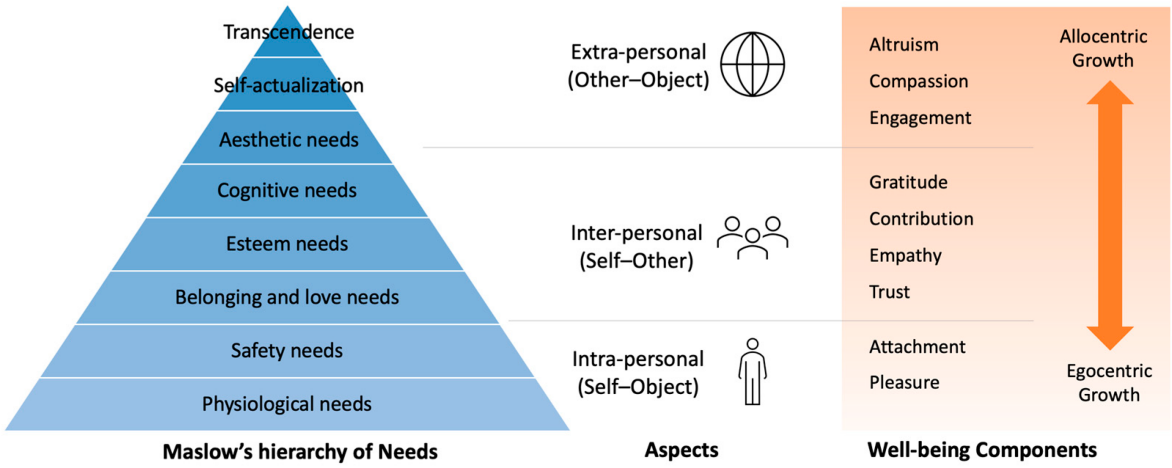

Figure 2. The structure of the well-being components.

- Intra-personal: The well-being components are experienced within the self or with an inanimate object. The affective experience is independent of the presence of others, such as pleasure and attachment toward an object, which can be a product or service, tangible or intangible.

- Inter-personal: The well-being components depend on the interaction between the self and others. Through a P2P platform, users exchange and communicate with each other and experience positive affects (e.g., trust, empathy, gratitude).

- Extra-personal: The well-being components are transcendent concerns or actions for goods, beings, and cosmos beyond the self. In such an experience, one feels the unity of all things and aims to fulfill one's full potential (e.g., engagement, compassion, and altruism).

To examine the relationship between the providers, receivers, and shared objects, the researchers reviewed and integrated related literature concerning psychological, social, and environmental motivations or needs in various sharing and reuse contexts. The following is the list of nine essential well-being components in the sharing and reuse contexts (also see **Table 1**), for which the researchers adapt the well-being factors for positive computing from Calvo and Peters [22] to fit the contexts of a sustainable PSS. This list is not exhaustive, but the researchers detail the research evidence for and applications of each component below:

- Pleasure: This is a positive influence that is fundamental and essential to the perception of well-being [23]. The need for pleasure ensures that animals are attracted to food, sex, or social interactions, leading to survival and reproduction [24]. Since owning and sharing possessions induces pleasure, scholars emphasize sharing and reusing rather than owning in the new era [25]. In addition, sharing tangible and intangible things generates pleasure. For example, sharing food online and offline facilitates social connections, and increases pleasure [26][27] and the appeal of food [27]. Furthermore, sharing home-grown food fosters social connections and motivates residents to share more [18]. By sharing intangible things (such as information, images, and ideas), people also feel the altruistic pleasure of helping others [26][28][29][30], etc.

- Attachment: This is the close bond developed between a baby and a mother (or a caregiver) through which the baby feels connected and secure [31]. In the sharing and reuse context, attachment can be extended toward inanimate things, such as an object or an environment. A strong attachment to an object motivates people to take good care of it and increases well-being [32]. Sellers who have a higher attachment to used products are more likely to offer discounts to buyers who will be able to use them appropriately [33]. For example, the presence of personal objects that evoke perceptions of the host's presence can improve guests' attachment to their hosts [34]. Attachment toward an accommodation can increase the intention to use recommendation sharing [35], etc.

- Trust: This can be defined as an attitude in which a person relies on and believes another to behave as expected in an uncertain and vulnerable situation [36]. Trust allows people to perceive security, support, and comfort, and facilitates pro-social behavior [37]. It plays a crucial role in P2P platforms [38][39], where users share belongings with strangers, especially while sleeping at others' homes [40][41][42][43][44]. Möhlmann and Geissinger [45] identify six design features that establish trust in the sharing economy: peer reputation, digitalized social capital, information provision, escrow services, insurance cover, and certification/external validation. Additionally, one study indicates that the quantity of information and communication between a provider and a receiver [44], the duration of self-description and diversity of

topics of hosts in self-disclosure [14], and the humanization of profile pictures [16] are important factors to build trust. Moreover, the trustworthiness of the host's personal photo increases the listing price and the probability of its being selected [13].

- Empathy: This is regarded as the mental process of eliciting emotions in response to others' traits and conditions, as well as understanding the reasons behind these emotions [46]. Empathy is an emotional response based on the perception of others' well-being [47]. In the sharing and reuse context, the empathy of receivers toward providers increases their willingness to make a purchase [48]. In addition, business and personal information disclosures between a seller and a buyer have a positive impact on empathy and business performance [49]. There is evidence that empathy prevents customers from leaving negative reviews [50][51].

- Contribution: The concept of contribution refers to a person's positive impact on others and their fulfillment of the basic psychological needs of autonomy, relatedness, and competence [52]. It can strongly predict the eudemonic well-being of oneself [53]. Concerning the sense of contribution in the sharing and reuse context, self-worth serves as an important intrinsic motivation to promote sharing of mobile coupons in social media [54]. Another study has shown that an organizational sense of contribution positively correlates with the intention of information system personnel to share knowledge [55].

- Gratitude: This is a feeling of appreciation when one receives favors, kindness, help, and support from others [56]. One can feel gratitude for not only inter-personal relationships but also for an object or an experience, such as artwork or a trip [57]. Research shows that practicing gratitude improves well-being (e.g., [58][59][60]). Gratitude appeal encourages word-of-mouth for sustainable luxury brands [61]. Furthermore, posting grateful reviews of firms will encourage other consumers to reward firms [62]. The gratitude between a salesperson and customer fosters the prosocial behaviors (e.g., information sharing) of a salesman, thus developing long-term buyer–seller relationships [63].

- Engagement: This refers to the state of being immersed in an activity or experience. It is also regarded as an optimal experience, "flow" [64][65]; moreover, it is defined as an exceptional and enjoyable experience that leads to the attainment of well-being [66]. Scholars indicate that a sense of ownership is the antecedent to engagement, including loyalty to a brand (or platform), contributions to its reputation, service functionality, and community-oriented sharing [67]. Additionally, inter-personal contamination (e.g., bad hygiene, intrusion of privacy) has negative effects on engagement in accommodation sharing, but the authenticity (e.g., providing more information about hosts, sharing their living space, and building a closer relationship between the host and the guest) can alleviate these negative effects, improving the engagement in sharing experiences [68][69].

- Compassion: This is an attitude of caring for others and a willingness to assist them in their suffering [70][71]. Additionally, treating oneself, others, and the environment with compassion improves individuals' well-being and mental health [71][72][73]. Empathy and compassion are fundamental for the prosperity of social relationships. Furthermore, compassion enables people not only to share others' emotions but also to help others [74]. According to a study, people who have high levels of trust and compassion for others are significantly more willing to share shelters and vehicles following disasters. In addition, the role of people (volunteers in past disasters and members of community organizations) rather than idle resources influences willingness to share [75].

- Altruism: This is regarded as a behavior rather than an emotion that gives benefits to others at the expense of oneself [76]. Altruism is based on empathy and compassion [47][77], which encompasses both inter-personal and extra-personal actions. In the sharing context, altruism and trust attract considerable attention. There is evidence that trust improves knowledge-sharing intentions, and altruism has a positive impact on the relationship between trust and knowledge-sharing intentions in teacher communities [78]. In particular, the trait of altruism impacts sharing intentions and lowers the need for trust [79]. Volunteers for the Wikipedia Foundation found that altruism motivates them to contribute to society continuously [80][81].

Table 1. Definitions and examples of the well-being components in a sustainable PSS.

Aspect	Component	Definition	Examples
Intra-personal	Pleasure	A positive effect that is fundamental to the perception of well-being [23].	Sharing food and food experiences [26][27], information, images, ideas [26][28][29][30], etc.
	Attachment	A close bond between a baby and a caregiver to feel connected and secure [31].	Sharing accommodation [35], personal items [34], etc.
	Trust	An attitude in which a person believes and relies on one another to behave as expected in an uncertain and vulnerable situation [36].	Sharing accommodations [13][14][16][40][41][42][43][44], vehicles [82], information, knowledge [83][84], etc.
Inter-personal	Empathy	A mental process in which emotions are elicited by others' traits and conditions, and the reasons behind these emotions [46].	Sharing accommodations [48], vehicles [49], information [50][51]., etc.
	Contribution	A positive impact on others that fulfills one's human needs of autonomy, relatedness, and competence [52].	Sharing mobile coupons [54], knowledge [55], etc.
	Gratitude	A feeling of thankfulness when one receives favors, kindness, help, and support from others [56].	Sharing word-of-mouth [61], comments [62], sale information [63], etc.
	Engagement	A state of being immersed in an activity or experience, and the optimal condition can be called a "flow" [64][65].	Sharing accommodation [68][69], etc.
Extra-personal	Compassion	A caring attitude and willingness to help others who are suffering [70][71].	Sharing shelter, relief supplies [75], etc.
	Altruism	A behavior rather than an emotion, which benefits others at the expense of oneself [76].	Sharing knowledge, expertise [78][79][80][81], etc.

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