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The Relationship between Well-Being and Knowledge Sharing

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Abstract: This research studies the relationship between well-being and knowledge sharing. While user innovation has garnered greater attention in recent years, the market has failed to properly incentivize the diffusion of user innovations. This study proposes that this shortcoming could be resolved through a consumer-to-consumer (C-to-C) marketplace and sheds light on non-financial benefits for the contributors, specifically, how knowledge sharing impacts contributor well-being. This research consists of two online survey studies. In both studies, the level of well-being was compared between knowledge sharing contributors and a control group using a scale developed in positive psychology. This study empirically shows that participation in knowledge sharing has a significant positive impact on contributor well-being. In a C-to-C marketplace, contributors diffuse and monetize their creations themselves, resulting in increased well-being. Contributing to knowledge sharing may be a sufficient incentive for user innovators to diffuse their innovations. The findings of this study will gain significance as the utilization of personal knowledge increases due to the expansion of the C-to-C business and the paradigm shift in work style.

Keywords: user innovation; market failure; sharing economy; well-being; PERMA

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1. Introduction

This research aims to understand the relationship between well-being and knowledge sharing. The goal of this research is to increase the utilization of personal knowledge in order to increase social welfare. Currently, through co-creation platforms, including crowdsourcing, people have more opportunities to utilize their personal knowledge than ever before. This tendency will keep accelerating due to the growing sharing economy and the big paradigm shift in work styles caused by the pandemic.

While sharing is not a novel concept, it has recently been drastically extended via digital technology. Thus, sharing economy research has clarified the concept by distinguishing it from comparable ones such as gift-giving, commodity exchange [1,2], collaborative consumption [3], and so on. Some researchers have started to examine participant motivation [4]. While a sharing economy has a large scope from goods, accommodations, skills, and services, this research focuses on knowledge sharing from the aspect of the utilization of personal abilities. The contributors are not only monetizing their knowledge based on market value but also receiving non-financial benefits such as reputation or feedback, which affects their well-being. This study specifically sheds light on the latter, which has not been well-researched. Interestingly, it was proposed that a sharing attitude can be driven by moral, social-hedonic, or monetary motivations, but that a monetary motivation alone is insufficient [4]. Though this is a significant implication for the future of a sharing economy, this finding was not yet proven.

Similarly, several user innovation researchers have studied the motivation of innovators to share their ideas or outputs [5–8]. In the early stage of user innovation research, it was argued that not only the supplier firm but also the user firm innovated by themselves [9,10]. Most recently, general users rather than firms are examined as user innovators. User innovation is a form of collective personal knowledge, and its diffusion is none other than knowledge sharing. This study makes use of knowledge and theories developed in user innovation research to demonstrate how to increase the utilization of personal

knowledge. It also has important implications in user innovation to examine how to diffuse personal ideas or innovations which innovators tend to keep to themselves.

User innovations have garnered greater attention in recent years because of diverse innovation resources and their potential to create financial value [11,12]. However, the market has failed to properly incentivize the diffusion of user innovations [13,14]. This diffusion of collective personal knowledge in the form of user innovation is a form of knowledge sharing. This study suggests solutions for market failure in user innovation.

This paper makes use of the term 'well-being' as developed in positive psychology [15]. In this definition, well-being is sustainable and separate from 'happiness'. It sometimes includes hardships; however, life satisfaction and feeling a sense of accomplishment is possible [15]. Acquiring and sharing knowledge is not a one-off, but a continuous activity, thus it fits this concept of well-being.

This paper empirically examines the relationship between well-being and knowledge sharing using data from real contributors and a control group. The rest of the paper is organized as follows. Section 2 clarifies the significant concepts related to this study from the literature review and the research question. Section 3 provides the material and method to answer the research question. The results (Section 4) follow, and the last part (Section 5) presents my conclusions and implications.

2. Literature Review

2.1. Meaning of User Innovation from the Aspect of Social Welfare

Earlier studies revealed that user innovators benefit financially during their leisure time, and such innovations can also increase social welfare [11,12]. The process of user innovation brings satisfaction to innovators themselves and increases social welfare compared to producer innovation [11,15]. Among user innovators, the existence of pure "participators" who benefit from not using or selling outputs but participation such as enjoyment and learning was identified [12]. If such participators spent their leisure time innovating, it would have a significant impact on social welfare [12]. In fact, leisure time is longer than working time, 21.6% and 16.5% of a 24 h day, respectively, among citizens aged 15 and over for the 18 Organization for Economic Co-operation and Development (OECD) nations [16]. When people choose to use leisure time in productive ways, both social welfare and economic growth increase [12].

User innovation is distinct from producer innovation; user innovators benefit from the process of innovation in addition to using or selling their output [11,15]. It has been empirically shown that 35–45% of the satisfaction of user innovators comes from the process itself [15,17], which is not possible from producer innovation.

2.2. Market Failure in Diffusion of User Innovation

Though it was proven that the adoption by firms of user innovation would have a positive impact on both the economy and social welfare [11,12,15,17], user innovations tend to be restricted to the innovators themselves and not diffused. Earlier studies have shown a market failure in the diffusion of user innovation [13,14]. User innovators are more likely to choose free information diffusion than paid diffusion, i.e., self-commercialization or through a firm, because the costs outweigh the gains [14]. This includes both financial and non-financial costs, such as time and effort, to introduce the innovation to firms.

In present-day business, there are several opportunities for user innovators. For instance, innovators could sell their products through C-to-C marketplaces such as Etsy. Etsy is the world's largest online marketplace that mainly deals with handmade crafts and continues to have double-digit growth in gross merchandise sales [18]. Moreover, user innovators can also estimate the marketability of their innovations and raise funds through crowdfunding [19]. This study focuses on such business opportunities for user innovators.

2.3. The Role of User Community and the Motivation of Community Participants

Earlier research showed that user communities have been critical for the diffusion of user innovation. User innovators participate in the user community and enhance the quality of their innovation in the process of commercialization [20]. It was empirically demonstrated that user innovators who belong to a user community share the invention, receive feedback from peers, and are more likely to be adopted by firms than those who do not belong to a community [21]. Furthermore, user community support leads users who are at the leading edge of a marketplace and expecting high benefits from a solution to their advanced needs [22]. Innovations by lead users are often commercially attractive [22,23], and peer communities enable lead user innovations to improve and diffuse [6]. Recently, makerspaces also support user innovation and diffusion [24].

User communities also play a key role in increasing entrepreneurship [25,26]. Entrepreneurs improve upon their ideas, identify market opportunities, and eventually establish their firms based on important feedback from other community members [25]. In a user community, a few individuals not only enjoy exploring market opportunities but also acquire a social position that influences entrepreneurship [26].

When individuals participate in the community, personal need, feedback from others, and fun become important motivations [5,7,8]. It is empirically revealed that community members of open-source software (OSS) projects first joined the community to fulfill personal needs, while a few treated it as a hobby [27]. In online communities dedicated to tangible consumer products, the participants sought fun rather than participating for personal need [7]. Although such nonfinancial motivation has been debated, a few researchers mention the effects of financial motivation. In the case of communities managed by firms, monetary rewards are effective for some participants [5,7]. In the case of a recipe site, it was noted that monetary incentive has a significant positive impact on the number of ideas, but not on their quality [28].

It is also indicated that opportunities for career creation could induce more spontaneous contribution than external incentives [29]. This implies that C-to-C business trend could increase such opportunities; therefore, the present study explores the role of C-to-C marketplace as an incubation of user entrepreneurship.

2.4. Well-Being and PERMA

In terms of psychology, Seligman defined well-being as the ultimate objective of positive psychology [30]. He argued that well-being is sustainable and separate from 'happiness' and suggested the importance of flourishing as a standard to measure well-being. Flourishing is different from happiness mainly in these three aspects. First, it is not necessarily being cheerful; even if a person is not in a cheerful mood, his/her life could be meaningful. Second, it is not explained by the satisfaction with one's own life at a certain point in time which determines happiness. Finally, it consists of the elements which are obtained by personal decisions to make good choices. Seligman confirmed five basic elements called "PERMA" as follows:

- Positive emotion: a subjective feeling of well-being itself;
- Engagement: a subjective feeling denoting the extent to which people are absorbed in something;
- Relationships with others;
- Meaning: the extent to which lives are meaningful for those living them;
- Accomplishment: the extent to which people accomplish something in their lives.

Well-being sometimes includes hardships; however, people could still find life satisfaction and feel a sense of accomplishment [30].

The PERMA model has been used to explain the relationship between well-being and a continuous process such as career [31], education [32–34], and hobby [35]. It appears that the well-being and social welfare that user innovation brings, such as enjoyment, learning or social status, through the user community [5–8,11,12,15,17] has similar contexts. Though a user innovator innovates once a year on average [21], it is a continuous process; he/she

faces a problem, makes a continuous effort to solve it, and sometimes gets supports or feedback from peers. Previous research pointed out such a process itself as a non-financial benefit [11,15]. However, as it is challenging to measure such intangible benefits, there are few empirical studies explaining such continuous innovation processes. Instead, the measurement of PERMA was developed via eleven international surveys (n = 31,966) [36]. It has been argued that subjective well-being [36] and PERMA are overlapped [37], and Seligman himself also takes cognizance of the relevant correlation between the two concepts [38]. The core idea of these two is common and this study follows it. If I had to choose, it is important whether it is measurable or not. Therefore, this study examines user innovator well-being based on PERMA [30].

2.5. Research Question

While earlier research revealed that user innovation could enhance social welfare [11,12,15,17], there is a lack of empirical research regarding this issue. Thus, the present study fills this gap by showing the relationship between well-being and knowledge sharing; the diffusion of user innovation. Notwithstanding its value to society, much of user innovation has not been diffused due to a lack of market incentive [13,14]. Given the rapid expansion of the C-to-C marketplace, the present study focuses on those who sell their products or skills based on their own personal knowledge. This study is motivated to visualize the increase of social welfare derived from user innovation and suggest the solution for market failure in user innovation. In addition, under the pandemic COVID-19, the depreciation of people's well-being is seriously concerning [39–41] and the increase of that is the ultimate goal of society. This study aims to contribute to this goal. From that motivation, the following research question is investigated:

RQ: How does knowledge sharing impact on contributor well-being?

3. Material and Methods

Two studies were conducted to address the research question. In study 1, I surveyed the creators of handmade crafts belonging to a peer community (group 1) and conducted a national survey to collect data from a control group. In study 2, I surveyed a broader range of knowledge sharing contributors (group 2) to validate the results of study 1.

3.1. Sample

3.1.1. Group 1. Handmade Creators

First, I surveyed handmade creators in Japan. There is a huge global market for handmade crafts due to the expansion of C-to-C marketplaces. The product categories vary from fashion items and infant goods to furniture. Each creator strives to differentiate from existing products by adding a unique element. They spend their leisure time in idea creation and crafting.

The data were collected through a handmade crafters' community that provides offline selling opportunities, such as a handmade fair at a department store. A link to the survey was posted on their website and data were collected from 16 to 19 January 2019 from 199 respondents. After excluding those with lower reliability, 185 respondents (mean age = 35.1 years, 98.4% female) were included in the analysis.

3.1.2. Control Group

The control group data were collected through a market research company from 25 to 29 January 2019. The distribution of the study panel samples (n = 1000, aged 18 to 74 years, mean age 47.4 years, 50.2% male) correlates with that of the Japanese population in age, gender, and residence. Of the 1000 samples, 21 knowledge sharing contributors were omitted, thus, 979 respondents (mean age 47.8 years, 50.8% male) were considered in the analysis.

3.1.3. Group 2, Knowledge Sharing Contributors

In Study 2, I recruited knowledge sharing contributors from an extensive scope of fields to examine the findings from the previous two surveys. The data were collected through a market research company from 19 to 22 March 2020. Of the 10,000 respondents (aged 18 to 74 years), 132 had knowledge sharing experience. After excluding those with low-reliability responses, 107 respondents (mean age 46.2 years, 58.9% male) were considered in the analysis.

3.2. Data

3.2.1. Control Variables

In studies 1 and 2, the dependent variable was respondent well-being, and both studies had participation in knowledge sharing as an independent variable. To verify the impact of participation in knowledge sharing, the following data were collected as control variables; age, gender (1 = male, 0 = female), marital status (1 = married, 0 = unmarried), employment status (1 = unemployed, 2 = part-time, 3 = full-time), educational background (1 = junior high school, 2 = high school, 3 = college, 4 = undergrad, 5 = graduate school). For clarification, employment status represents the length of labor time, and educational backgrounds represents the length of educational period.

3.2.2. Well-Being

Butler and Kern presented a PERMA-Profiler, its model fitness, as well as internal and cross-time consistency, were tested using 11 studies. Finally, they settled on a set of 15 questions as a measure of PERMA (three items per PERMA domain) [35] (See details Table A1 in Appendix A). In addition to PERMA, they included questions about overall well-being, negative emotion, loneliness, and physical health resulting in a 23-item measure [35]. The respondents evaluated each of the 23-items on an 11-point Likert scale (0 to 10), however only the 15 PERMA questions were used in the analysis. As it is recommended to retain the multidimensional structure of the measure [35], I adopted the average score of the three questions per element.

3.3. Analysis

The data were analyzed as follows:

1. Analysis of the control group to specify the factors which influence the level of well-being;
2. Comparison of the level of well-being between group 1, group 2 and the control group.

First, I conducted multiple regression analysis to verify the relationship between each element of PERMA and the attributes such as age, gender, marriage status, employment status, and educational background and specified the ones which significantly influence the level of well-being. Then, I compared the score of each element of PERMA between the sharing contributors and the control group in order to specify the elements which were significantly different between the two groups. To validate those results, I conducted multiple regression analyses to verify the relationship between the elements of PERMA and the participation to knowledge sharing (1 = yes, 0 = no).

4. Results

4.1. The Relationship between the Respondents' Attributes and Well-Being

First, to specify the variables which predict the level of well-being, the multiple regression analysis was conducted with the data from the control group. The distributions of all variables are shown in Tables 1 and 2. Before the analysis, in order to avoid multicollinearity, it was confirmed that the residuals of each dependent variable followed a normal distribution and the VIF of each independent variable are less than 2 (Table 3). The results showed that age was a significant predictor of Positive emotion ($\beta = -0.09$, $t = 2.47$, $p < 0.001$), Engagement ($\beta = -0.14$, $t = 3.99$, $p < 0.001$), Accomplishment ($\beta = -0.18$,

$t = 5.15$, $p < 0.001$). Similarly, marriage status was a significant predictor of Positive emotion ($\beta = 0.07$, $t = 2.05$, $p < 0.001$), Engagement ($\beta = 0.15$, $t = 4.39$, $p < 0.001$), Relationship ($\beta = 0.13$, $t = 3.69$, $p < 0.001$), and Accomplishment ($\beta = 0.19$, $t = 5.50$, $p < 0.001$). Educational background was also a significant predictor of Positive emotion ($\beta = 0.09$, $t = 2.71$, $p < 0.01$) and Relationship ($\beta = 0.12$, $t = 3.52$, $p < 0.001$).

Table 1. The attributes of the respondents.

	Group 1				Group 2				Control Group			
	n	**Min**	**Max**	***M***	***n***	**Min**	**Max**	***M***	***n***	**Min**	**Max**	***M***
Age	184	22	60	35.1	107	21	70	46.1	979	18	74	47.8
Gender	185				107				979			
Male	3		1.6%		63		58.9%		497		50.8%	
Female	182		98.4%		44		41.1%		482		49.2%	
Marriage	184				107				979			
Unmarried	39		21.2%		38		35.5%		278		28.4%	
Married	145		78.8%		64		59.8%		701		71.6%	
Employment	185				107				979			
1. No employment	79		42.7%		19		17.8%		492		50.3%	
2. Part-time	43		23.2%		18		16.8%		136		13.9%	
3. Full-time	46		24.9%		70		65.4%		331		33.8%	
Others	17		9.2%						20		2.0%	
Education					107				979			
1. Junior high school					2		1.9%		27		2.8%	
2. High school					28		26.2%		307		31.4%	
3. College					15		14.0%		210		21.5%	
4. University					55		51.4%		380		38.8%	
5. Graduate school					7		6.5%		52		5.3%	
Others									3		0.3%	

Table 2. PERMA of the respondents.

	Group 1					Group 2					Control Group					(a)(c)U-Test	(b)(c)U-Test
	n	**Min**	**Max**	***M*(a)**	***SD***	***n***	**Min**	**Max**	***M*(b)**	***SD***	***n***	**Min**	**Max**	***M*(c)**	***SD***	***p***	***p***
PERMA																	
Positive emotion	185	1.33	10.00	7.10	1.74	107	0.00	10.00	5.89	2.17	979	0.00	7.67	3.99	1.39	0.000	0.000
Engagement	185	1.67	10.00	7.37	1.59	107	0.67	10.00	6.36	2.05	979	0.33	10.00	5.41	1.25	0.000	0.000
Relationship	185	0.00	10.00	7.03	1.91	107	0.33	10.00	5.64	2.06	979	0.00	10.00	5.40	1.89	0.000	0.148
Meaning	185	0.67	10.00	6.57	1.85	107	0.00	10.00	5.85	2.29	979	0.33	10.00	5.13	1.33	0.000	0.000
Accomplishment	185	0.67	10.00	6.60	1.60	107	0.00	10.00	6.08	2.06	979	0.00	10.00	5.27	1.50	0.000	0.000

Table 3. The result of regression analysis in the control group.

Dependent Variable	**Positive Emotion**	**Engagement**	**Relationship**	**Meaning**	**Accomplishment**	**VIF**
	β	**β**	**β**	**β**	**β**	
Independent variable						
Gender	−0.03	−0.04	−0.02	0.09	−0.06	1.17
Age	−0.09 ***	−0.14 ***	−0.07	0.00	−0.18 ***	1.29
Employment status	0.00	−0.01	0.07	0.05	−0.03	1.32
Marital Status	0.07 ***	0.15 ***	0.13 ***	0.10	0.19 ***	1.20
Educational background	0.09 **	0.05	0.12 ***	0.04	0.046	1.07
R^2	0.02	0.03	0.03	0.02	0.05	
F	3.40 ***	6.20 ***	5.82 ***	3.70 ***	10.00 ***	

** $p < 0.01$; *** $p < 0.001$.

4.2. The Relationship between Well-Being and Knowledge Sharing

In study 1, I collected the data of handmade creators (group 1) (n = 185). The respondents' handmade categories were accessories (n = 107; 57.2%), bags, wallets, small goods (n = 51; 27.3%) and so on (Table A2). Some 9.2% of respondents had never sold their crafts (n = 17), and 71.9% of those earned less than USD 500 per month (n = 133) (Table A3). Some 87.0% (n = 161) started handmade crafting as a hobby (Table A4); 76.8% (n = 142) spent their leisure time crafting (Table A5) and 70.3% (n = 130) spent less than 10 h per week (Table A6).

I compared the level of well-being between group 1 and the control group using the Mann–Whitney U test. As a result, group 1 showed significantly higher levels of well-being in all criteria of PERMA ($p < 0.001$) (Table 2). Furthermore, I conducted the multiple regression analysis to examine the impact of participation on knowledge sharing after eliminating such other factors as marital status and age; educational background was not available in group 1. The dependent variables are the five elements of PERMA, and the independent variables are age, marital status and knowledge sharing (group 1 = 1, control group = 0). The results showed that participation in knowledge sharing was a significant predictor of Positive emotion ($\beta = 0.45$, $t = 16.11$, $p < 0.001$), Engagement ($\beta = 0.22$, $t = 7.28$, $p < 0.001$), Relationship ($\beta = 0.10$, $t = 3.22$, $p < 0.01$), and Meaning ($\beta = 0.08$, $t = 2.71$, $p < 0.01$) (Table 4). In other words, participation in knowledge sharing had a significantly positive impact on the level of well-being.

Table 4. The result of regression analysis in study 1.

Dependent Variable	Positive Emotion	Engagement	Relationship	Meaning	Accomplishment	VIF
	β	β	β	β	β	
Independent variable						
Age	−0.06 *	−0.10 **	−0.05	−0.07 *	−0.15 ***	1.30
Marital Status	0.08 **	0.12 ***	0.14 ***	0.08 **	0.16 ***	1.18
Knowledge sharing (handmade)	0.45 ***	0.22 ***	0.10 **	0.08 **	0.02	1.15
R^2	0.23	0.08	0.03	0.02	0.03	
F	113.17 ***	34.23 ***	5.82 ***	7.17 ***	13.43 ***	

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

In study 2, I applied the same procedure on the knowledge sharing contributors in broader fields (group 2) to validate the result of study 1. Some 59.8% of respondents (n = 64) were paid for knowledge sharing and 40.2% of those (n = 43) were unpaid. While group 1 was specific to handmade crafting, group 2 was based on more diversified knowledge such as languages, PC skills, programming, accounting, childcare, education, and so on. Some respondents acquired the knowledge through their careers or from schools, the other respondents developed their skills through their hobbies.

I compared the level of well-being between group 2 and the control group using the Mann–Whitney U test. As a result, group 2 showed significantly higher levels of well-being in Positive emotion, Engagement, Meaning, and Achievement ($p < 0.001$) (Table 2). To examine the impact of participation in knowledge sharing after eliminating other factors, I conducted multiple regression analysis; the dependent variables are those four elements, and the independent variables are age, marital status, educational background, and knowledge sharing (group 2 = 1, control group = 0). The results showed that participation in knowledge sharing was a significant predictor of Positive emotion ($\beta = 0.35$, $t = 12.12$, $p < 0.001$), Engagement ($\beta = 0.19$, $t = 6.56$, $p < 0.001$), Meaning ($\beta = 0.14$, $t = 4.59$, $p < 0.001$), and Achievement ($\beta = 0.14$, $t = 4.82$, $p < 0.001$) (Table 5). Therefore, in addition to study 1, participation in knowledge sharing had a significantly positive impact on the level of well-being in study 2.

Table 5. The result of regression analysis in study 2.

Dependent Variable	Positive Emotion	Engagement	Meaning	Accomplishment	VIF
	β	β	β	β	
Independent variable					
Age	−0.07 ***	−0.11 ***	−0.08 *	−0.16 ***	1.19
Marital Status	0.08 ***	0.14 ***	0.09 **	0.17 ***	1.19
Educational background	0.07 **	0.04	0.07 *	0.06	1.00
Knowledge sharing	0.35 ***	0.19 ***	0.14 ***	0.14 ***	1.01
R^2	0.13	0.06	0.03	0.06	
F	41.23 ***	16.70 ***	9.36 ***	15.87 ***	

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

4.3. The Relationship between Paid and Unpaid

Additionally, I examined the impact of monetary incentive on well-being with the data from group 2. I compared the level of PERMA between paid (n = 64, mean age = 44.3 years, 45.3% male) and unpaid contributors (n = 43, mean age = 48.9 years, 58.9% male). Using the Mann–Whitney U test, no significant difference between the two groups was shown in all criteria of PERMA: Positive emotion (M_{paid} = 6.09, M_{unpaid} = 5.41), Engagement (M_{paid} = 6.67, M_{unpaid} = 5.91), Relationship (M_{paid} = 5.79, M_{unpaid} = 5.41), Meaning (M_{paid} = 5.88, M_{unpaid} = 5.80), Accomplishment (M_{paid} = 6.20, M_{unpaid} = 5.90). It suggested that monetary incentive for knowledge sharing had little impact on well-being.

5. Conclusions and Discussion

5.1. Novel Aspects of Knowledge Sharing

This research aims to understand the relationship between well-being and knowledge sharing. The study's results show that knowledge sharing has a significantly positive impact on well-being. Much attention has been paid to the financial value of the expanding sharing economy [42,43]. However, this paper demonstrates a novel aspect; the positive impact of knowledge sharing on contributor well-being. This is supported by study 2 showing no significant difference between paid and unpaid contributors; an increase in well-being and monetary rewards are heterogeneous. On the other hand, we should keep note that more than a few respondents in study 1 and 2 expressed satisfaction with monetary rewards. That said, it may not be the amount of money but the reward itself that was important to them. This issue should be carefully considered in future research.

The utilization of personal knowledge will continue to increase due to the expansion of C-to-C business and the ongoing paradigm shift in work styles. This study's findings are significant to such knowledge sharing dynamics.

5.2. Contributions to User Innovation Research

This research made three contributions to user innovation research; to visualize the increase of social welfare, to show a solution for market failure in user innovation, and to show an additional incubation of entrepreneurship. First, earlier research revealed that user innovation could theoretically enhance social welfare [11,12]. However, it has not been disseminated enough to motivate the stakeholders such as the innovators themselves, platform managers, and policymakers. This study provides empirical evidence in support of this theory using measurements of well-being to visualize the increase of social welfare.

Second, it was contended that a large majority of user innovation has not been diffused due to a lack of incentive [13,14]. This study finds that those who share their knowledge increase their level of well-being, not only due to monetary rewards, but also by gaining recognition, connecting with other people, achieving self-efficacy, having a strong desire to improve their skills, and other benefits. Such benefits could be promoted by knowledge sharing platforms to incentivize potential user innovators.

Finally, earlier studies show that a user community plays an important role in improving and diffusing user innovations [6,18,20] and sometimes increases entrepreneurship [25,26]. Recent studies revealed that makerspaces also play an important role to improve and diffuse user innovations [24] and crowdfunding platforms enable more large-scale commercialization of user innovations [19]. This study finds that the role of a C-to-C marketplace is similar to that of other platforms, as shown in the above studies. The contributors diffuse and monetize their creations by themselves via C-to-C marketplaces, in other words, they become micro-entrepreneurs. Thus, this research added a C-to-C marketplace to the incubations of entrepreneurship among user innovators.

5.3. Managerial Implications for Platforms and Policymakers

When handling shared knowledge, platform managers need to consider the issue of intellectual property (IP). In study 1, one of the most serious concerns of the contributors was unintentional IP infringement when contributing their creations to the platform, as they are public-facing. Handmade crafters especially had such anxieties. Earlier studies have shown market failure in the diffusion of user innovation [13,14] due to the costs outweighing gains [14]. IP concerns are one such cost preventing user innovators from public disclosure.

Study 1 respondents care more about IP infringement than IP protection. IP concerns may be one of the more important decision factors when determining which platform to use. Platform managers and policymakers should thus provide guidelines on and increase general knowledge of IP among participants. Previous research has studied and demonstrated strategies for firms to manage Consumer Generated Intellectual Properties (CGIP) [44]. In many cases, firms let their consumers assume responsibility of their CGIP, however, when a platform takes on that responsibility, the contributors can concentrate on generating ideas. Consequently, it would enhance IP knowledge among platform participants, solving current IP concerns. The importance of emotional property (EP) was also pointed out; while IP is legal rights to creations, EP is the emotional investment in or attachment to creations [44]. Firms ought to recognize such EP even if it has no legal status.

Though there are some issues to be solved, if platforms can motivate contributors and sustain their engagement, social welfare would be increased sustainably.

5.4. Limitations and Future Research

The present study demonstrates the relationship between well-being and knowledge sharing and provides possibilities to increase social welfare. However, there are some limitations. First, I examined the group of handmade creators as a representative of knowledge sharing contributors in study 1. The number of handmade creators and the sales value via C-to-C marketplaces have been growing and staying at home due to COVID-19 pandemic has accelerated these trends. Handmade creators can be said to be one of the typical knowledge sharing contributors. In study 2, I examined other types of the contributors to validate the study 1 result. However, the data were derived from a limited sample size, thus, further research is required to validate these results. Second, although this study raises the IP issue, further research could propose solutions that would reduce the non-financial cost of user innovators and increase social welfare. As IP issues are a primary concern among contributors, it should be considered seriously to facilitate the expansion of knowledge sharing. Finally, while this study demonstrates that knowledge sharing increases well-being, it has not identified the reason for this correlation. Doing so is the most critical and impactful course of study to amplify social welfare.

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Appendix A

Table A1. 23-item PERMA profiler measure [35].

Label	Question	Response Anchors
A1	How many times do you feel you are making progress towards accomplishing your goals?	0 = never, 10 = always
E1	How often do you become absorbed in what you are doing?	
P1	In general, how often do you feel joyful?	
N1	In general, how often do you feel anxious?	
A2	How often do you achieve the important goals you have set for yourself?	
H1	In general, how is your health?	0 = terrible, 10 = excellent
M1	In general, to what extent do you lead a purposeful and meaningful life?	0 = not at all, 10 = completely
R1	To what extent do you receive help and support from others when you need it?	
M2	In general, to what extent do you feel that what you do in your life is valuable and worthwhile?	
E2	In general, to what extent do you feel excited and interested in things?	
Lon	How lonely do you feel in your daily life?	
H2	How satisfied are you with your current physical health?	0 = not at all, 10 = completely
P2	In general, how often do you feel positive?	0 = never, 10 = always
N2	In general, how often do you feel angry?	
A3	How often are you able to handle your responsibilities?	
N3	In general, how often do you feel sad?	
E3	How often do you lose track of time while doing something you enjoy?	
H3	Compared to others of your same age and sex, how is your health?	0 = terrible, 10 = excellent
R2	To what extent do you feel loved?	0 = not at all, 10 = completely
M3	To what extent do you generally feel you have a sense of direction in your life?	
R3	How satisfied are you with your personal relationships?	
P3	In general, to what extent do you feel contented?	
Hap	Taking all things together, how happy would you say you are?	0 = not at all, 10 = completely

Table A2. Group1: Respondents' handmade categories.

	n	**%**
Accessories	107	57.2%
Bags, wallets, small goods	51	27.3%
Knitting	29	15.5%
Foods	29	15.5%
Fashion items	26	13.9%
Babies/infants goods	25	13.4%
Furniture, daily goods	23	12.3%
Smartphone cases, mobile goods	19	10.2%
Arts, photos	19	10.2%
Aromas, candles	17	9.1%
Herbariums, gardening	17	9.1%
Dolls	15	8.0%
Stationery goods	9	4.8%
Ceramics, glasses, tableware	8	4.3%
Toys	6	3.2%
Pets goods	4	2.1%
Others	9	4.8%

Note. Multiple answers

Table A3. Group 1: Revenue from handmade crafts.

	n	**%**
Never sold	17	9.2%
Less than $500	133	71.9%
More than $500–$1000	25	13.5%
More than $ 1000–$2000	4	2.2%
More than $ 2000–$3000	4	2.2%
More than $ 3000–$5000	0	0.0%
More than $ 5000	2	1.1%
Total	185	100.0%
Note. Sales value: monthly average within a year		

Table A4. Group 1: The reason to start handmade crafting.

	n	**%**
As a hobby	161	87.0%
For personal use	84	45.4%
Utilization of leisure time	70	37.8%
For gifting	70	37.8%
For family use	65	35.1%
Interested in selling	60	32.4%
Utilization of skill	58	31.4%
Dissatisfaction toward existing products	58	31.4%
To save money	22	11.9%
Needed (for child's school etc.)	21	11.4%
Others	38	20.5%
Note. Multiple answer		

Table A5. Group 1: The resource of time for handmade crafting.

	n	**%**
Leisure time	142	76.8%
Sleeping time	77	41.6%
Household/Nursing time	61	33.0%
Working hours	13	7.0%
Others	1	0.5%
Note. Multiple answer		

Table A6. Group 1: Time for handmade crafting per week.

	n	**%**
Less than 5 h	81	43.8%
More than 5–10 h	49	0.5%
More than 10–15 h	25	13.5%
More than 15–20 h	6	3.2%
More than 20–25 h	9	4.9%
More than 25 h	15	8.1%
Total	185	100.0%
Note. Average within a year		

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