

Gaming Simulation Analysis on the User Selection of Community Currency

ゲーム	取引内容	通貨(円)	プレイヤー数(人)	時間
1	銀行	1000	10	10
2	銀行	1000	10	10
3	銀行	1000	10	10
4	銀行	1000	10	10
5	銀行	1000	10	10
6	銀行	1000	10	10
7	銀行	1000	10	10
8	銀行	1000	10	10
9	銀行	1000	10	10
10	銀行	1000	10	10

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Introduction

- About 800 CCs were issued in Japan, most of CCs are analog-banknote, analog-LETS. Recently, new digital CC has increased in Japan

What changes will occur by changing the issuance form in CC?

From previous studies

- Yoshida and Kobayashi (2016)
 - Analog-banknote CC promotes circulation of CC
 - Analog-LETS CC tends to bring community oriented value to users
- Tanabe and Niitsu(2016)
 - Digital currency technology has a potential to enhance the economic functions of CC

These studies have different assumptions about the case

It is necessary to prepare an environment that uses analog and digital CC under the same social economic conditions

Our Research Purposes

- What is the difference in user behavior using analog and digital CC?
- How do users evaluate analog and digital CC?

Building gaming simulation, consider these issues by analyzing game results

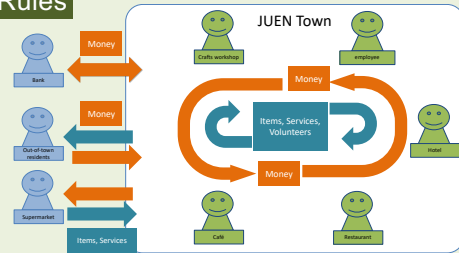
What is Gaming simulation?

Gaming simulation is a hybrid form, involving the performance of game activities and simulated contexts (Greenblat, 1988)

>>>A framework for dynamic interaction of participants in a simulated context

Community Currency Game

Rules



- Five roles in the town, and each participant is assigned one role
- The participants must make three decisions:
 - Buying items inside or outside the town**
All roles sell items. And some of the items sell cheaply outside the town. Participants must decide whether to buy items in the town or outside when buying items.
 - Whether to volunteer on request**
In the game, some troubles may cause that you cannot do yourself. If you have other participants who can solve it, you can ask. When asked, you must decide whether to do it as a volunteer
 - Whether to participate in the town activities**
In the game you have to decide who will do the activities to maintain the town. If not decided, they must outsource so they will collect cash from everyone

- The game consists of two parts
- CCs can be used to exchange items in the town, to use as a thank-you for volunteers, or as a reward for town activities. The participants decide how to use it.

The first half of the game
• Trade only with Yen

The second half of the game
• Trade with Yen and CC

Participants

- To avoid the influence of prior CC use experience, we conducted this game for university students who have never used CCs previously

Four Games

- We conducted four games with different types of CCs

	Analog CC	Digital CC
Day1	Game1: Banknote	Game2: Digital-reloadable
Day2	Game3: LETS	Game4: Digital-LETS

- The participants played two games using analog and digital CCs that corresponded to each other on the same day, and at the end of the day, they evaluated the two CCs.
- At the end of the second day, all participants compared the analog and digital CCs used in the two games and evaluated all four CCs.

Results

Game Implementation

- We conducted this game at Joetsu University of Education from December 1 to 2 2018 with sixteen participants

Participant's behavior

- After introducing analog CC
 - The number of activities in the town significantly increased (Table3)
- After introducing digital CC
 - the purchase frequency inside the town and volunteering frequency significantly increased (Table1, 2)

Table1. Purchase frequency inside the town

	average	N	SD	t	DF	p
analog before introducing CC	1.21	6	0.82	-2.21	9	0.054
analog after introducing CC	1.9	10	0.99			
digital before introducing CC	0.5	10	0.71	-6.71	9	0
digital after introducing CC	2.5	10	0.71			

Table2. Volunteering frequency

	average	N	SD	t	DF	p
analog before introducing CC	1.21	6	0.82	-1.75	5	0.14
analog after introducing CC	2.17	6	1.17			
digital before introducing CC	0.33	6	0.52	-3.08	5	0.02
digital after introducing CC	2.5	6	1.38			

Table3. Frequency of town activities

	average	N	SD	t	DF	p
analog before introducing CC	1.2	10	0.42	-2.71	9	0.02
analog after introducing CC	1.8	10	0.63			
digital before introducing CC	1.3	10	0.48	-1.77	9	0.11
digital after introducing CC	1.9	10	0.74			

- Digital CC encourages individual community activities
- Analog CC encourages group activities in the community

Participant's evaluation of CC

Table 4. Comparison of the two CCs

		average	N	SD	t	DF	p	
analog-banknote vs digital-reloadable	convenience of CC	analog-banknote digital-reloadable	2.57	14	0.51	-7.87	13	0
	contribution to economic revitalization	analog-banknote digital-reloadable	3.86	14	0.36			
		analog-banknote digital-reloadable	2.93	14	0.73	-2.28	13	0.04
	contribution to volunteer activities	analog-banknote digital-reloadable	3.14	14	0.54			
	contribution to town activities	analog-banknote digital-reloadable	2.93	14	0.48	0	13	1
analog-LETS vs digital-LETS	convenience of CC	analog-LETS digital-LETS	2.58	13	0.65	-5.33	12	0
	contribution to economic revitalization	analog-LETS digital-LETS	2.62	13	0.51			
		analog-LETS digital-LETS	2.93	13	0.56	-1.19	12	0.08
	contribution to volunteer activities	analog-LETS digital-LETS	2.85	13	0.38	-0.56	12	0.58
	contribution to town activities	analog-LETS digital-LETS	2.92	13	0.28			

- Digital CC has a high evaluation in both rounds of comparison regarding convenience and contribution to economic revitalization

Table5. Ranking of the four CCs

median rank	Revitalization of the local economy	Strengthening the local community ties	CC that should be introduced
1	digital-LETS (1.54)	analog-LETS (2.08), analog-banknote (2.38)	digital-reloadable (1.69)
2	digital-reloadable (1.92)	analog-LETS (2.08), analog-banknote (2.38)	digital-LETS (2.92)
3	analog-LETS (3.08)	digital-reloadable (2.77), digital-LETS (2.77)	analog-LETS (2.92)
4	analog-banknote (3.46)	digital-reloadable (2.77), digital-LETS (2.77)	analog-banknote (3.38)

shown in parentheses is average rank

- Participants evaluate digital CCs as enhancing the economic effect, analog CCs as bringing community effect

From the results of gaming simulation

- The convenience of digital CC encouraged economic transactions and volunteers and led to evaluate digital CC as enhancing economic effect and as CC to be introduced

- Analog CC that promotes community group activities is evaluated as a CC that brings community ties

Discussion

Participants evaluate digital CC as a CC to be introduced

- Participants highly appreciate the convenience of digital CC during individual community activities
- But, the novelty of using a new type of currency called digital CC is also included in the evaluation

Future research

Compare behavior and evaluation when changing attributes of participants and app specifications

Can the group activities in the community be encouraged by changing the app specifications of digital CC?

- If possible, how will the evaluation change?