

WORKPLACE REFORM WITH CHANGING MANAGEMENT THROUGH THE USER PARTICIPATION WORKSHOP : THE CASE STUDY OF SEIYO CITY OFFICE

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ABSTRACT

The research explains about workplace reform, aimed at improving productivity of General Affairs and Policy Planning department of Seiyō office by changing management through the user participation workshop at 4th floor of Seiyō city office and on the changes of workplace reform. The purpose of this research is to find the changes that are worker's behaviour and worker's awareness of workplace through workplace reform. The researchers surveyed changes, worker's behaviour and worker's awareness of workplace using workplace reform at 4th floor of Seiyō office as case study. In workplace reform, in order to create a place where new work style can be practiced, the researchers conducted the user participation workshops with workers a total of 6 times. Through the workshops, concept of work style and plan of renovation were proposed. In addition, the researchers did a survey using two methods which were a set of questionnaire and 3 observations that is before the workplace renovation, 3 months after the renovation, and 1

year and 3 months after the renovation. The findings obtained from the questionnaire in the first three months after the renovation showed that the opinions of the workers were divided between pros and cons against workplace reform. However, the survey of 1 year and three months after the renovation showed that almost all workers are satisfied with the new environment. In addition, the researchers found that a positive correlation exist between participation rate of workshops and the satisfaction level. The findings suggest the worth of workshops for workplace reform. In the Observation Survey, the workers needed to select a place freely where they can work comfortably after the workplace reform. For example, they chose to work in refresh space. In addition, the findings from the survey showed that the floor became livelier when the participation rate increases at that workplace. Additionally, the participants became more conscious of the work style such as features of work style, after workplace renovation; they are able to clearly differentiate between short intermittent works separated by conversation and phone and personal work on concentration.

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INTRODUCTION

The number of workplaces by participatory design is increasing (Wang et al., 2014). However, there is minimal research on comprehensive (subjective and objective) perspective. There is only one case that examined the degree of satisfaction of the office (New Office P. A., 2016, p.214-237). Therefore, the researchers decided to do a study on workplace reform using changing management of the 4th floor of Seiyo city office. The research aimed to comprehensively survey the influence of workplace reform the perspective of worker's work style (awareness and behaviour), using a questionnaire and behavioural observation survey. In addition, "change management" means that work style changes occur when the workers deeply participated in the process of workplace design. When the workers are involved, it will deepen their understanding of each goals, organizational goals, business style occur changing the awareness about their work contents and style through participatory design (New Office P. A., 2014, p.255-256).

LITERATURE REVIEW

The definition of an effectiveness of participatory design is user can take ownership of own workplace (Wang et al., 2014 ; Okabe et al., 2014). Furthermore, when thinking design is not done for public, but only for identified people, then participating directly in the process of design is more effective (Kumazawa et al., 2008).

In workplace, there is correlation between conversation satisfaction and employee's productivity (Midorikawa et al., 2011). Moreover, effectiveness of conversation and productivity by changing layout is researched (Okamoto et al., 1999; Numanaka et al., 2015). When evaluating productivity, communication is one of the important factors (Okamoto et al., 1999). In addition, satisfaction of conversation makes employee to become more productivity. According to the research by Okamoto et al. (1999) and by Numanaka et al. (2015) there is correlation between Conversation and employee's productivity.

SUMMARY OF WORKPLACE REFORM

Background of Workplace Reform

Along with the recent declining working population, it is an urgent task to raise productivity. Even in Seiyō city, Ehime, Japan, the population and staff are expected to decrease dramatically from 2013 to 2040 (Intelligent Productivity Research Committee, 2012). These shows a possibility of financial collapse may occur when the allocation tax is being reduced. Therefore, the authors aimed to improve the productivity of workers by creating a workplace where they can practice better work style, through workplace reform by changing management through the user participation workshop.

Workplace Reform Policy and Flow

The goal is to make it possible for workers to practice how to improve the productivity of the whole Seiyō office by workplace reform. In this case, the authors aim for improvement in productivity, which depends on the 2 policies for the General Affairs and Policy Planning Department (hereinafter, referred to as “GAPP”). The 1st policy is reduction of cost by improving the efficiency of routine work, while the 2nd policy is improving quality of output by creating innovation, realizing ideas to solve various problems, thus, making Seiyō city attractive. To determine this, first, the researchers conducted survey and workshops (WS1, 2 and 3) to grasp the current situation and the ideal. Next, based on those results, the research was proposed to change the new work style and new layout. Additionally, the researchers held workshops (WS4, 5 and 6) to think about the ways to improve productivity. Finally, in order to evaluate the effectiveness of workplace reform, the researchers conducted a survey three months after the renovation and one year and three months after the renovation.

Table 1: Outline of Workshops

	WS1	WS2	WS3	WS4	WS5	WS6
Schedule	14 Apr 2016 13:00~ 18:30 15 Apr 2016 9:00~ 12:00	25 May 2016 9:00~ 12:00	30 May 2016 13:00~ 17:00 31 May 2016 9:00~ 12:00	19 Oct 2016 13:00~ 17:00	8 Nov 2016 13:00~ 18:30	9 Nov 2016 9:00~ 12:00

Participant	<ul style="list-style-type: none"> · GAPP (15 people) · Other 11 divisions (11 people) Total 26 people 	<ul style="list-style-type: none"> · GAPP(7 people) · Other 8 divisions (8 people) Total 15 people 	<ul style="list-style-type: none"> · GAPP (9 people) · Other 10 divisions (10 people) Total 19 people 	<ul style="list-style-type: none"> · GAPP (25 people) · Other 1 division (1 person) Total 26 people 	<ul style="list-style-type: none"> · GAPP (27 people) Total 27 people 	<ul style="list-style-type: none"> · GAPP (23 people) Total 23 people
Purpose	<ul style="list-style-type: none"> · Make yourself a reform. · Grasp the current situation and share recognition of each worker. 	<ul style="list-style-type: none"> · Bird's eye view of own work and reconsider value. · Sharing of ideals of city hall and future policies. 	<ul style="list-style-type: none"> · Sharing current problems and solutions (by way of work, space). · Determination of the policy of reform. 	<ul style="list-style-type: none"> · Think about new ways of work style toward improving work efficiency. · Imagine how to work in the new workplace. 	<ul style="list-style-type: none"> · Notice the necessity of improving productivity. · Have an awareness to change work style to date. 	<ul style="list-style-type: none"> · Think about the workplace operation method to realize a new work style.
Overview	<ul style="list-style-type: none"> · Lecture (about 2.5 h) · Case introduction / comparison · "Good point" and "Bad point" · Depth interview · Scenario writing 	<ul style="list-style-type: none"> · Tour of the latest workplace case · Business model campus · Work style Concept creation 	<ul style="list-style-type: none"> · Modification of Work style Concept · Case study of workplace space · Pattern Language 	<ul style="list-style-type: none"> · Review of work using diary survey · Scenario writing (New workplace version) 	<ul style="list-style-type: none"> · Lecture (about 2 h) · Troubleshooting for improving work efficiency Brest 	<ul style="list-style-type: none"> · Develop ideas for becoming cross-division organization · Establishment of operational rules at the new workplace

RESULTS OF THE WORKSHOPS

Work Style Concept

Through the first half workshops (WS1, 2 and 3), the researchers created work style concept as a policy of workplace reform by making ideal of Seiyo city office and the ideal of Seiyo city. As a result, the work style concept was made “ChangeSeiyo!” and the sub concept is “challenge”, “connect” and “enjoy”. By having the concept, the workers aim at improving the work style so far and aim to be a workplace where they can work challengingly as well as improving citizen service. As a result, the Concept meaning has changed to be more attractive at Seiyo city.

Content of Layout Suggestions

The researchers designed a workplace layout that can embody sub concepts (challenge, connect and enjoy) of the work style concept, and

encourage new work style (Fig.1). The concept of the layout is “Choose a place depend on mode that is based on work style concept according to your schedule”, and the layout is based on the team address system. The team address system is our original seat system. An island for each division (number of seats is smaller than the number of people) and non-territorial seats are prepared, and workers who could not sit on the division’s islands will automatically sit at non-territorial seats with workers of other divisions. However, the General Affairs Division has only fixed seat system. In addition, the researchers set up six modes (team, concentration, welcome, discussion, play and share) and made space according to each mode. By having various meeting spaces, the researchers aimed to promote collaboration among staff based on the number of people, mood and purpose.

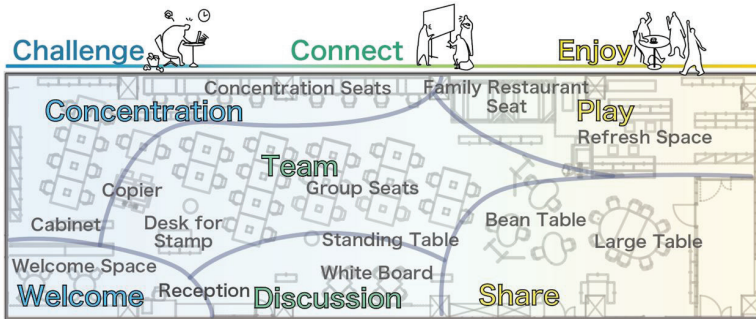


Figure 1: Proposed Layout

EVALUATING THE EFFECT OF WORKPLACE REFORM

In this case, the authors evaluated the effect of workplace reform from the two viewpoints; questionnaire survey as a subjective perspective and behavioural observation survey as an objective perspective. The effect of evaluation was conducted 3 times before the renovation, 3 months after the renovation, and 1 year and 3 months after the renovation. In the following, it is abbreviated as BEFORE, AFTER1 and AFTER2.

Questionnaire Survey

In the questionnaire survey, 30 items related to the surrounding of seat, conference room, tools, etc. were evaluated in 6 ranks from 1 to 6 on 2 axes; satisfaction and influence, on work. (Tables 2 & 3)

Table 2: Summary of Questionnaire Survey

Item	Survey on satisfaction level of workplace environment and degree of influence on work
Term	BEFORE: 25 May 2016~ 1 Jun 2016 AFTER1: 23 Feb 2017~ 3 Mar 2017 AFTER2: 30 Mar 2018~ 11 Apr 2018
Target	Seiyo city office workers (35 to 42 people)
Method	URL distribution mail using WEB questionnaire

Table 3: Questionnaire Survey Items (some excerpts)

1. The size of the desk	8. Ease of taking out necessary document such as shared locker
2. Desk storage capacity (withdrawal etc.)	9. Amount and content of office equipment (stationery etc.)
3. Comfort of office chairs	10. The distance between desks and the size of the aisle
4. Ease of concentration of work at the desk	11. The extent that it does not care about surrounding voice and sound
5. Ease of conversation with people around me at my seat	12. Number of "meeting rooms" (including the size)
6. Ease of refreshing at your desk	13. Ease of use depending on the location of "meeting rooms"
7. Amount of storage such as shared locker	14. Assortment of "meeting room" equipment

Simple Tabulation

Changes of the degree of satisfaction on each item for the workplace environment and the degree of influence of work (6 grades) are shown in Figure 2. AFTER1, positive and negative reactions to the new workplace environment appeared extremely, and items were scattered at both ends of Figure 2. However, in AFTER2, these gathers together as one cluster and most items of satisfaction level raised such as in item "meeting space" of satisfaction level is greatly raised. By setting up various kinds of meeting

space, it is possible for the workers to choose a place according to the mood and situation. It seems that it causes the rise in satisfaction level.

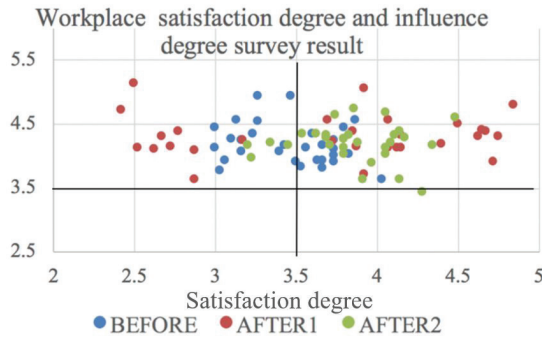


Figure 2: Workplace Satisfaction Degree and Influence Degree

Relationship with Workshop Participation Rate

A strong positive correlation is found between the degree of participation (as shown in Eq. (1)) in workshops and the degree of increase in satisfaction with the workplace (Table 4). It suggests the higher the participation rate in workshops, the higher the degree of satisfaction increases a trend.

The participation degree in the workshop for each division is x as follows when the number of participants in the workshop of the division is n , the total number of workers in the division is m and the total number of times of workshops is k . The symbol figure is shown below:

$$x = n/m * k \quad (1)$$

In addition, in AFTER1 the trend is particularly noticeable, and in AFTER2 the lower the participation rate is, the higher the satisfaction increases (negative correlation). From this it can be expected that workers who joined the workshops are easier to adapt to the new workplace. It can be inferred that they did provide opinion at the time of workshops participation and the element was actually reflected in the layout.

Table 4: Correlation between Participation Rate of Each Workshop By Department and Degree of Satisfaction of Each Item

		Appropriate area is secured for the workplace	High workplace design	Ease of taking out necessary documents such as shared lockers
AFTER1	Average value (change amount)	3.13 (-0.58)	3.53 (-0.04)	1.93 (-1.07)
	Correlation coefficient	0.87	0.88	0.75
AFTER2	Average value (change amount)	3.56 (0.42)	4.00 (0.47)	2.78 (0.84)
	Correlation coefficient	-0.52	-0.52	-0.58

Effect Evaluation using Behavioural Observation Survey

In order to grasp how to work from an objective viewpoint, the authors conducted behavioural observation survey of workers working at the target floor. Table 5 shows the summary of the survey.

Table 5: Summary of Behavioural Observation Survey

Item	<ul style="list-style-type: none"> · Time and place sitting · Conversation time and opponent and place · Time on the phone
Term	BEFORE:18 Oct 2016 at PM and 20 Oct 2016 at AM AFTER1: 8 Mar 2017 at PM, 9 Mar 2017 at AM & PM and 10 Mar 2017 at AM AFTER2: 19 Mar 2018 at PM, 20 Mar 2018 at AM & PM and 21 Mar 2018 at AM (AM 9:00 a.m. ~12:00 p.m., PM: 13:30 p.m. ~17:15 p.m.)
Target	Seiyo city office 4th Floor General Affairs and Policy Planning Department Working Floor
Method	Fixed point observation was done by an investigator by visual observation. Recording was done with precision of 1 min, and the researcher entered the record result in the format. In addition, for actions carried out within 1 min, the researchers regarded as actions performed for 30 sec for convenience and recorded.

Average Number of People Stayed

Table 6 shows the average number of people staying per day for each survey. Only BEFORE is 11.6 people, which is less 12 than AFTER1

and AFTER2. Due to this result, the existence of a meeting during the investigation time was considered. In the case of a meeting during the survey time, In BEFORE, it had been held in a conference room where is not covered by the survey. However, in AFTER1 and AFTER2, space was set up to allow holding conferences in the working floor by changing layouts. Therefore, in AFTER1 and AFTER2 the average number of people staying has increased.

Table 6: Average Number of People Staying Per Day for Each Survey

		Average number of people staying per day for each survey		
		BEFORE	AFTER1	AFTER2
All Divisions		11.6	24.1	28.4
Division	General Affairs Division	5.8	9.2	8.0
	Town Planning Promotion Division	2.8	5.4	6.8
	General Policy Division	1.4	3.3	8.9
	Finance Division	1.7	6.2	4.6

Usage Time by Location

Figure 3 shows the usage time by place per day and the rate of change from AFTER1 to AFTER2. Both AFTER1 and AFTER2, Group Seat show the longest usage time, followed by Concentration Seat. In addition, the change rate showed an increase in the usage time in the Refresh Space, the Welcome Space, the Copier, and the Family Restaurant Seat. In the Refresh Space and the Family Restaurant Seat, scenes of personal work and light talks are watched, and it seems that the usage time has increased since workers started to use various ways between AFTER1 and AFTER2.

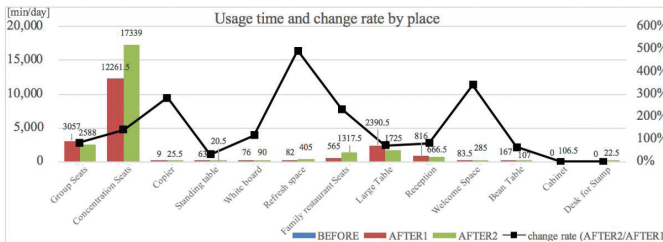


Figure 3: Usage Time and Change Rate by Place

Conversation Participation Rate

Figure 4 shows the average conversation participation rate per day for the entire floor and for each division. The above conversation participation rate is calculated by calculating the ratio of the number of participants in the conversation among the workers who stayed in the scope of the survey at a 15 min average. As a result, the conversation participation rate of AFTER1 and AFTER2 is increasing in all cases compared to BEFORE. In all cases, increase is confirmed from BEFORE to AFTER1, and in the General Affairs Division it only increased to 1%, but in other divisions it shows a remarkable increase of 9% to 18%. Additionally, the change from AFTER1 to AFTER2 is divided, only 5% in the General Affairs Division. However, in other divisions it shows a decrease of 2% to 5%. From this, the General Affairs Division only shows a different movement from other divisions. As a factor, it is conceivable that only the general affairs section adopts the fixed seat system due to the difference in working system.

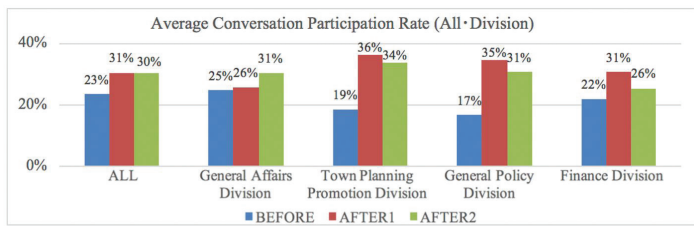


Figure 4: Average Conversation Participation Rate (all division)

Distribution of conversation time length

Figure 5 shows the histogram of the length of conversation time per 1 day. Overall, the conversation is the most numerous for 0.5 min, followed by 1 min, 2 min, 3 min in order. In addition, the shorter the conversation time overall, the more the number of conversations tends to be. Also, the number of conversations by AFTER1 and AFTER2 is increasing more than BEFORE. This is presumed to be due to the increase in conversation participation rate and the number of people staying on the floor.

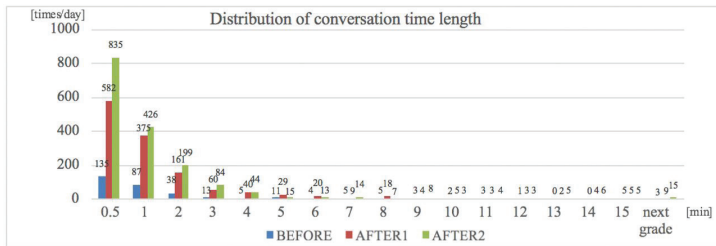


Figure 5: Distribution of Conversation Time Length

Continuous Personal Working Time

The Continuous Personal Working Time is defined as the time for workers to work on individuals continuously without conversation and phone, and the histogram and the increase rate is shown in Figure 6.

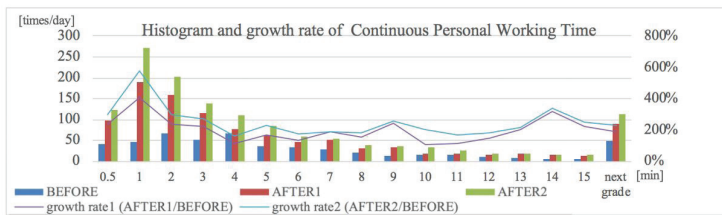


Figure 6: Histogram and Growth Rate of Continuous Personal Working Time

In AFTER1 and AFTER2, 1 min of work is the most frequent, indicating frequent conversation and phone and short intermittent of working. In addition, the rate increases show a significant increase from BEFORE to AFTER1 and AFTER2, with an increase rate of 1 min and 14 min of over 300%. As one of the reasons for this, it suggests that they become conscious of the work style and they can clearly differentiate between short intermittent works separated by conversation and phone and personal work on concentration.

CONCLUSION

The researchers carried out workplace reform through six times user participation workshops and layout changes, and analysed worker’s

awareness of the workplace environment and behaviour change using questionnaire survey and behavioural observation survey.

Through the user participation workshops, the researchers proposed concept of work style and plan of renovation. In the questionnaire survey of 3 months after the workplace renovation, it shows that the opinions of the workers were divided between pros and cons against workplace reform. However, the survey of one year and three months after the renovation shows that almost all the workers are satisfied with the new environment. In addition, it was found that a positive correlation between participation rate of workshop and satisfaction. The findings suggest workshops is necessary for workplace reform. In the Observation Survey, it shows that worker select a place freely where they can work comfortably after workplace reform. For example, they work in refresh space. In addition, from the observation the rise of the conversation participation rate, made the whole floor livelier. As a characteristic of the work style for workers, the findings show the relation between the conversation time and the Continuous Personal Working Time. The findings in the study illustrate that the Conversation time is the longest for less than 1 min, the shorter the conversation time, the more the number of conversations tended to show. The Continuous Personal Working Time were similar to the conversation time in a short time. However, after the renovation, it suggests that they become conscious of the work style. They can clearly differentiate between short intermittent works separated by conversation and phone and personal work on concentration.

The limitation of the research is the data accuracy of behavioural observation survey. Since the researchers conducted an observation survey visually by investigators, the researchers have the possibility of oversight and mistake of observation.

Finally, as a future prospect, it is necessary for future papers to clarify the impact of user participation workshops on workers and to study workshop methods suitable for workplace reform, such as how to organize workshops.

REFERENCES

- Report of 23th year of the Heisei period in the Japanese calendar Intellectual Productivity Research Committee, Ministry of Land, Infrastructure and Transport Housing Bureau (2012). Intelligent Productivity Research Committee.
- Kumazawa T. & Saito M. (2008). *The Effects on a Method to Remind Users of Activity Image with Scene in Participative Designing*. Proceedings of the Annual Conference of Japanese Society for the Science of Design, No.55, 65-66.
- Midorikawa Y., Ikaga T., Sato T. & Warita T.(2011). The Influence of Office Building Space and Communication onIntellectual Productivity. Summaries of Technical Papers of Aannual Meeting Architectural Institute of Japan, 149-152.
- New Office Promotion Association. (2014). NEW OFFICE, No.196, 255-256.
- New Office Promotion Association. (2016). NEW OFFICE, No.198, 214-237.
- Numanaka S., Takahashi K., Amano K., Kato S., Takahashi M. & Kikuchi T. (2015). Field Survey on Communication and Workplace Environment in an Office which is Aimed at Improving Workplace Productivity, 80, No. 713, 609-619.
- Okabe Y., Kanai M., Matsumoto Y. & Naka R. (2014). *User Participation Method in Facilities Management to Deal with Changes in Way of Working* (No.2). Summaries of technical papers of annual meeting Architectural Institute of Japan, 515-516.
- Okamoto S. (1999). Improvement of Intellectual Productivity through Communication Management. *Intellectual Asset Creation*, 7(1), 93-101.
- Wang D., Kanai M., Matsumoto Y. & Naka R. (2014). User Participation

Method in Facilities Management to Deal with Changes in Way of Working (No.1). Summaries of technical papers of annual meeting Architectural Institute of Japan, 513-514.

