



Problem Structure for Employee Well-Being in the Workplace

Personal and Organizational Well-Being

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Abstract. This study proposes causal loop diagrams to identify factors that inhibit employee well-being on the basis of the problem structure in a Japanese workplace. The well-being and productivity of Japanese employees is low. Thus, human resource department needs to understand the organizational problem structure to increase employee well-being. We identify it by designing causal loop diagrams through workshops for two divisions. As the results, we identify a framework of employee well-being in which there is a trade-off between concentration and communication based on health. We also obtain the different problem structure and determine the problems of each division. Our findings contribute to practical knowledge of serviceology by identifying a framework of employee well-being.

Keywords: Well-being · Workplace · Causal loop diagram · Value co-creation · HR-tech

1 Introduction

The workplace has become the main area where people can fulfill their abilities because working hours occupy most of their time. However, the well-being of Japanese employees is lower than that in other countries [1], despite Japan's recent work style reform law, such as reduction of overtime work [2]. Work engagement, one element of well-being, has a particularly low score [3] due to increasing organizational cynicism [4].

While stress management intervention has been researched as a method to reduce organizational cynicism, it has only been applied to individual employees rather than to organizational problem structure [5]. A service provider, such as human resource management, in the Japanese workplace needs to solve the fundamental problems by understanding the problem structure. The purpose of this study is to clarify the factors that inhibit employee well-being from the perspective of the problem structure of the workplace.

2 Theoretical Background

2.1 Employee Well-Being in the Workplace

In human resource management (HRM), both the organization and its employees are meant to have a relationship built on caring and trust [6]. According to the mutual gains perspective based on social exchange theory [7], HRM has the potential to increase both employee well-being and organizational productivity [8, 9]. Ideally, the human resource department should suggest interventions to increase both employee well-being and organizational productivity. However, Japanese employee well-being is low [1], which indicates that many Japanese companies do not have a service design to increase them. One cause of low employee well-being is organizational cynicism [4], which can be broadly defined as a negative relationship between employees and their organization [10]. More specifically, organizational cynicism is a social failure of exchange between employees and the organization, in which employees do not perceive there is any organizational support [11] and feel distrust for the organization as a whole. The foundation of organizational cynicism in a particular organization depends on how that organization operates [12]. One study showed a negative correlation between perceived organizational support (i.e., the extent to which employees feel supported by their organization) and organizational cynicism [13].

Stress management intervention has been performed to reduce psychological and physical stress in individuals [5]. This will improve the ability of employees to adapt to their workplace by improving their coping skills (conflicting outcomes perspective) [9, 14, 15]. However, because this is done on an individual basis, it cannot solve the structural problems in each organization as a whole. Clarifying why employees do not trust their organization (i.e., the reason for the organizational cynicism), and why Japanese employee well-being is low, will lead to a more cohesive understanding of the organization.

A recent study by Voorde et al. categorized employee well-being into three dimensions: health, relationships, and happiness [16]. Health means a stress and stressor, relationships means interactions with others, and happiness means employee satisfaction. It is necessary to confirm that these three dimensions are appropriate to current Japanese employee well-being, and we also need to know the specific details of them when designing a service.

To increase employee well-being by solving the problem structure of workplace, employees and their organization need to co-create values that will lead to their mutual well-being. Therefore, the factors that inhibit employee well-being need to be clarified by examining the problem structure of workplace and using the insights gained to get a clear understanding of how employees feel about their working environment.

2.2 Solving the Problem by System-Thinking

An effective way to clarify problem structures is system-thinking, an approach that regards the analysis subject as a system constructed by different elements. By using the system-thinking approach, we can consider how different elements affect each other and how they function as a whole system [17, 18]. A causal loop diagram is a tool that

visualizes causal relationships by means of feedback about the mutual effects of different elements. A mental model of individuals or teams as a system structure should be formed [18].

We can understand the problem structure of a workplace by regarding the workplace as one system. Issues in the workplace are deconstructed into different elements and adjusted to determine their effect on each other. For example, the NIOSH model of job stress explains the process of increasing stress in the workplace, where different elements (A, B, and C) form a simple, one-way relationship of influence: $A \rightarrow B \rightarrow C$. In reality, however, a causal loop (i.e., feedback) exists. To suggest concrete services, real-world problems should be visualized with a causal loop diagram. This diagram can be designed by more than one person by applying Minato's method [17, 19], where a structure can be agreed upon between the employees rather than creating a personal phenomenon by carrying it out with only one person. The causal loop diagram for the problem structure of a workplace designed by working employees through a workshop makes it possible to accurately determine the factors that inhibit employee well-being.

In this study, we carry out interviews and workshops to design causal loop diagrams for one workplace. The overall process is shown in Fig. 1.

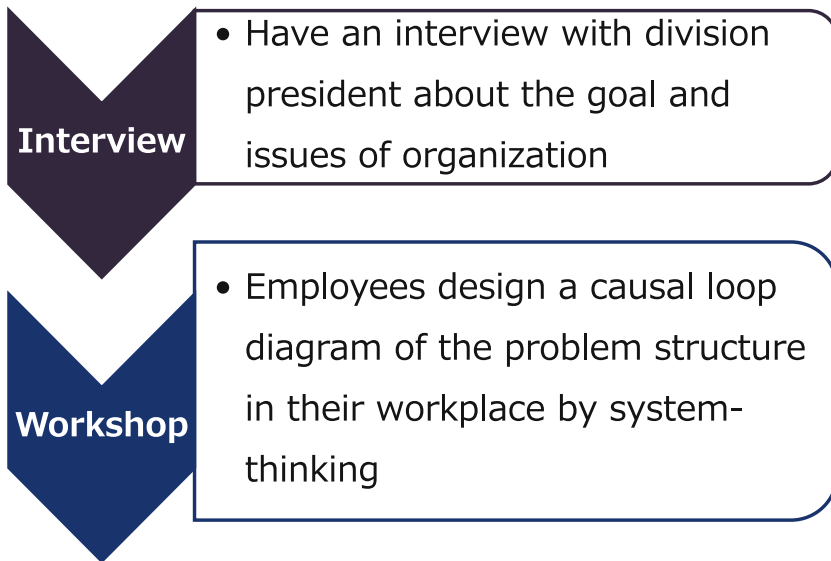


Fig. 1. Overview of this research.

3 Study 1: Interview for Understanding the Goal of Division

Two divisions (division A and division B) participated in these studies (study 1 and study 2). Both divisions belong to the same Japanese IT company, which was established over 100 years ago and has about 20,000 employees.

3.1 Method of Interview

We carried out interviews to clarify the organizational goals and issues from the viewpoint of the division leaders. The procedures of these interviews are detailed in Table 1.

Table 1. Procedures of interviews.

	Division A	Division B
Date	22 May 2019 Total time: 30 min	Responses to questions sent via e-mail were returned on 21 May 2019
Interviewee	The division president of 20 employees	A manager of eight employees
Question	(A) What are the goals of your organization? (B) What are the organizational issues or solutions?	

3.2 Answers

Tables 2 and 3 show a summary of the answers to Questions A and B.

Table 2. Goals and issues of division A.

(A) Goals of organization	To keep on schedule for the team’s business plan, ensure cost-benefit performance, and keep within budget
	To communicate with different divisions
	To maintain a workplace with a friendly atmosphere
(B) Organizational issues or solutions	Employees can’t communicate casually
	Employees don’t know when they should consult colleagues about their job

Table 3. Goals and issues of division B.

(A) Goals of organization	To carry out the organizational mission in an efficient way
	To provide a new value for output
(B) Organizational issues or solutions	Retain human resources
	Re-examine existing processes, rules, and mindset
	Improve communication within the team
	Improve communication with people concerned about their job
	Develop expertise

These goals and issues were then used in the workshop (study 2), as discussed in the next section.

4 Study 2: Workshop for Designing Causal Loop Diagram

As discussed earlier, causal loop diagrams created by system-thinking are used to clarify organizational structures, including the causal loops among issues. We facilitated two workshops in which the author was the facilitator and asked participants to design a causal loop diagram.

4.1 Participants

Division A. Participants were seven employees working at division A in the Japanese IT company. These seven were among the 20 employees working in division A.

Division B. Participants were eight employees working in division B at the same company. There were only eight employees in division B in total.

4.2 Date

Division A. 27 May 2019. 13:00–15:00 (required time was two hours)

Division B. 23 May 2019. 9:00–12:00 (required time was three hours)

4.3 Process

In both workshops, the process of making a causal loop diagram comprised four steps (Fig. 2) based on Minato's method [17]:

- Step 1. Extraction of issues
- Step 2. Input of interview results
- Step 3. Extraction of issues
- Step 4. Construction of causal loop

Before the workshop, participants were shown four keywords—work productivity, private productivity, workplace innovation, and workplace comfort—and asked to brainstorm at least ten issues related to keywords.

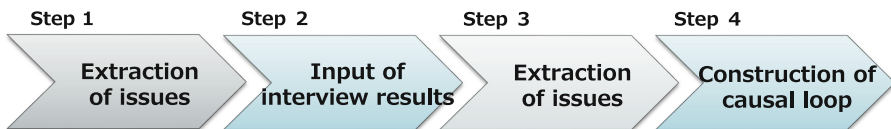


Fig. 2. Four steps of the workshop.

In Step 1, Extraction of issues, we taught the participants how to brainstorm, which is a group creativity technique that encourages the gathering of ideas [20].

The facilitator placed four keywords—work productivity, private productivity, workplace innovation, and workplace comfort—on the table. Participants brought stickies on which they had written issues about their workplace in advance and stuck them on the table. During the workshop, if participants came up with any new issues or ideas from ideas introduced by others, they could write it on a new sticky and add it to the table at any time.

In Step 2, Input of interview result, the facilitator introduced issues written on a sticky as based on the interview results (Tables 2 and 3).

In Step 3, Extraction of issues, participants extracted issues about their workplace on the basis of added insight from the interview results, in the same manner as Step 1.

In Step 4, Construction of causal loop, participants were asked to think about causal structures among the issues extracted in Steps 1 and 3, and to draw arrows between issues having causal relationships. They were also told to draw arrows between relationships such as “B occurs for A”; if there were logical gaps between A and B, they could add the issue as an element in the middle (Fig. 3). In the process of construction, participants were asked to combine similar issues having the same meaning.

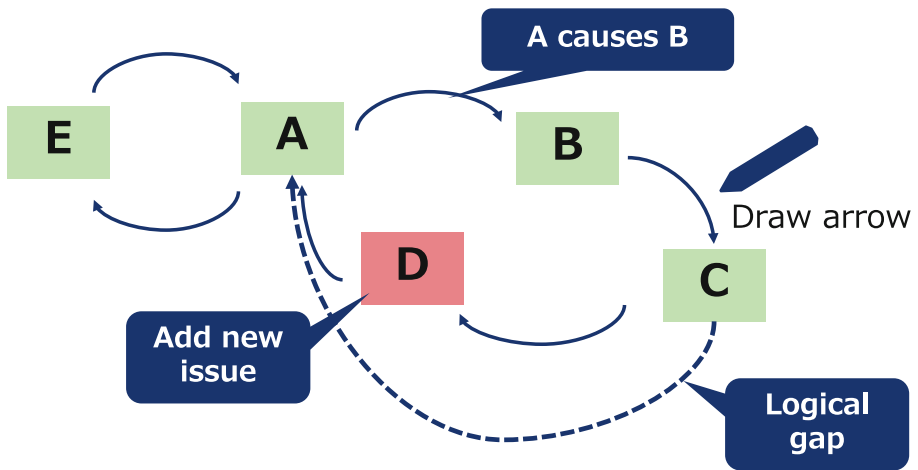


Fig. 3. Method of constructing causal loop (Step 4).

4.4 Ethical Considerations

We obtained consent from the participants under the following conditions.

1. The results of this workshop will be used only for research.
2. The identities of participants will not be revealed in the results.
3. Participants are requested not to discuss anything about the workshop that may lead to the identification of other participants.

5 Results

After the completion of the workshops, we had obtained two causal loop diagrams (one for division A and one for division B). First, we show the causal loop diagram for division A and explain its structure. We then do the same thing for division B's. We also explain how the problem structure derived from the causal loop diagrams includes conversations and contents summarized in workshops, as the authors participated in the workshops as facilitators.

5.1 Division A

Division A was a planning division and had one division president, two division managers, and 16 members. It was organized into three distinct groups. Each group had different missions, and the employees recognized these differences. The mission of division A as a whole was to proceed with a plan as scheduled while keeping within the budget and ensuring a good cost performance (Sect. 3, Table 2).

Figure 4 shows the causal loop diagram that visualizes the problem structure of division A's workplace.

First, we explain the influences on "work productivity." "Individual learning" and "sleeping time" directly affect "work productivity." If employees were able to learn about their job on their own time and get enough sleep, they could increase work productivity.

Next, we explain the influences of the amount of communication (Fig. 4, bottom). The "amount of communication" and the "quality of communication" have multiple effects. High-quality communication decreases the amount of communication. On the other hand, a lot of communication increases the quality of communication. Appropriate communication in terms of amount and quality affects each of the elements, influencing "work productivity" via "information". In other words, poor communication quality influences work productivity negatively by shortage of information, which means that great communication increases work productivity.

The amount of communication influences "individual concentration" and "work productivity" via "group concentration," meaning that appropriate communication increases group concentration (e.g., in meetings, etc.), resulting in employees being clear on their role and job, thus increasing their concentration. Employees can concentrate individually by "deciding on a time to concentrate."

As for "time difference", we found that it affects "work productivity" and "private productivity" via "the degree of freedom." Division A has what is known as a jet lag job, which means that if they don't have a certain degree of freedom, they can't increase their work or private productivity.

productivity” via “sleeping time,” “physical & mental health,” and “concentration.” This suggests that when employees over work, they can’t sleep enough, and as a result they can’t concentrate on their work and put their own physical and mental health at risk.

Next, we explain the influences of “mental reward” (Fig. 5, bottom). “Mental reward” affects “work productivity” via “smile,” “necessary communication,” and “sharing ideas.” This suggests that employees can get a mental reward when they appreciate the work of others and when they are appreciated for their own work, and that makes them smile. Smiling employees makes for a friendly atmosphere, and they can communicate smoothly and share information about their jobs, which increases work productivity. In addition, “mental reward” affects “motivation,” meaning that employees want to do a better job when they are being appreciated for their job. “Motivation” has a direct positive effect on both “independence” and “work productivity”.

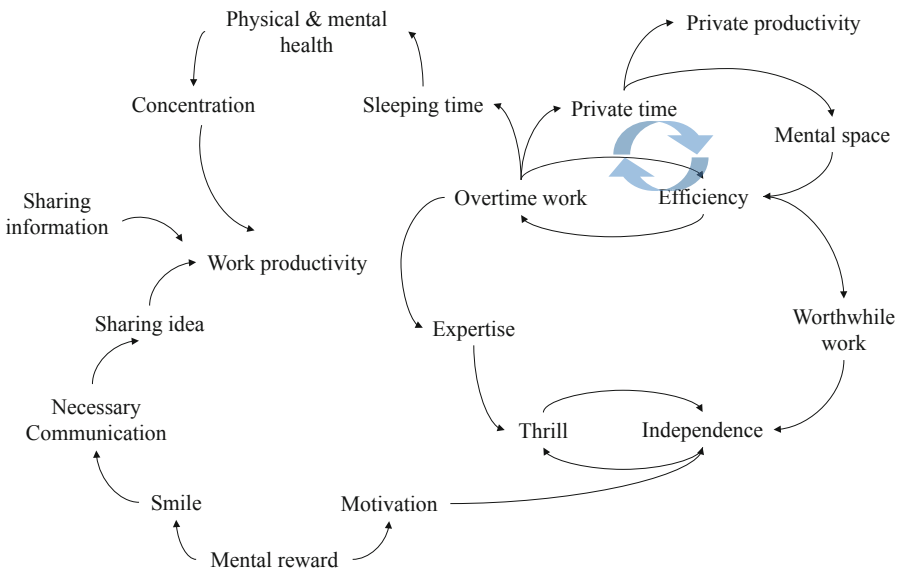


Fig. 5. Causal loop diagram of division B.

5.3 Comparison of Division A and Division B

We compared the causal loop diagrams of divisions A and B to interpret the information contained in the two divisions. Our findings revealed both common categories and different categories.

Common Categories. Three common categories were extracted: physical & mental health, concentration, and communication. Table 4 shows these three categories and the elements they contain.

Table 4. Common categories of division A and B.

Common category	Issues	
	Division A	Division B
Physical & metal health	Sleeping time	Sleeping time Physical & metal health
Concentration	Deciding a time to concentrate Individual concentration Group concentration	Concentration
Communication	Amount of communication Quality of communication Information	Necessary communication Sharing ideas Sharing information

We found a common structure of the workplace: specifically, that good physical & mental health was required as a basis for work, and individual concentration and communication with other employees were important to improve employee well-being and work productivity.

Different Categories. We focused on particular elements excluding common categories from each division’s causal loop diagram. Table 5 shows each different category based on these elements.

Table 5. Different categories of division A and B.

Division A		Division B	
Category	Issues	Category	Issues
Business configuration	Time difference	Motivation	Motivation
	Degree of freedom		Thrill Worthwhile work

We found that the “business configuration” of division A, and the “motivation” of division B, were two distinct categories expressing the characteristics of each division.

6 Discussion

6.1 Theoretical Contribution

In this study, three categories—mental & physical health, communication, and concentration—were extracted from causal loop diagrams designed through workshops. Regarding the problem structure of the workplace, we modeled that individual concentration and communication are achieved on the basis of good physical & mental health.

We compare the existing studies and a result of this study. In a previous study on HRM, Voorde et al. defined organizational performance and employee well-being to include three dimensions: health, relationships and happiness [16]. According to Voorde et al. (2012), because trade-offs among these three dimensions may exist, they have to be examined simultaneously. For example, someone with high job satisfaction (i.e., high happiness) might get too absorbed in their work and put their health at risk because of workaholism.

In this study, we extracted a concept that was synonymous with physical & mental health. In addition, communication was a concept that has a relevant relationship. Individual concentration is a new category uncovered in this study. No category that corresponds to the happiness postulated by Voorde et al. was extracted. Table 6 shows a comparison of the existing theory (i.e., Voorde's three dimensions) and the results of this study.

Table 6. Comparison of existing theory and this study.

Existing theory [16]		This study
Health	=	Physical & mental health
Relationships	≡	Communication
Happiness		
		Concentration

Health/Physical & Mental Health. Because physical & mental health is known as a basic building block of well-being in this field, it comes as no surprise that it was extracted in both the existing theory and this study. Physical & mental health is also included in the definition by WHO [21] and in Maslow's theory [22] of traditional well-being. The results of our study support these, as we found that employees prized their physical & mental health to exercise their abilities and to work with high productivity. The mutual gains perspective as well as the concept of theoretical dimensions were supported by the feedback of employees.

Relationships/Communication. The concept of communication in our study resembles the relationship dimension in the existing theory. According to Grant et al. [23], relationship is the dimension of well-being that emphasizes interactions with other employees or supervisors in the workplace. This dimension is a new idea because the well-being research area has mainly examined the subjective view. Communication is a method used in the construction of relationships.

Improving the quality of communication leads to an increase in trust between employees and supervisors, and consequently to a decrease in organizational cynicism [24]. The issues in the communication category (Table 4) that are relevant to organizational cynicism includes information (i.e., employees cannot share information with colleagues or supervisors (Fig. 4)) and sharing information (i.e., employees cannot

share information with different divisions (Fig. 5)). Our findings indicate a shortage of information about employees. This is important because clear communication among employees and supervisors is essential for a Japanese company to run smoothly. We need to investigate appropriate ways of communicating in order to increase interpersonal well-being and thereby decrease organizational cynicism.

Happiness. Happiness, which was not extracted in this study, is defined as employee satisfaction [9, 25]. In the workshops we conducted, practical factors were extracted rather than abstract concepts such as happiness, presumably because we asked participants to think about factors disturbing their productivity. Solving these practical issues could increase happiness (i.e., employee well-being).

Concentration. Concentration was extracted as a new category of employee well-being. Calvo & Peters's well-being research, which takes the engineering approach and includes not only employees but also general individuals, defines well-being as stemming from nine factors [26], one of which is concentration. In workplaces where IT tools such as Skype and Slack are used, it is possible that employees may communicate too much. Calvo & Peters are concerned about excessive notifications from IT tools that disrupt concentration (i.e., inhibiting focus on a task deeply), while human resource management or traditional organizational theories assume employees always focus on their tasks while they are at work. It is convenient that employees can contact each other anytime and anywhere, but it may be detrimental to their individual concentration. In this study, concentration was extracted as an important category to increase work productivity.

Frameworks for Employee Well-Being. We propose a framework that contributes to employee well-being research based on our comparison of the existing theory and the results of this study (Fig. 6). The proposed framework is based on physical & mental health and examines a balance of communication and concentration. Communication and concentration are complicated because they have a trade-off relation due to restricted time. For example, we need to hold meetings in order to share information and build consensus, but on the other hand, employees cannot concentrate on personal tasks if they are always attending meetings. According to Morrison & Robinson [24], the most effective way to minimize any gap between the perceptions of employees and an organization is communication, meaning that quality of communication has a negative correlation with organizational cynicism. We need to examine the most appropriate communication that enables a balance between the effect on concentration and the decrease in organizational cynicism causing low employee well-being.

It is important to create a service that can promote an appropriate balance between any two things that result in a trade-off, such as communication and concentration. This perspective will be the future work of service research.

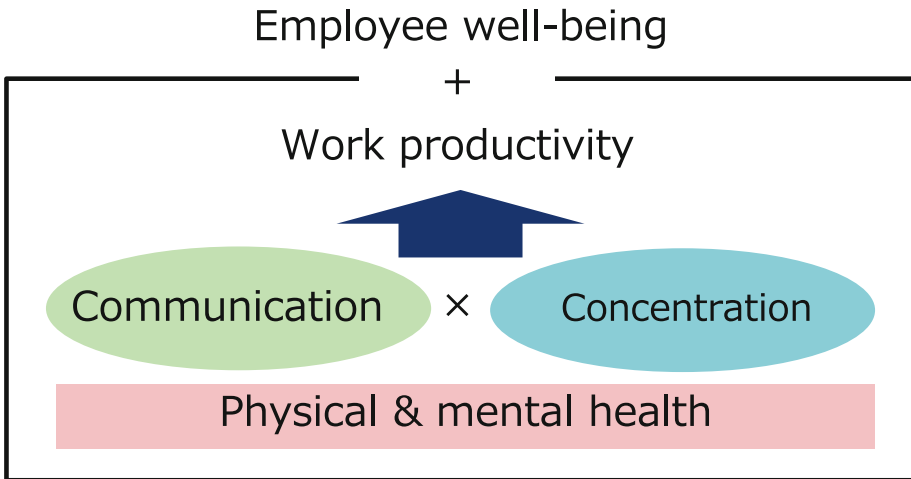


Fig. 6. Framework for employee well-being.

6.2 Practical Contribution

From causal loop diagrams obtained in this study, we were able to identify an intervention point to improve organizational productivity. We propose a specific intervention point for the two divisions we examined based on the problems that appeared in each division's causal loop.

Division A. We focus on the “business with time difference” problem of division A. Employees in division A work with people internationally, so there is often a significant time difference. Thus, they had time constraints on their work and low flexibility, which caused low productivity in both work and life. By making use of options like flextime and telework, they can have more flexibility in terms of both work time and place. Thus, the negative effect on work and private productivity will decrease. For example, if they have a voice meeting at night, they can attend it from home using telework so that they don't need to stay in the office for a long time. In addition, they can shift the next day's work hours by using flextime. This solution can be implemented by using IT tools (for telework) and a flexible personnel system. However, this work style might have a negative effect on physical & mental health and communication among employees. Therefore, a new service that copes with the negative effects accompanying flextime and telework should be provided.

Division B. Next, we explain the particular issue of “motivation” for division B. While motivation is included as one of the factors of well-being [26], in this study, it was not extracted as a common category with division A. It was extracted for division B, meaning that these employees recognize their low motivation as an issue to resolve. Because their work involves supporting other workers in a staff position, it might be that creating meaning in their job is difficult. According to division B's causal loop diagram, they desire to get gratitude for the daily tasks they fulfill. While there are apps that can be used to send messages of gratitude to others (e.g., Unipos [27]) as an

existing service to resolve this problem. This service provides daily interaction to improve short term well-being. Evaluation from supervisor to recognize the progress toward the goal increase the motivation for a given task and longitudinal well-being. Companies may require new services to recognize contributions themselves or to share them within the team.

7 Conclusion

In this study, we clarified the factors that inhibit employee well-being by examining the problem structure of a workplace.

In our theoretical contribution, we identified common categories within two divisions of the same organization. Three categories—physical & mental health, concentration, and communication—were extracted from causal loop diagrams designed by employees through workshops. These problem structures showed that physical & mental health is crucial for employee well-being, and individual concentration and communication are important. In particular, we found that to increase employee well-being, examining the appropriate balance between concentration and communication is key. In the future, it will be necessary to create a service to achieve an appropriate balance between them while considering the inevitable trade-off.

In our practical contribution, we identified distinct categories belonging to the two separate divisions. While existing services can be used to solve the issues particular to each division, it is not enough, and it raises new issues. To effectively increase employee well-being, we need to solve the structural problem by using the framework—physical & mental health, concentration, and communication—and the causal loop diagram visualizing the problem structure of the workplace.

In the future, we will improve the framework of employee well-being presented in this study by means of a qualitative approach (such as interviews and workshops) in addition to a quantitative approach (such as surveys or sensing). Further, in the process to improve the framework, we will investigate the importance of employees and their organization needing to co-create values for employee well-being, and come up with a method to achieve these values.

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