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A Team Performance Measurement by Pulse Survey Results of Corporate Planning Members

Tomiya KIMURA[a,1], Midori SUGIHARA[b], Mayu TAKARAMOTO[a], Masako TORIYA[c] and Tetsuya TOMA[a]
[a] *Graduate School of System Design and Management, Keio University, Yokohama, Japan*
[b] *System Design and Management Research Institute, Keio University, Yokohama, Japan*
[c] *Keio Global Research Institute, Keio University, Tokyo, Japan*

Abstract. A typical company's corporate planning department in Japan, is under the direct control of management, and the majority of its work is to deploy management's instructions within the company rather than to think and act on its own. As a result, members of the corporate planning department, which is supposed to function as the core of the company, have a strong sense of being told to do what they are told, resulting in a sense of stagnation. As a result, the motivation of the members of the Corporate Planning Department declines, and there are concerns about the health hazards associated with this. To solve these problems, we introduced on-on-one meeting, education and training, and behavior change initiatives to increase the motivation of the members of the Corporate Planning Department. We measured members' motivation by conducting a pulse survey after each initiative, calculated the effectiveness of each initiative, and used a Monte Carlo simulation to determine the most effective way to order the initiatives. According to the results of the pulse survey, when corporate planning team members are forced by their supervisors to follow a one-on-one meeting policy, their performance generally worsens; however, they may be easily influenced by their management philosophy, and other indicators may increase. And from the results of the simulation, a one-on-one meeting does not appear to have an effect if started early in the organization's formation. By contrast, conducting a one-on-one meeting after an ice breaker, such as behavior change or education, in which members collaborate with each other, is considered effective. However, it was found that the effect gradually became the same as the number of simulations increased.

Keywords. Team Performance Measurement, Behavior change, Employee engagement, Motivation, Monte Carlo simulation

Introduction

Currently, all companies are trying to increase the work motivation of their employees. Work motivation has been studied in the past, as evidenced by Maslow's Hierarchy of

[1] Corresponding Author.

Needs [1] and Bloom's Expectancy Theory [2]. The following is a list of the most common reasons for an increase in the number of employees. Other well-known studies on work motivation include Herzberg's "two-factor theory" [3] and Deci's "theoretical evaluation theory." [4] This study focused on the motivation of employees in a typical company.

According to Stowe, there are two types of motivation—intrinsic and extrinsic [5]. Ramlall describes how intrinsic and extrinsic motivation are both involved in increasing employee performance[6]. Work motivation, in the meantime, includes three components: direction, strength, and persistence [7][8]. Direction refers to the clarity of why and how goals will be achieved; strength refers to the level of effort and awareness needed to realize goals; persistence refers to the amount of time and continuity spent in pursuing and realizing goals [9].

Organizational performance is influenced by a variety of factors, including expenses, working environment, human relations, and especially, human resources [10]. Consequently, organizations are faced with the complex challenge of considering all these factors to motivate their employees.

According to Lindner, the most difficult task for managers is motivating subordinates [11][12]. He also stated that work motivation is greatly influenced by the work environment [13]. Companies refer to work motivation considering young adults [14][15]. As tenure and experience in a company increases, motivational situations become more complex and intricate, and individuals may respond with adjusted motivations based on their job and role [16][17].

Motivation has been discussed in several industries. Improving work motivation in healthcare settings is more effective with behavior change, which has been tested using healthcare and health promotion [18][19][20]. There are also studies in which exercise behavior was changed by implementing various interventions, such as counseling and behavioral science approaches [21][22][23].

In addition, one-on-one meetings are considered more effective in increasing work motivation than company town hall meetings or plenary sessions [24].

Barrick et al. developed a work motivation scale based on the standard definitions of achievement including achievement-oriented, competition-oriented, and cooperation-oriented motivation. The scale also included direction, intensity, and persistence, aiming to measure dynamic aspects [25]. Others measured the degree of internalization regarding work motivation in terms of the degree of self-determination [26].

However, while various quantitative studies have measured work motivation measures, there is little quantitative research on the extent to which the initiatives put in place to increase work motivation are realized.

Organizations are always considering various ways to increase work motivation; however, they are not always effective. In particular, the corporate planning team, which is directly connected to the top management of a company, is tasked with deploying unilateral instructions from management throughout the company. Consequently, a large part of their job is to pass on instructions, regardless of their own intentions. In addition, these members have low work motivation due to complaints from the ones they gave the instructions to. Although the members of the corporate planning team are excellent and motivated, the above situation causes a sense of stagnation among them, which is spread throughout the organization resulting in employees losing motivation for their work and an increase in health problems; thus, such a scenario is concerning.

This study aims to examine the effects of one-on-one meetings, education and training, and behavior change as measures to increase the work motivation of

management planning team members. The results of a survey on the effectiveness of these measures and effects of the measures on the objective is to verify and simulate which order is most effective.

1. Research Methodology

We conducted icebreakers, one-on-one meetings, and education and training for corporate planning team members of 9 people, and behavior change for new members after the reorganization. We conducted a pulse survey every six months to observe the results. All 9 members answered all questions.

The flow was as follows: when a new member joined as part of reorganization, we conducted a pulse survey to measure their motivation at the start of the process and get a baseline reading. (STEP 1) Next, we held self-introductions and lunch meetings over a period of six months as ice breakers. Subsequently, we conducted a pulse survey at the end of this period and obtained the results. (STEP 2) Next, we initiated a one-on-one meeting with key staff and subordinates. Subsequently, we conducted a pulse survey again and obtained the results. (STEP 3) We made members of the department aware about the work being done in various departments within the company, what was being discussed in other countries and related to corporate planning, and how to manufacture products. (STEP 4) All members participated in a walking rally conducted by the company's health insurance association and implemented a behavior change in which they reported daily on how much they had walked. Subsequently, a pulse survey was conducted again, and the results were obtained (Figure 1).

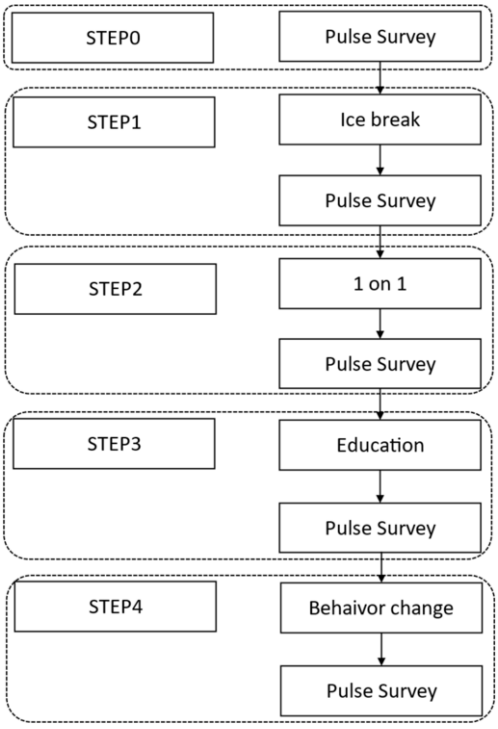

Figure 1. Initiatives and Pulse Survey Steps.

Based on the results, we identified which initiative was most effective and conducted simulations to determine the effect of changing the order of each initiative and the effect of repetition. What is the degree of influence of the order of each initiative? Then, if the degree of influence is known, the effect can be maximized by changing the order of future Initiatives. If we know whether the degree of influence of each Initiative converges or diverges significantly when the initiatives are repeated many times, we will be able to determine the best cycle to repeat the initiatives.

The schedule was from March 2020 to November 2021, with pulse surveys conducted in May 2020, November 2020, May 2021, and November 2021, during which Steps 1–4 were conducted (Figure 2).

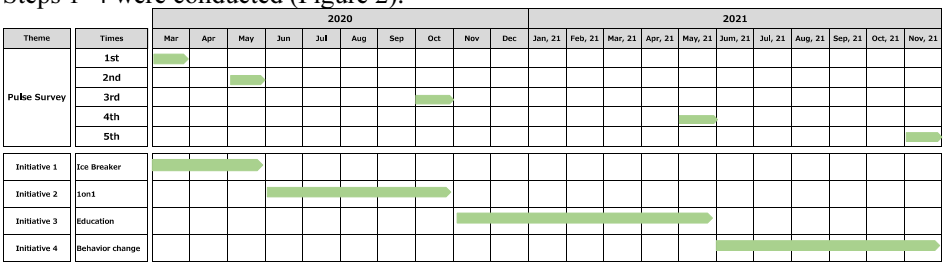

Figure 2. Schedule of initiative and Pulse Survey Steps.

The pulse survey had 26 questions, categorized as job, personal growth, health, support, relationships, approval, philosophy strategy, organizational climate, and environment (Table 1).

Table 1. Pulse Survey Questionnairese.

Main item	Sub item
professional duties	being worth doing
	discretion
self-growth	accomplishment
	growth opportunity
Health	workload
	Stress reaction
Support	Job support
	Support for personal growth
	Clarification of mission and goals
	Support from colleagues in times of difficulty
interpersonal relationships	Relationship with the supervisor
	Relationships with workmates
Approval	Approval of results
	Approval of remarks and opinions
	Conviction in evaluation
Philosophy and Strategy	Empathy with the mission and vision
	Conviction of the company's policies and business strategies
	Trust in the management team
	Pride in the business or service
organizational culture	Provide career opportunities
	A culture of challenge
	Interdepartmental cooperation
	Relevance to Praise
Environment	Satisfaction with the work environment
	Work-Life Balance
	Satisfaction with salary

2. Pulse Survey Results

The results of the pulse survey conducted at each step are shown in Figure 3. Interpersonal relationships and support were high, whereas self-growth, health, and organizational culture were low. The overall trend is up from 1st to 2nd, down from 2nd to 3rd, and up from 3rd to 5th. The score changes and percentage changes are shown in Figure 4. The score changes are the percentage change from the prior implementation.

Looking at the rate of change, from the 1st survey to the 2nd, everything except health increased; from the 2nd survey to the 3rd, everything except self-growth, philosophy, and strategy decreased. From the 3rd survey to the 5th, all areas except philosophy and strategy increased.

The rate of change was up 9% from the 1st to the 2nd survey, 5% from the 2nd to the 3rd survey, and 7% from the 3rd to the 5th survey. Although a detailed examination of each item will show what was and was not effective for each initiative, currently, we shall look at the macroscopic calculation.

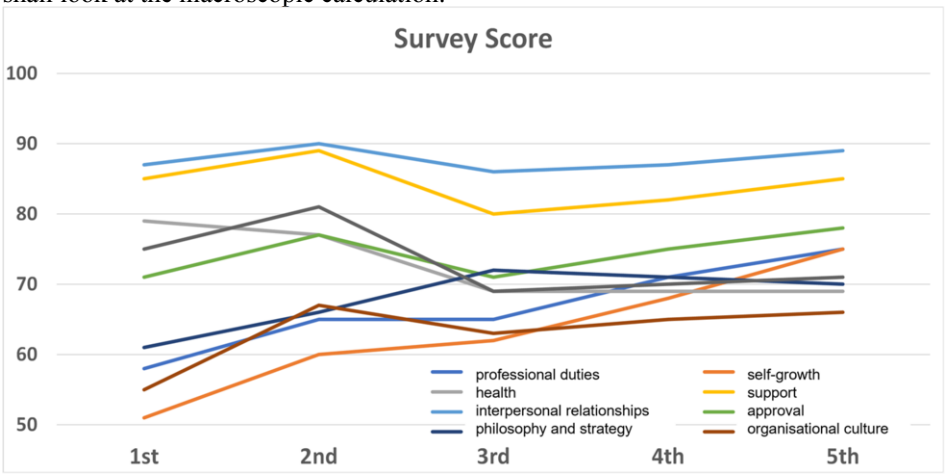

Figure 3. Pulse Survey score.

		1st vs.2nd		2nd vs. 3rd		3rd vs. 4th		4th vs. 5th	
#	Item	Comparison	%	Comparison	%	Comparison	%	Comparison	%
1	professional duties	7	12%	0	0%	6	9%	4	6%
2	self-growth	9	18%	2	3%	6	10%	7	10%
3	health	-2	-3%	-8	-10%	0	0%	0	0%
4	support	4	5%	-9	-10%	2	2%	3	4%
5	interpersonal relationships	3	3%	-4	-4%	1	1%	2	2%
6	approval	6	8%	-6	-8%	4	6%	3	4%
7	philosophy and strategy	5	8%	6	9%	-1	-1%	-1	-1%
8	organizational culture	12	22%	-4	-6%	2	3%	1	2%
9	environment	6	8%	-12	-15%	1	1%	1	1%
		Ave.	9%	Ave.	-5%	Ave.	4%	Ave.	3%

Figure 4. Pulse Survey Results.

3. Simulation Model

As shown in the results of Figure 3, the numerical values of each item were found to change depending on the initiative implemented at each step, and from these results, the effects are modelled with methods used in previously simulations of management organizations[27].

- Sk：Total Survey Scores
  Survey score after each initiative. The possible range is 0– 100.
- c(i)：Attribute information for each agent i
  The parameter values are capability and Motivation, where capability is the hourly rate and Motivation is the actual number of hours worked.

Motivation ranges from 100– 320, based on the results of the members, and reflects the results of the survey, which showed that working hours increase as motivation increased. Capability ranges from 3,000– 8,000 for members and from 5,000– 12,000 for managers.

The relationship between Trust in the management team and motivation is represented by the graph in Figure 5, which is set up shows that better Trust in the management team increase motivation and lower results decreased motivation. The organization of corporate planning is shown in Figure 6, with a department head above at the top of each manager. Using the above parameters, the evaluation method for the simulation is as follows.:

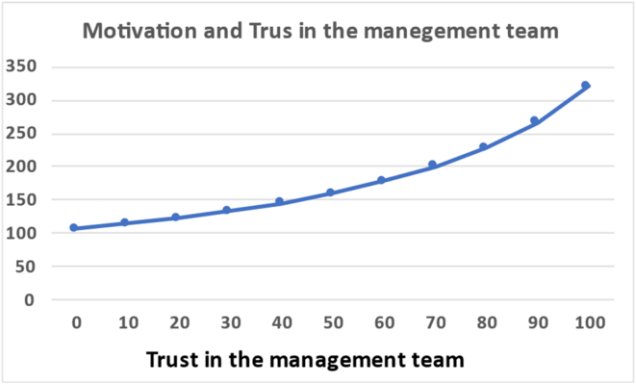

Figure 5. Organization.

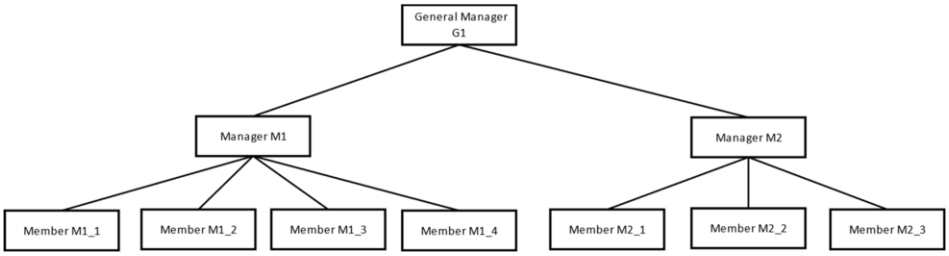

Figure 6. Organization.

Step1：Impact of the survey results of the Survey after the first initiative (ice breakers) on each member.

The equation for the effect of the result (Sk1) on motivation after the first initiative (ice breakers) is as follows.:

$$c(i)' = \frac{c\,(i) \times 100}{50 + (100 - Sk1)}$$

Step2：Motivation after an agent receives some initiatives from an agent.

$$c(i)'' = \frac{c(i)' \times 100}{50 + (100 - Sk2)}$$

Step3 : The motivation c(i)" calculated in Step 2 is subtracted from the initial c(i) and used as the adjustment value.

Adjusted value: $c(i)''' = \{c(i)'' - C(i)\}$

Step4 : It is assumed that the effect of the initiative will increase the later it is implemented,, and that the curve will be similar to the motivation graph. The motivation for each step is defined as the average of this effect and the rate of change in the survey results, multiplied by the adjustment value c(i)''' calculated in Step 3, and subtracted from the initial value c(i)".

$Step - by - step\ motivation\ differences \quad c(i)'''' = (c(i) - c(i)''') \times Av$

Step 5 : The adjustment value c(i)''' calculated in Steps 3 and Step 4, plus the motivation difference c(i)'''' for each step, is the total motivation after that initiative.

Motivation after initiative: $c(i)after = c(i)''' + C(i)''''$

Steps 1– 5 above are sequentially inserted for each initiative; if the initiative continues, the motivation c(i) after the initiative is the initial value for the next initiative.

4. Simulation Result

The following scenario should be added to the simulation. Fix the ice breaker at the beginning of the initiative. Simulate how the final motivation changes by changing the order of other initiatives.

・Capability is set to zero because the general manager does not perform any work.

The default values for each participant are listed in Table 2. The total motivation held by the organization was set to 9,360,000.

Table 2. Missing quantity.

Agent	Capability	Contribution
G1	0	0
M1	11,000	1,760,000
M1_1	7,000	1,120,000
M1_2	5,000	800,000
M1_3	4,000	640,000
M1_4	3,500	560,000
M2	10,000	1,600,000
M2_1	8,000	1,280,000
M2_2	6,000	960,000
M2_3	4,000	640,000
	TTL	9,360,000

Monte Carlo simulations were performed 5000 times using these scenarios and parameters. Simulations were performed with the following six patterns(Table 3). The results of simulations run for each pattern are shown in Figures 7 – 12 and Table 4.

Table 3. 6 Pattern.

Pattern	1st	2nd	3rd	4th
1	Ice breaker	One-on-one meeting	Education	Behavior change
2	Ice breaker	Education	One-on-one meeting	Behavior change
3	Ice breaker	Education	Behavior change	One-on-one meeting
4	Ice breaker	Behavior change	Education	One-on-one meeting
5	Ice breaker	Behavior change	One-on-one meeting	Education
6	Ice breaker	One-on-one meeting	Behavior change	Education

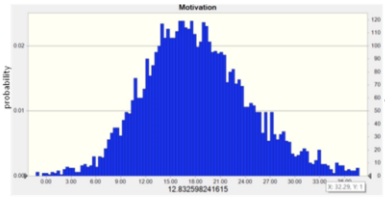

Figure 7. Pattern 1.

Figure 8. Pattern 2.

Figure 9. Pattern 3.

Figure 10. Pattern 4.

Figure 11. Pattern 5.

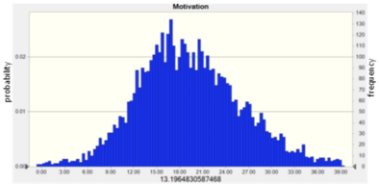

Figure 12. Pattern 6.

Table 4. 6 Probability index.

	Pattern					
	1	2	3	4	5	6
Base case	12.83	13.30	12.94	13.38	13.55	13.20
Average	18.30	19.30	19.10	19.08	19.79	19.19
Median	17.89	18.81	18.61	18.27	19.40	18.69
SD	7.08	7.09	7.27	7.17	7.28	6.90
Dispersion	50.09	50.22	52.78	51.35	52.98	47.62

5. Discussion and Conclusion

According to the results of the survey, when corporate planning team members are forced by their supervisors to follow a one-on-one meeting policy, their performance generally worsens. However, they may be easily influenced by their management philosophy, and other indicators may increase. Since the corporate planning member consists of the best people in the company, they understand the company's policies, such as the management philosophy, as they go about their work, which is thought to be reflected in the result that they are influenced by the company's philosophy. In fact, after implementing a one-on-one meeting, education and behavior change were implemented, and the results were in line with the ice breaker figures, suggesting that implementing a one-on-one meeting early in the organization is unlikely to be effective for corporate planning team members.

In addition, from the results of the simulation, a one-on-one meeting does not appear to have an effect if started early in the organization's formation. By contrast, conducting a one-on-one meeting after an ice breaker, such as behavior change or education, in which members collaborate with each other, is considered effective. However, it was found that the effect gradually became the same as the number of simulations increased. Another reason why 1-on-1 meetings are not effective in the early stages is that corporate planning member are required to make many demands from the management level, and superiors may use 1-on-1 meetings to implement these demands to their subordinates, thereby lowering the motivation of their subordinates. For subordinates, they think that their superior understands their suffering, but instead of empathizing with their suffering in the 1-on-1 meetings, they are conveying the demands from the management layer directly to their subordinates, which may be lowering their motivation.

In this study, we used the survey and simulation results to examine the effects of changing the order of initiatives for members of the corporate planning team. Issues that need to be addressed in the future are the addition of one-on-one meetings influenced by the supervisor-subordinate relationship and differences between survey and simulation results due to the increase in sample size.

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