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An Empirical Analysis of Cultural Intelligence, Narcissism, and Export Firm Performance in Japan

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Abstract

Metacognitive cultural intelligence (CQ) monitors and objectively controls cognitive processes, and may affect the narcissism of Japanese export managers. This study conducted an empirical analysis, using data collected from small- and medium-sized enterprises in Japan, to examine the hitherto unexplored relationship between CQ, narcissism, and export firm performance. The findings suggest that narcissism moderates the relationship between metacognitive CQ and performance prediction. In addition, motivational CQ—moderated by metacognitive CQ, cognitive CQ, and narcissism—affects export firm performance and performance prediction.

Keywords:

Cultural Intelligence, Narcissism, Firm Performance, Japan

(1) Introduction

Globalization has increased the number of foreign tourists and workers, which affects both export firms that conduct cross-border business and those that mainly conduct business domestically. In this situation, firms must be mindful of cultural differences. Managers need to develop the skills and capabilities necessary to understand and adapt to other cultures.

The concept of cultural intelligence (CQ), introduced by Earley (2002), can be used to recognize the importance of cultural understanding. CQ “refers to a person’s capability to adapt effectively to new cultural contexts” (Earley and Ang, 2003, p.59). CQ

focuses on an individual’s cognitive skills, motivation, and cultural adaptation behavior. Earley and Ang (2003) identified CQ as a multifactor concept that includes metacognition, cognition, motivational, and behavioral factors. Empirical findings have indicated a relationship between the facets of CQ and psychological factors: Big five (Ang et al., 2006) and self-efficacy (Hu et al., 2018; Rehg et al., 2012).

This study proposes that CQ is related to the narcissism of Japanese export managers, who determine the course of business. Narcissism mainly refers to our feelings about ourselves, including self-esteem and self-

admiration¹. Managers with high levels of narcissism often disrupt teamwork and impair the overall performance of the export firm (Judge et al., 2009; Resick et al., 2009). Metacognitive CQ, which monitors and controls the cognitive process, can be used to restrain one's level of narcissism, thereby improving export performance.

Previous research on CQ (Bücker et al., 2014; Elenkov and Manev, 2009; Magnusson et al., 2013) and narcissism (Chatterjee and Hambrick, 2007; Wales et al., 2013) has focused on managers and other senior management members. However, no study has examined the relationship between the CQ and the narcissism of export managers, or how this relationship affects export performance. This study conducts an empirical analysis to examine this relationship and its effects.

This study applies the trait theory of leadership (Geiser, 1967; Judge et al., 2002; Kirkpatrick and Locke, 1991), which considers the behavior of the leader of an organization, to two personality traits of export managers: CQ and narcissism.

This study makes several contributions to research on international business and narcissism, which are relevant to management. First, this study uses empirical analysis to further investigate the effect of CQ on export performance. Previous studies on CQ focused on the relationship between individual traits and CQ (Ward and Fischer, 2008; Huff et al., 2014; Hu et al., 2018). Previous studies on narcissism in business

management did not focus on CQ, though studies have examined the relationship between CEO narcissism and business performance (Chatterjee and Hambrick, 2007; Wales et al., 2013). The present study proposes a new perspective of CQ to deepen our understanding of the relationship between CQ and narcissism in a business management context.

This paper first presents a theoretical background of CQ and narcissism to develop the hypotheses. Second, it presents the method of analysis used to test the hypotheses, and the results. Finally, it discusses the implications of the findings.

(2) Theoretical background and hypotheses

1. CQ

CQ is a multidimensional concept that includes metacognition, cognition, motivation, and behavior. According to Ang and Dyne (2008), who defined the four facets of CQ, metacognitive CQ refers to “the individual's level of conscious cultural awareness during cross-cultural interactions” (p.5); cognitive CQ reflects “knowledge of norms, practices, and conventions in different cultures that has been acquired from educational and personal experiences” (p.5); motivational CQ reflects “the capability to direct attention and energy toward learning about and functioning in situations characterized by cultural differences” (p.6); and behavioral CQ reflects “the capability to exhibit appropriate verbal and nonverbal actions when interacting with people from different cultures” (p.6).

¹ In this study, narcissism does not mean a pathological condition.

Empirical studies of CQ and business have indicated that the four facets of CQ are positively associated with short-term business travel, the need to control a situation, and international non-work experiences (Tarique and Takeuchi, 2008; Tay et al., 2008).

Thomas et al. (2015) developed another conceptual model of CQ that included three facets: knowledge, metacognition, and skills. These facets respectively correspond to cognitive CQ, metacognitive CQ, and behavioral CQ, as defined by Ang and Dyne (2008). However, Thomas et al.'s model does not include a facet that corresponds Ang and Dyne's (2008) motivational CQ because, "motivation and intelligence may have a limited recursive relationship" (Thomas et al., 2015, p.1100). The facets of CQ as outlined by Thomas et al. (2015) may have reliability issues. The authors operationalized the three facets based on very few questions: 2 questions on knowledge, 5 questions on skills, and 3 questions on metacognition. Consequently, the model's reliability index of Cronbach's α is low, which is problematic (Soga, 2019).

Therefore, this study adopts the CQ model introduced by Earley and Ang (2003) because it has been used in many previous studies. Earley and Ang (2003) used 20 questions to identify the facets of CQ: 4 questions on metacognitive CQ, 6 questions on cognitive CQ, 5 questions on motivational CQ, and 5 questions on behavioral CQ (Ang et al., 2007). Thus, they did not have a reliability problem.

Prior studies have shown the effects of the four CQ facets, as defined in the Earley and Ang (2003) model, on business

management. Bückner et al. (2014) analyzed the effect of CQ on communication effectiveness and job satisfaction in a sample of Chinese managers working in multinational enterprises. The results indicated that CQ enhances communication effectiveness and job satisfaction. In addition, Magnusson et al. (2013) used data from US exporting firms to examine the influence of CQ on marketing mix adaptation and export performance. Their study revealed that metacognitive CQ moderates the relationship between marketing mix adaptation and export performance, and motivational CQ moderates the relationship between environmental differences and marketing mix adaptation. Based on these studies, CQ has a positive effect on business management and firm performance.

2. Narcissism

Narcissism originates from the Greek myth of Narcissus, a beautiful young man who fell in love with his reflection in water. Sigmund Freud (1914-1957) used narcissism as a term to describe a personality disorder, based on this myth. In the social sciences, narcissism is used to refer to our feelings about ourselves, including self-esteem and self-admiration.

Narcissism has both positive and negative effects. Lubit (2002) suggested that narcissism could be healthy (positive) or destructive (negative). Healthy narcissism reflects reality and results in self-confidence. Destructive narcissism causes grandiose thinking and the devaluation and exploitation of others. In addition, destructive narcissism involves "the need to be admired,

self-glorification, taking credit for the work of others, repressive control, critical and devaluing behavior, envy, lack of empathy, and lack of insight” (Lubit, 2002, p.132).

Previous studies have developed scales to measure narcissism. Raskin and Terry (1988) conducted an empirical analysis of items in the Narcissistic Personality Inventory (NPI) and identified 7 components of narcissism: authority, exhibitionism, superiority, vanity, exploitative, entitlement, and self-sufficiency. In addition, Resick et al. (2009) used 8 characteristics—arrogant, assertive, boastful, conceited, egotistical, self-centered, show-off, and temperamental—to measure the narcissism of CEOs.

Using these measures, empirical research has elucidated how narcissism affects business management. Namely, narcissism detracts from the use of contingent reward leadership because a narcissistic person has little concern for others (Resick et al., 2009). Further, the narcissism of a leader affects firm performance. Chatterjee and Hambrick (2007) examined the relationship between the narcissistic tendencies of CEOs and firm performance; the results of their empirical analysis revealed that when a firm’s CEO had narcissistic tendencies, the firm’s performance was either higher or lower than the average. Wales et al. (2013) also analyzed this relationship, revealing that the narcissism of CEOs affects the variance of firm performance, and that entrepreneurial orientation has a moderating effect on this relationship.

3. Hypotheses

Metacognitive CQ is related to cognitive

CQ. Flavell (1979), who introduced the concept of metacognition, defined the term as reflecting on one’s own thinking. Nelson and Narens (1990) explained metacognition by splitting the cognitive process into two levels: object-level and meta-level. The meta-level cognitive process uses experience and knowledge to monitor and control the object-level cognitive process. This results in an objective understanding of one’s own cognitive process. Metacognition can be used to avoid narcissistic qualities, such as overconfidence, overestimation, and higher self-esteem. The following hypotheses are proposed:

Hypothesis 1a: Metacognitive CQ is positively associated with cognitive CQ.

Hypothesis 1b: Metacognitive CQ is positively associated with narcissism.

Narcissism affects motivation. According to Foster and Trimm (2008), narcissism has a weak impact on the motivation to avoid negative outcomes but a strong impact on the motivation to attain desirable outcomes. An empirical analysis by Brunell et al. (2014), however, which focused on volunteer motivation, identified no relationship between narcissism and motivation. This is likely because narcissists do not typically practice selfless acts such as volunteering. In other words, narcissists are motivated by outcomes related to success and reputation, and volunteering does not provide those outcomes. This study examined motivational CQ in the context of jobs that yield desirable outcomes. The following hypothesis is

proposed:

Hypothesis 2: Narcissism is positively associated with motivational CQ.

Expertise enhances the motivation to develop skills and accumulate knowledge. Individuals with expertise have the desire to utilize their skills. Tsuji and Yoshikane (2010) investigated the relationship between expertise and work motivation among library employees in Japan. The results indicated that employees with a librarian license had higher motivation than those without it. Similarly, export managers who had familiarity with different cultures had a high motivation to communicate with individuals from different cultures. Therefore, Hypothesis 3 is proposed:

Hypothesis 3: Cognitive CQ is positively associated with motivational CQ.

Narcissism of the company leader is associated with firm performance. According to previous studies, narcissism results in extreme (higher or lower than average) firm performance (Chatterjee and Hambrick, 2007; Wales et al., 2013). Narcissists also tend to overestimate their performance, intelligence, and attractiveness (Buffardi and Campbell, 2008; Farwell and Wohlwend-Lloyd, 1998; Gabriel et al., 1994). Therefore, the following hypotheses are proposed:

Hypothesis 4a: Narcissism is positively associated with export performance.

Hypothesis 4b: Narcissism is negatively

associated with the accuracy of export performance prediction.

Motivation is one of the important factors in organization behavior. Grant (2008) classified motivation as intrinsic and prosocial to analyze the relationship between motivation and job performance. The results suggested that motivation does not affect performance; however, the interaction between intrinsic and prosocial motivation has a significant effect on job performance. In addition, Barrick et al. (2002) classified motivation into communication striving, accomplishment, and status striving to analyze the moderating effect of motivation on the relationship between personality and job performance. Their findings suggested that communication striving, accomplishment, and status striving had a significant effect on job performance. Thus, motivational CQ enhances export performance. If export managers' motivation leads to good performance, their prediction of performance will also improve. Therefore, the following hypotheses are proposed:

Hypothesis 5a: Motivational CQ is positively associated with performance.

Hypothesis 5b: Motivational CQ is positively associated with the accuracy of export performance prediction.

(3) Analysis

1. Method

To test these hypotheses, partial least squares structural equation modeling (PLS-SEM), using SmartPLS 3.2.7, was employed.

This technique is used to conduct factor analysis, path analysis, and regressions (Charoensukmongkol, 2016). PLS-SEM can be applied when the sample size is small, compared with covariance-based structural equation modeling (CB-SEM), which has the same objective as PLS-SEM (Rigdon et al., 2017).

2. Samples

Data were collected from February to April 2018. Information on 2,342 Japanese small- and medium-sized enterprises (SMEs) was extracted from the databases of TSR Kigyo Joho File and Kaigai Sinshutsu Kigyo Soran². Questionnaires were mailed to the enterprise leaders responsible for the international business of these SMEs; 67 usable questionnaires were returned. The leaders in the usable sample have international experience. The average time these leaders engaged in export was 25.8 years. In addition; the average time they were engaged in business in a foreign country was 18.7 years.

3. Measures

CQ items in this study were adopted from the 20-item CQ scale (CQS) (Ang et al., 2007): metacognitive CQ = 4 items; cognitive CQ = 6 items; motivational CQ = 5 items; and behavioral CQ = 5 items. In addition, confidence was measured according to the definition of superiority index in the Japanese NPI (Konishi et al., 2006). These items were measured on a 7-point Likert scale (1 =

strongly disagree, 7 = strongly agree).

Furthermore, export sale information was obtained to measure export performance. We calculated the accuracy of export performance prediction based on the difference between the firm leader's forecast and actual export sales; for example, if the forecasted sales were 10% higher than the actual export sales, the respondent wrote - 10% in the questionnaire.

Missing values were replaced with average values.

(4) Results

1. Measurement of model evaluation

Before the PLS estimation, tests were used to evaluate the model and confirm the reliability and validity of all latent variables. The test of common method variance was conducted; single respondents were asked questions about the three CQ facets and narcissism. Harman's single factor test and exploratory factor analysis of the three CQ facets and narcissism revealed five factors with an eigenvalue greater than 1.0. The contribution rate of the first factor was 40.246%. Thus, the common method variance is not confirmed in this study.

Second, three measures of construct reliability were conducted: Cronbach's α coefficient, RhoA coefficient, and composite reliability coefficient. The minimum value of these coefficients was greater than .70, which is a widely recommended value (see Table 1). Therefore, the model of this study meets the criterion of reliability.

² Questionnaires were filtered based on capital and number of employees. However, they were not filter for type of industry specialization.

Third, the test of convergent and discriminant validity was conducted. The average variance extracted (AVE) was measured, and the square root of the AVE was compared with the correlation coefficient. The minimum value of the AVE was greater than .50, which is the cut-off point suggested by Fornell and Larcker (1981) (see Table 1). The square root ranged from 0.749 to 0.881 (see Table 2). Each of these values was higher than the correlations between them and the other latent variables. These results showed that the model of this study has a high level of validity.

Fourth, the outer loading was checked to test the effects of the variables on the construct. All outer loadings were greater than .50, which is the criteria suggested by Hair et al. (2017).

These results showed the reliability and validity of the construct of this study.

2. Results of empirical analysis

The variance inflation factor (VIF) was measured to test the presence of multicollinearity. The maximum value of the VIF in the inner model was 1.230. As the value was less than 5, the suggested criteria by Hair et al. (2017), the problem of multicollinearity is not confirmed.

The bootstrap method was used to estimate the path coefficient and test the hypotheses (see Table 3). The result of the PLS analysis confirmed a positive and significant relationship between metacognitive CQ and cognitive CQ ($f^2 = 0.315$, $\beta = 0.489$, $p < .001$), and metacognitive CQ and narcissism ($f^2 = 0.284$, $\beta = 0.470$, $p < .001$). Consequently, H1a and H1b are supported.

The results also confirmed a positive and significant relationship between narcissism and motivational CQ ($f^2 = 0.068$, $\beta = 0.223$, $p < .05$), and cognitive CQ and motivational CQ ($f^2 = 0.343$, $\beta = 0.502$, $p < .001$). Thus, H2 and H3 are supported. The result indicated a positive, but not significant relationship between narcissism and performance ($f^2 = 0.027$, $\beta = 0.175$, $p > .10$). However, narcissism had a significantly negative effect on export performance prediction ($f^2 = 0.043$, $\beta = -0.21$, $p < .01$). H4a is not supported, but H4b is supported. Motivational CQ had a significant negative effect on performance ($f^2 = 0.075$, $\beta = -0.293$, $p < .05$), so H5a is not supported. On the other hand, motivational CQ had a significant positive effect on export performance prediction ($f^2 = 0.083$, $\beta = 0.306$, $p < .05$), which supported H5b.

R^2 and Q^2 were used to measure the predictive accuracy and relevance of the study. R^2 explains the level of the endogenous variable compared to the exogenous variable. Q^2 shows the prediction level of the model. The R^2 values of cognitive CQ, motivational CQ, and narcissism were greater than 0.25, but those of performance and export performance prediction were less than 0.25. This suggests a weak predictive accuracy of cognitive CQ, motivational CQ, and narcissism. The Q^2 values of cognitive CQ, motivational CQ, and narcissism were greater than 0.12, but those of performance and export performance prediction were 0.056 and 0.041 respectively. This study had a Q^2 value greater than 0, which indicates that this model has a high predictive relevance.

Table 1 Cronbach's α , Rho_A, composite reliability, and average variance extracted

METACQ:	metacognitive	CQ;	COGCQ:	cognitive	C	
	METACQ	COGCQ	MOTICQ	NAR	PER	PER_PRE
Cronbach's α	.740	.942	.918	.891	1.000	1.000
Rho _A	.738	.944	.935	.916	1.000	1.000
Composite reliability	.835	.954	.939	.914	1.000	1.000
Average variance extracted	.561	.776	.756	.577	1.000	1.000

Q; MOTICQ: motivational CQ; NAR: narcissism; PER: performance; PER_PRE: performance prediction

Table 2 Correlation and square root of AVEs

	METACQ	COGCQ	MOTICQ	NAR	PER	PER_PRE
METACQ	.881					
COGCQ	.489	.749				
MOTICQ	.322	.595	.870			
NAR	.470	.418	.433	.759		
PER	.046	-.026	-.217	.048	1.000	
PER_PRE	.036	.071	.211	-.088	-.041	1.000

METACQ: metacognitive CQ; COGCQ: cognitive CQ; MOTICQ: motivational CQ; NAR: narcissism; PER: performance; PER_PRE: performance prediction

Table 3 PLS-SEM path coefficient

Hypothesis	Path	Coefficient	f ²
H1a	metacognitive CQ → cognitive CQ	0.489**	0.315
H1b	metacognitive CQ → narcissism	0.470**	0.284
H2	narcissism → motivational CQ	0.223*	0.068
H3	cognitive CQ → motivational CQ	0.502**	0.343
H4a	narcissism → performance	0.175	0.027
H4b	narcissism → performance prediction	− 0.221 †	0.043
H5a	motivational CQ → performance	− 0.293*	0.075
H5b	motivational CQ → performance prediction	0.306*	0.083

† $p < 0.1$, * $p < .05$, ** $p < .01$

(5) Discussion

The results of this study show that the metacognitive CQ of export managers affects their cognitive CQ. This supports the findings of Flavell (1979), and Nelson and Narens (1990), which suggested that metacognition monitors and controls cognitive process. Metacognitive CQ encourages leaders to obtain more knowledge about different cultures when their knowledge is lacking. The metacognitive CQ of export managers has a significant positive effect on their narcissism. This is attributed to the level of self-esteem among Japanese people. Previous studies have indicated that Japanese people have lower self-esteem compared to other nationalities (Feather and McKee, 1993; Kobayashi and Brown, 2003; Schmitt and Allik, 2005; Yamaguchi et al., 2007). Japanese people tend to underestimate themselves. In the Japanese context, metacognitive CQ does reduce the level of self-esteem in general, but it improves the self-esteem of export managers to the appropriate level, which is neither too high nor too low.

The narcissism of export managers enhances motivational CQ. Brunell et al. (2014) analyzed the relationship between narcissism and the motivation to volunteer. They did not confirm whether narcissism significantly enhanced motivation. In the context of their analysis, narcissists did not have positive feelings towards volunteering, because volunteering does not provide the honor and fame that narcissists wish to attain. However, the results of the present study, which investigated the effect of motivational CQ, elucidated a significant relationship between narcissism and motivation. This is

because motivational CQ is relevant to narcissists' ability to achieve job success and reputation. This is an important new implication for the relationship between narcissism and motivation.

The analysis conducted in the present study shows that cognitive CQ has a positive effect on motivational CQ. This implies that motivational CQ should be included as a facet of CQ. Although Thomas et al. (2015) suggested that the facet of motivation should be excluded from CQ measures, the results of the present study, which highlighted the relationship between motivational and cognitive CQ, suggest that it is better to include motivation as a facet.

The results of this study further indicate that narcissism significantly affects performance prediction, but not actual performance. Previous studies have suggested that the narcissism of a leader results in extreme performance (Chatterjee and Hambrick, 2007; Wales et al., 2013), but those studies did not consider the relationship between narcissism and export performance, which has not been confirmed. The narcissism of export managers provides both positive and negative aspects to their export performance. The present study shows that narcissism has a negative effect on performance prediction. Narcissism causes export managers to overestimate the firm's future performance. It is critical that researchers who explore the role of narcissism in business management investigate the prediction of firm performance in addition to actual performance.

This analysis shows that, in export firms, motivational CQ negatively affects actual export performance and positively affects the

prediction of export performance. These results imply that motivation and behavior—including ability and skill—are not synchronized. Porter and Lawler (1968) argued that ability moderates motivation (effort) and performance. Baum and Locke (2004) elucidated that entrepreneurial skills, in addition to motivation, impact performance. However, since the present study only focused on psychological factors, it could not clarify the relationship between motivation and behavior.

(6) Conclusion

This study showed that psychological factors—narcissism and cultural intelligence—affect export performance. Narcissism and motivational CQ also affect the prediction of firm performance. These results suggest that export managers should consider their psychological traits when predicting firm performance to ensure that the prediction is accurate.

Although the present study's empirical analysis provides some significant results, this study has some limitations. First, as the study focused on only Japanese SMEs, managers of large-sized enterprises in other countries must be investigated in future research. This study only focused on export performance. Although export is at an early stage in the traditional internationalization model, many recent firms place it in a later stage since they have foreign subsidiaries (Root, 1982). Unlike exporting firms, these firms face problems managing international human resource and cross-cultural understandings in their international teams. Therefore, future research should add this as

a variable.

Although this study clarified the relationship between narcissism, CQ, and export performance, it did not address the behavior of export managers and organizations. Behavior is an important element for performance analysis because it reflects the psychological traits of managers. Future business management research should include behavior as a variable to clarify the relationship between managers' psychological traits and firm performance.

The results showed that while narcissism, which is enhanced by metacognitive CQ, negatively affects the prediction of firm performance, motivational CQ, which is indirectly and positively influenced by metacognitive CQ, positively affects the prediction of firm performance. In other words, metacognitive CQ indirectly affects firm performance prediction both negatively and positively. There is partial evidence of the effects of metacognitive CQ. Future empirical research is necessary to analyze metacognition according to the following classification: metacognitive knowledge, metacognitive monitoring, and metacognitive control.

This study measured narcissism using only the notion of superiority index based the Japanese version of the NPI. Future research should consider other factors to clarify the effect of narcissism in detail.

This study does not focus on industry difference. Cultural intelligence is needed in industries where the product adapts to the host country. Future studies should control for industry differences.

This study clarifies the relationship

between CQ and narcissism, thereby contributing to the literature on leadership. This analysis demonstrates that metacognitive CQ enhances the narcissism of Japanese export managers. Narcissism has a significant negative effect on export performance prediction. This study elucidates the relationship between CQ and narcissism, which contributes to the literature on narcissism in management performance. Further research is necessary to understand CQ, and other psychological factors, in business management.

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The role of collaboration in developing agricultural competitiveness and welfare

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Abstract

Given its high cost, producing and supplying organically grown and naturally cultivated crops is considered a challenge in Japan. The vegetables that *Yamanobu-Shouten Co., Ltd.* sells through its food retailing business *Supermarket Yamanobu* and its affiliated restaurants are produced by an affiliated agricultural production corporation, *Midori-no-Sato*. As a result of *collaboration between agriculture and welfare (CAW)*, *Midori-no-Sato* has successfully achieved low costs while adopting a natural farming method.

The CAW process began by matching the goals of the agricultural corporation, which required farm laborers, with those of a welfare organization looking to rehabilitate mentally disabled people. During the process of setting up the CAW, the two sides built a smooth relationship and launched the partnership under a community concept. With this, the agricultural corporation could manage its mentally disabled workers. Therefore, the CAW has increased the value of the community's internal resources, enabling it to increase production and expand sales channels. We also analyzed the concept of management control system as proposed by Merchant and Van der Stede (2012). Furthermore, this study showed that the success factors of social collaboration, as pointed out in previous studies, are included in CAW.

Keywords

Collaboration, Management Control System, Cost Reduction, Agriculture, Welfare

(1) Introduction

Since the announcement that Tokyo will host the 2020 Olympic Games, there has been increasing attention in Japan on organic farming practices and agribusinesses related to this approach, to cater to the specific needs of players, who are expected to arrive in large numbers as a result of the Games attention in Japan has focused on farming without agricultural chemicals, and on agribusinesses related to this approach. The health consciousness of local consumers has also been growing, increasing the demand for agricultural products grown using only organic

pesticides. However, farming without chemical fertilizers places a heavy burden on agricultural workers, since work that previously relied on chemical spraying using farm equipment is generally carried out manually.

Organically cultivated products are often labeled as “organic” in retail stores and are considered to have been produced with a farming method that does not use chemicals; for example, only organic fertilizer is used to cultivate organic produce (Table 1). However, “naturally cultivated farming” does not have a nationally accepted definition or established standards like organic

cultivation does. Generally, natural cultivation is considered a generic term for agricultural crop cultivation methods that use no pesticides or fertilizers. A characteristic of both organic cultivation and natural cultivation is that the use of agricultural chemicals and fertilizer is low, thus increasing work complexity. In Japan, the aging of the population in general and the shortage of successors in agriculture pose serious issues. This social background further aggravates the complexities of organic and natural cultivations.

This additional effort, in turn, affects selling prices, and organic and natural cultivation results in more expensive products. According to the Ministry of Agriculture, Forestry and Fisheries (2018), the prices of organic products are around 1.5 times as high as the same product grown using ordinary agricultural methods¹. As for the difference in sales, no figure is available based on a large-scale survey in Japan, but the sales of organic products is generally higher than those of products grown using other methods. Organic cultivation and natural cultivation rely on manual farming for spraying pesticides and fertilizers. Therefore, it is impossible to secure manpower for these agricultural methods unless the sales price increases. A system called *collaboration between agriculture and welfare (CAW)* can resolve this issue.

In this study, we focus on *CAW*, which uses the community concept to bring together agricultural corporations and welfare organizations, as an approach that

can potentially overcome this situation. Our case company has succeeded in setting up an agricultural production corporation that sells organically grown and naturally cultivated products to its affiliated supermarket business, which in turn sells these products to customers at low prices. We will examine the collaboration between this company's agricultural production corporation and welfare organizations based on the community concept and the determinants of its success. In addition, this collaboration is also affected by certain issues that are peculiar to Japanese society. It is necessary to consider these issues this within the theoretical framework of social collaboration.

(2) Previous research

In recent years, companies have started prioritizing their social responsibility. Companies use their management resources to tackle various social issues through business types or social contributions. According to Tanimoto *et al.* (2013), to tackle social issues, companies sometimes cooperate with other companies and organizations in various sectors, such as NPOs and governments, instead of acting as a single unit.

One of these business types is called “social collaboration²,” wherein multiple organizations work together to address social issues³. According to Seitanidi (2008), social collaboration involves the selection of partner organizations and mobilization of resources. In the “formation stage” of collaboration, a business plan is

Table 1 Differences in farming methods

	Regular cultivation	Organic cultivation	Natural cultivation
Pesticides	Yes	No	No
Fertilizer	Yes	only use organic fertilizer	No

(Source: by author)

¹ Ministry of Agriculture, Forestry and Fisheries (2018), p.3.

² In previous studies, there are expressions such as “*Social Partnership*” in addition to “*Social Collaboration*.” All of these are common in terms of “cooperation by multiple organizations for the

purpose of solving social issues.” Therefore, in this paper, the notation “*Social Collaboration*” is unified.

³ Waddock (1991), Hartman and Stafford (1997), Austin (2000), Googins and Rochlin (2000), Wohlstetter *et al.* (2005)

formulated and the business is promoted to facilitate smooth collaboration with partner organizations. The “execution stage” consists of several stages for building a simple relationship. Regarding the success factors of social collaboration, the literature has proposed the following points ⁴.

- In the formation of collaboration, it is important to select partners who share the mission of resolving social issues and to secure the resources necessary for the realization of the business, in addition to matching with the management resources of the company.
- In the planning stage—which is the formation stage of collaboration—organizations must achieve both “objective proximity” and “means necessity” for smooth collaboration. “Objective proximity” means the purpose of the project is important for each participating entity. “Means necessity” implies that cooperation among organizations is a means necessary for business execution.
- Given that organizations differ in scale and culture, it is necessary to build a

trusting relationship through close communication among members at the execution stage of collaboration.

- In the execution stage, it is also necessary to prevent the problem of the partner organization not fully contributing to the business. Therefore, rules must be formulated for managing collaborative relationships and a business reporting mechanism established to clarify accountability from each other.

In light of the above, research on management strategies is important to lead social collaboration to success. However, previous research has rarely examined the development process of collaborative relationships ⁵; rather, the focus was on either the formation stage or the execution stage as the success factor of social collaboration⁶. Thus, it is clear that there is a need to investigate the success factors of both the formation and execution stages of collaboration, in general, and to examine each stage through a comprehensive and detailed case study, in particular. To fill this gap, this study sets the following two research questions.

- *Yamanobu-Shoten Co., Ltd.* (founded in 1955, Toyota-shi, Aichi)
 - Representative Director and Chairman: Toru Yamanaka
 - Capital stock: 49.99 million yen
 - Number of Employees: 815 (including 117 full-time employees)
 - Net Sales: 10.2 billion yen (Fiscal 2016)
- Business description: Retail (store, in-house farm, and own brand (described later))
 - Supermarkets: Seven stores named “*supermarket Yamanobu*”
 - Agricultural production corporation: “*Midori-no-sato*”
 - Limited company: “*Nakua*” restaurant group; four stores
 - Foods store: “*Ruru-Bio-Episurie Hoshigaoka*”
 - Wagon retailer “*Tokushimaru*”
- Management Philosophy: “Freshness and safety of products”
 - Prominent responses during the surveys: “We want to deliver safe products to local customers”

Figure 1 Outline of the Case Company
(Source: Created by the authors based on survey results)

⁴ Seitanidi (2008), Reinand Stott (2009), Berger *et al.* (2010), Yokoyama (2017), Hartman and Dhanda (2018)

⁵ Seitanidi (2008), Yokoyama (2017), Hartman and Dhanda (2018).

⁶ Okura (2017), Hartman and Dhanda (2018).

- a) What should companies do in the formation stage of social collaboration?
 b) In the execution stage, how can organizations with different scales and cultures establish a smooth collaborative relationship?

(3) Overview of our Case Company

Yamanobu-Shouten Co., Ltd. operates seven supermarkets in the Aichi Prefecture, an agricultural production corporation “*Midori-no-Sato*,” four restaurant groups, high-end food shops, and mobile dealers (Figure 1). Established in 1955, its head office is located in Toyota City, Aichi Prefecture. The company’s goal is to achieve organizational management that contributes to the local community. Its company philosophy is “freshness and safety of products.”

Yamanobu-Shouten has succeeded in realizing CAW with the help of *Midori-no-Sato* and in branding and selling products at its supermarkets—its main business.

The company has the following features.

It focuses on its regional contribution, which is influenced by the founder's philosophy. The founder continued to work after retirement, interacting with customers on the sales floor to stay

connected to his/her community. Additionally, the company actively donates to local educational organizations⁷.

The company's brand that has fulfilled its philosophy is “*Gonbei-no-Sato*,” which primarily procures from its directly managed farm and major supplier, *Midori-no-Sato*. The farm cultivates agricultural crops, mainly using organic cultivation and natural cultivation farming methods and sells or supplies food to group restaurants. All products are composed of agricultural crops of organic and natural cultivation. It is necessary to clear the private brand’s own examination criteria. Additionally, the brand’s staff has “*Junior Vegetable & Fruit Meister*” qualifications⁸ and provides information to customers at the time of customer service. Initially, this private brand was purchasing and selling agricultural crops by sourcing high quality crops that met the expectations of external suppliers and vendors. However, they now have their own farms. Most major agricultural crops are supplied from their own farm, “*Midori-no-sato*.”

Their own brand, “*Gonbei-no-Sato*,” produces organic vegetables through natural cultivation, and, as shown in Figure 3, sales have grown significantly in

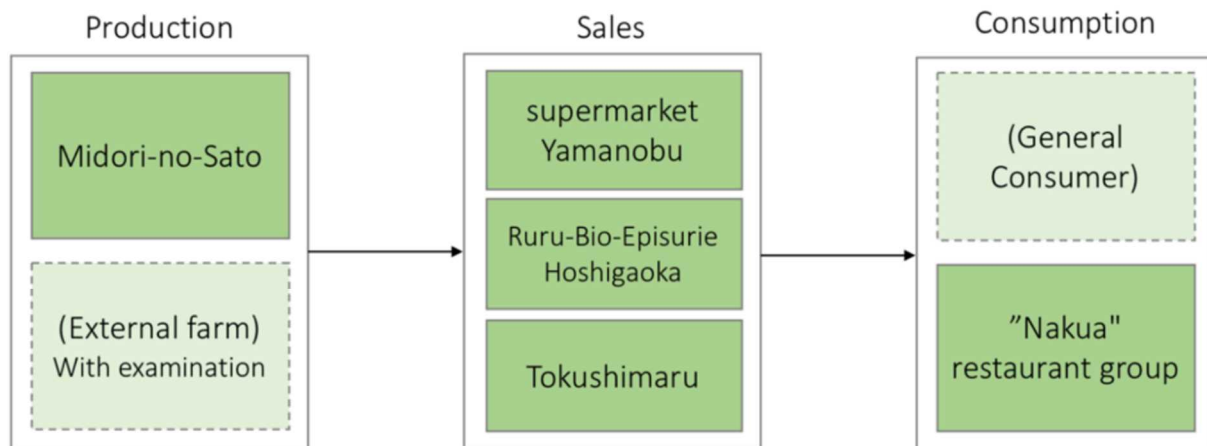


Figure 2 Realization of “Production-Sales-Consumption” Cycle for the “*Gonbei-no-Sato*” Brand

(Source: Created by the based on survey results)

⁷ Donation activity as a part of regional contribution: Donation totaling 786,600 yen to local parent-teacher association groups (The 28th result; from November 21, 2018 to May 20, 2019)

(Source: author, based on survey results)

⁸ It is the private accreditation given by the *Japan Vegetable Sommelier Association*.

recent years. The reason is that the prices of the organic and natural products of the brand are lower than the prices of general products. Their price is generally set at 1.2–1.3 times the price of general products, which is much lower than the country's average price difference of 1.5 times (see Section 1). This is because the company does not have operate in large metropolitan areas such as Tokyo and Osaka; therefore, organic crops can be sold only at prices lower than their average price in Japan.

The company farm "*Midori-no-Sato*" has successfully realized such a sales price. "*Midori-no-sato*" produces naturally grown crops to be provided to "*Gonbei-no-Sato*," the main brand of the group. It was established in 2008, with five employees, including Mr. Shingo Nonaka, the farm director. Their major crops are rice and strawberries and other crops are blueberries and vegetables. The biggest feature is that they cultivate all the crops by natural cultivation. As mentioned above, natural cultivation is extremely difficult to commercialize due to labor requirements and soaring prices of sales. However, they succeeded in commercialization. They achieved the world's first successful commercialization of naturally cultivated strawberries without using agricultural

chemicals and fertilizer.

This is the reason behind the strong feelings and commitment to naturally cultivated foods held by the founder. The founder believes that agricultural workers, including those involved in natural cultivation, can create high quality agricultural crops; but if there is no place to sell them, there will be problems, including failure. By having places such as supermarkets and restaurants that consume the products in the business group, there are places to sell the agricultural crop products, making it possible for them to flow within the company (Figure 2).

The company believes that realization of this flow has created marketing channels for agricultural workers so that they can concentrate on agricultural production. *Yamanobu-Shouten Co., Ltd.* has been able to sell these products at a low price. These lower selling prices are attractive to customers and sales of their own brand *Gonbei-no-Sato* have risen over the years (Figure 3).

This rise in sales is the reason behind the strong feelings and commitment toward naturally cultivated foods held by *Shouten Co., Ltd.* He made it possible for entities using agricultural products, such

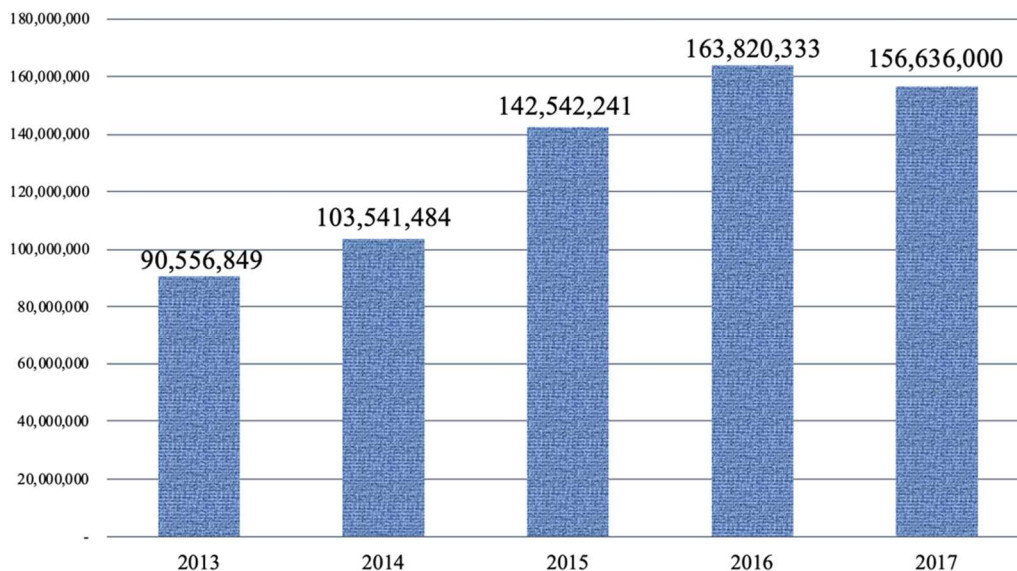


Figure 3 "*Gonbei-no-Sato*" annual sales (unit: JPY)
(Source: Created by the author based on survey results)

Differentiation strategy (from a position-based perspective)

- Provide customers with high quality, high value-added products from the viewpoint of "safety."
- However, since Toyota City is a small city, a realistic selling price must be set to keep prices lower (around 1.2 times of Practical Cultivation) than the sales price in the metropolitan area (Tokyo, among others, around 1.5 times of the practical cultivation)

Enhancement of internal resources (from a resource-based perspective)

- Realization of internal resources that can lead to products that can generate customer satisfaction

Figure 4 Strategy of the Case Company
(Source: author)

as directly operated farms, dealers, and restaurants, to be part of the group. Mr. Toru Yamanaka, Chairman of *Yamanobu*. Yamanaka believes that agricultural workers, including those involved in natural cultivation, can create high-quality agricultural crops. However, if there is no place to sell them, then there will be problems, including farm failure. Setting up outlets, such as supermarkets and restaurants, which consume the products in the business group, allows sales of agricultural crop products, facilitating the flow of profits within the company. The company believes that the realization of this flow has created marketing channels for agricultural workers, ensuring their focus on agricultural production. This is one of the management policies of *Yamanobu-Shouten Co., Ltd.*; it is unlike the policy of setting high prices, which was witnessed for products cultivated using traditional, natural farming methods.

To ensure success of the aforementioned level of crop yield. Since chemicals are not used in natural cultivation, securing the method, it is necessary to realize a certain appropriate harvest quantity through this method becomes very difficult. However, they have solved this problem through the development of *CAW*. This was made

possible as "*Midori-no-Sato*" collaborated with welfare organizations outside the group. In summary, "*Midori-no-Sato*" has succeeded in providing farm products to its own supermarket at a low price through natural cultivation, which tends to be more expensive than general farming methods. Therefore, we decided to conduct a case study on the group.

(4) Research Method

Relevant actors (i.e., founders and companies) adopt the strategy shown in Figure 4. *CAW* is effective in realizing this strategy. Therefore, to clarify how *CAW* functions in the field, we conducted an interview-based qualitative study by implementing the following procedure (Figure 5).

Based on the findings, we assume that *CAW*'s management strategy is based on the Management Control System (MCS) framework of Merchant and Van der Stede (2012). However, in a previous study on MCS, Simons' framework was found to be mainstream⁹. Based on previous research, we consider the difference between these two frameworks as follows¹⁰:

- **Merchant:** Emphasis is placed on how to control the behaviors of people in all levels of the organization based on individual objects

⁹ In our research project, we have been conducting surveys of previous research and recording theoretical progress in another research. Please also refer to the discussion about the framework. Since

this paper is a case study, we kept the description concise to avoid confusions on research topics.

¹⁰ Ohtani (2017), pp. 55-56.

- **Simons:** Emphasis is placed on how top managers select and use MCS to maintain or change organizational behavior

We adopted Merchant's framework because of its focus on individual objects. Mr. Nonaka (*“Midori-no-Sato”*) views the disabled persons of welfare corporations as individual workers. He also emphasizes how we can work with them "happily" (i.e., they are interested in improving their performance).

(5) Initiatives of Midori-no-Sato: On-site management through CAW

Within *Gonbei-no-Sato*, one of the main product categories comprises naturally cultivated agricultural crops from a direct-managed farm called *Midori-no-Sato*. To manage this cultivation, *Midori-no-Sato* utilizes the collaboration between agricultural groups and welfare organizations that form the CAW. In this context, it must be noted that *Midori-no-Sato* communities are primarily composed of patients who have mental illnesses.

Midori-no-Sato, the agricultural production corporation, has been pursuing a mechanism for selling its products through the CAW over the past six years. This mechanism is based on the natural cultivation farming law that they have been working on for 11 years, which is still

ongoing. Definitions and other guidelines have generally not yet been established with CAW, but it broadly refers to the collaboration between agricultural groups and welfare organizations. Mr. Shingo Nonaka of Midori-no-Sato regards it as the creation of a community by combining agriculture and welfare.

According to Mr. Nonaka, in the five years the corporation has been established, it has been believed that mass production of naturally cultivated crops is necessary for management stability. However, as previously noted, the natural cultivation agriculture method creates a very heavy burden because it does not use pesticides or fertilizers. The company faced the situation where expansion of agricultural land area was essential, but there was not enough manpower. At this time, they accidentally launched CAW through a chance acquaintance with the staff of a welfare corporation company.

Initially, Mr. Nonaka offered farm work to mildly disabled people and paid them an hourly wage (Figure 6). This corresponds to the formation stage of social collaboration. While working with them, Mr. Nonaka witnessed the power of people with disabilities, who performed similarly to healthy people, and realized that he could help them. Mr. Nonaka began working with more people with disabilities. In addition, he began working with

- **Survey method:** Continuous survey from October 2017 to the present
October 12–13, 2017 (Toyota, Aichi, Japan)
Interview and visit to the farm
Mr. Toru Yamanaka, Founder and Chairman of Yamanobu-Shoten Co., Ltd.
Mr. Shingo Nonaka, Farm Director, “Midori-no-Sato”
- **Analysis of materials** provided by Mr. Nonaka (financial documents, internal documents, and publications, among others)
January 20, 2018 (Hirosaki, Aomori, Japan)
Mr. Toru Yamanaka and Mr. Shingo Nonaka at the Hirosaki University Forum "Response of agricultural crops naturally cultivated in supermarkets and agricultural cooperation" (**Recorded at the time of visit and lecture**)
- Subsequently, **multiple surveys are being conducted via e-mail**

Figure 5 Procedure of Case Study
(Source: author)

severely disabled people. For him, a labor force to undertake the difficult natural cultivation was a necessary resource. While securing such a workforce, it was possible to provide an agricultural experience to persons with mental disabilities. Mr. Nonaka worked at the Japan International Cooperation Agency before becoming a farmer and wishes to contribute to resolving social issues. For him, the advantage of collaboration with a welfare organization was that he would have a partner who shared the mission of solving social issues while securing the resources necessary to realize his business. As shown in Figure 6, the two parties can establish a win-win relationship and help each other fulfil their purpose, indicating that they experience “objective proximity.” Moreover, the collaboration itself was a “means necessity” for both parties to conduct business. In particular, welfare organizations were essential to provide a workplace experience to help rehabilitate mentally disabled people. Thus, this case secured the success factors of the formation stage of social collaboration.

Mr. Nonaka then came up with the idea to compensate workers with crops instead of money. When farmers sell crops to provide money for people with disabilities, the amounts that can be paid become small because it costs more to sell and develop sales channels. However, if

you decide to sell agricultural crops using people with disabilities, the costs can be reduced. Of course, since the farmers provide the crops, money is not taken from the welfare organization as an intermediate margin. As a result, disabled people receive more money if sales go well. This is the reason for establishing a “community.”

Mr. Nonaka realized that this system increased the motivation of disabled people from welfare organizations. This seems to be the case, because the results of the process of individuals cultivating their own crops and selling them jointly with farmers can be visibly observed.

Next, Mr. Nonaka's task was to raise money for people with disabilities. Specifically, he sold nonstandard products that could not otherwise be sold as crops and processed items. By further adding value and increasing sales prices, the price of labor for people with disabilities was raised. Furthermore, since 2017, he has created a “harvesting team,” with a relatively mildly disabled person in charge. He sold agricultural crops to the group at lower wholesale prices and delegated harvesting and selling. This is an effort to have welfare associations handle agricultural crops in connection with welfare organizations. By doing this, Mr. Nonaka made mass production possible. As a result, the CAW of the community

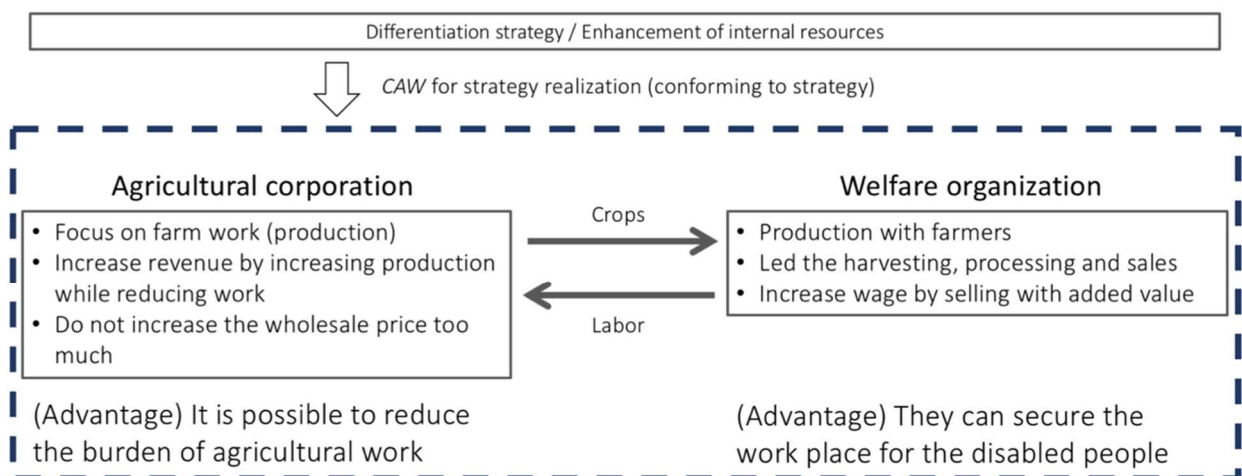


Figure 6 Outline of CAW at early stage
(Source: author)

enabled mass production of naturally cultivated crops, expansion of distribution channels, and stabilization of selling prices. His approach is not to move money, but to take advantage of people's coming, increase production, and return that production as agricultural products. It can also be said that Midori-no-Sato created a management control system (MCS) that is very different from the usual MCS.

(6) Case analysis using the MCS framework

In this section, we consider the CAW's management using the MCS framework of Merchant and Van der Stede (2012). In recent years, there have been active discussions about MCSs. Previous research has shown that they provide organizations with sustainability and effectively fulfill the role of supporting corporate social responsibility (CSR)¹¹. By properly creating an MCS, employees take appropriate actions and increase the probability that the organization will achieve its goal¹². Merchant and Van der Stede (2012) list the following four types of MCSs.

1.1 Results Controls¹³

Results controls provide employees with the desired degree of accomplishment as a goal. These controls are used by those who intend to manage behavior by providing external compensation (such as cash or stock) for goal accomplishment, or by satisfying internal rewards (such as a target crime rate inside police). By giving employees high autonomy, results controls are indirect controls that do not focus on actions and decisions. In other words, you may not be able to control the actions taken to achieve the goal.

Results controls is supplemented or replaced by the following three controls.

2.1 Action Controls¹⁴

Action controls are attempts to manage actions by confining employee actions to those that are beneficial to the organization, or by determining the actions that are known not to be beneficial. In most cases, action controls are used to prevent undesirable behavior.

3.1 Personnel Controls¹⁵

Personnel controls are intended to increase employees' appropriate self-esteem and self-satisfaction by making suitable personnel assignments, offering education and training, job design, and resource provision, consequently managing their behavior.

4.1 Cultural Controls¹⁶

Cultural controls are attempts to manage the behavior of employees through an organizational code of conduct, mutual monitoring by employees, and influencing each other. The organization's code of conduct is an organizational culture. Specifically, it is built on the traditions, norms, beliefs, values, ideologies, opinions, and actions shared by the organization. According to Merchant and Van der Stede (2012), personnel controls and cultural controls are becoming more important as "soft controls."

Merchant and Van der Stede's (2012) categories are used to analyze Mr. Nonaka's approach.

1.2 Analysis using the concept of Results Controls

Midori-no-Sato has a "target," but recognizes that the target is not a work norm. They try to enjoy thinking about how everything has gone so far rather than focusing on the aspect of completing work norms. They appreciate that they could evolve by more than just achieving their goals. They also often do not present

¹¹ Ito (2009), Sumita (2015), Nagano (2015), Shinoda and Maruta (2017)

¹² Merchant and Van der Stede (2012), p. 5

¹³ *Ibid.* (2012), pp.35, 40, 81.

¹⁴ *Ibid.* (2012), pp.81, 85

¹⁵ *Ibid.* (2012), p.81.

¹⁶ *Ibid.* (2012), p.81

"targets" to people with disabilities. Instead, they encourage them to try doing the first job for the time being, and then encourage them in the form of "I hope you can do better tomorrow."

Mr. Nonaka and other officials are included in the workforce as appropriate, especially when the work of the disabled is unlikely to be completed, such as pot clogging work or strawberry harvest packing. Sometimes, they all work together until they finish. In these circumstances, there are cases where each goal is determined by the individual without getting permission. As people with disabilities become more willing to be able to do more than their nature and in their past, they sometimes create quotas in their hearts with the goal of exceeding past performance. This way, as much as possible, the spontaneity of people with disabilities is encouraged.

As mentioned earlier, remuneration may not only be in the form of money, but also internal crops, such as actual farm products and work and sales achievements by everyone. Therefore, regarding results controls, those that lead to an internal sense of accomplishment are considered to be functioning effectively.

The aforementioned scenario led to the division of labor and to the emergence of the community concept. The thorough

division of labor led to the clarification of roles and the development of mutual community aid (Figure 7). This corresponds to the execution stage of social collaboration. In this effort, welfare organizations created a shift from an attitude of working alone to an attitude of "working collaboratively" (to the able-bodied farmers developed a respect toward the self-motivation of disabled people). This changed the consciousness of disabled people (voluntary target setting). In addition to the given goals, they started to set voluntary working norms like "I want to be able to do better than I what I did in the past" (Staffs are not concerned nor involved at all.)

2.2 Analysis using the concept of Action Controls

There are rules for agricultural work at Midori-no-Sato; for example, "Do not walk on the ridge" and "Do not harvest strawberries that are not mature yet." In fact, there are a lot of finer details, depending on the work being done, that are taught while working. Therefore, they do not hold separate training or study groups.

If problem behavior, such as throwing things to people, occurs, they do not ignore it. Such instances provide teaching opportunities, such as saying that "their behavior is wrong" and nurturing values.

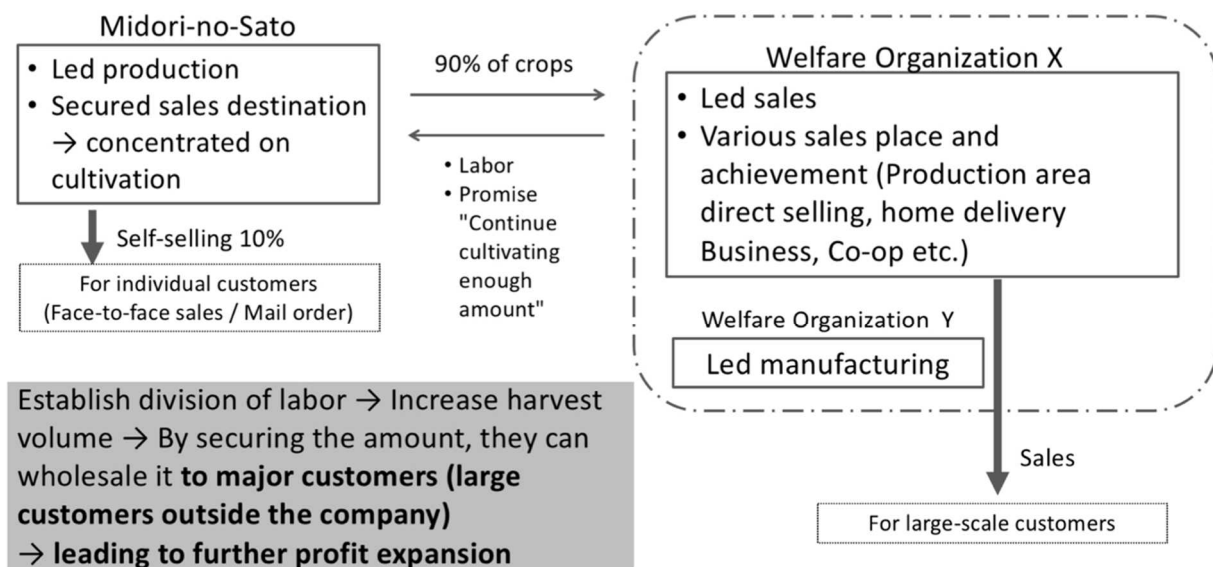


Figure 7 Outline of CAW at the community stage
(Source: author)

Prioritizing actions and teaching rules as appropriate are used as action controls, rather than behavior management and prevention policies.

The above approach shows that the focus is on taking corrective actions irrespective of particular roles and responsibilities. Furthermore, from the viewpoint of persons with disabilities, it is understood that measures for examining work performance are provided at the work site (farm or workplace). This approach reduced their sense of burden and responsibility. In other words, they execute farm work with little ease. These efforts contribute to the formation of a workable environment for persons with disabilities. It is also obvious that these ideas are influenced by collaboration and the community concept.

3.2 Analysis using the concept of Personnel Controls

As much as possible, Midori-no-Sato keeps the same person in charge of the agricultural work, trying not to change workers; this is very characteristic. At the CAW site, they arrange people considering the different talents and disadvantages of disabled people and other workers. However, Midori-no-Sato has not been able to secure workers that already possess talent at the desired level. Therefore, they prioritize allowing individuals to adapt to work. Once they are accustomed to work, they then focus on improving work skills. To accomplish this, Midori-no-Sato also requests the cooperative welfare organization to consistently use the same personnel.

As a result of personnel fixation, professional abilities of persons with disabilities improved, thereby improving product quality. People with mental disabilities who had difficulty consistently attending the facility have improved on self-esteem and are actively working. Enhancing expertise contributes toward improving the quality of agricultural crops and the efficiency of agricultural work. This initiative also results in the

realization of the "right place for the right person" agenda: resolving the question of which work is suitable for which person leads to close communication with each member. This is one of the success factors of the execution stage of social collaboration.

Furthermore, as a side effect, the change in consciousness of workers with disabilities became clear. Disabled persons, who used to come to welfare facilities once a week, now come to welfare facilities every day. Additionally, they are actively engaged in farm work. This enhances the performance of disabled farmers and helps them achieve organizational objectives.

4.2 Analysis using the concept of Cultural Controls

Midori-no-Sato is trying to ensure that people with disabilities do "not perform meaningless work." Mr. Nonaka said that by having disabled people do only meaningful work, they can reflect and think that "I was able to spend the day contributing to the organization and society." They are focusing on making their workers aware of their contribution through their work. Their sense of accomplishment is thought to function as the driving force of action.

Agricultural corporations' staff have changed not only how they work, but also improved efficiencies within their facilities for disabled working people. This improved the quality of employees (strengthening internal resources). Transitioning from a workplace that overly focused on improving work efficiency to a workplace that accommodates failure and facilitated amicable relationships enhanced the social contribution of staff and instilled in them a sense of pride.

This community concept not only increased their productivity, but also improved internal human resources. It must be noted that realizing an environment that enhances the work environment for mentally disabled persons enabled the disabled to lead and contribute to the profit of the community. Through

this process, each staff gained pride and a sense of social awareness within their organization.

We also wish to note that this community concept is based on the division of labor. This division of labor is established by mutually acknowledging the expertise of co-workers in each business and business process. The division of labor not only improves productivity, but also strengthens mutual trust. Enhancing mutual trust accelerates communication between members. This is cited as a success factor of the execution stage of social collaboration.

In addition, due to the increase in productivity, stable crops can be secured. Therefore, it became possible to develop sales channels, other than their own brands. This led to the expansion of the welfare organizations' existing sales channels. As a result, CAW enabled a simultaneous increase in production volume and expansion of sales channels as a company.

In Japan, due to changes in the agricultural environment, local rural farmers are especially required to devote time to agricultural work, making it difficult to foster management skills and collaboration outside the organization. One of the reasons for this is the weakening of the regional network. Therefore, it is necessary to create a local community that is the core of regional value creation. CAW is a management system based on the community concept; it also connects people with disabilities to communities and utilizes the skills of people with disabilities. Therefore, there is a possibility that it will strongly influence the future development of the region and the Japanese society. In that sense, this research is a subject of agriculture and cooperation, which has not been studied in previous research. It is not limited to the introduction of valuable practical case examples in the field of management accounting and providing verification materials as materials for examination and criticism. It highlights new development to further improve the

future of Japanese society, most especially in the discussion of regional contribution and regional creation through farmers, social welfare, and local communities.

(7) Conclusion

A characteristic of CAW is that an agricultural organization and a welfare organization are working in a community platform. They reap mutual benefits through their collaboration at CAW. This collaborative advantage increases the value of internal resources within the community, considering the organizations' activities from the community's perspective. Additionally, these organizations can increase production and expand sales channels, which would inevitably increase the power of appeal to customers and increase sales. Next, we finally answer the research questions posed in Section 2 based on our overall analysis.

a) What should companies do in the formation stage of social collaboration?

The CAW process at *Yamanobu-Shouten* began with matching the goals of *Midori-no-Sato*, the group's agricultural corporation that required labor for working on the farm, and those of a welfare organization looking to rehabilitate mentally disabled people. In other words, at the earlier stages of CAW, laborers worked in exchange for crops. Gradually, farmers recognized the value that disabled people contributed to the workforce and the community and thus created an environment to accommodate them. As a result, expertise has increased thorough the division of labor and maximum employment of the community's skillset. By tapping individual ingenuity, they succeeded in increasing yield through the community concept. Additionally, such management policies attracted human resources that conformed to the founder's focus on local contribution and food safety. This approach facilitated an environment that accepted people with disabilities. In this case, the choice of the partner

organization during the formation of social collaboration was accidental. In addition, because of the nature of rehabilitation for people with mental disabilities, it is not possible to actively utilize external resources for the purpose. Therefore, internal resources must be strengthened at the formation stage. It is necessary to consider what is important for the collaborator and to make it happen. When CAW was functioning in our case study, the following features were noted:

- Fostering specialized skills through complete division of labor
- Increasing the quality of shipping crops by improving skill and expertise
- Thinking of how to make work easier
- Changing consciousness of workers with disabilities

b) In the execution stage, how can organizations with different scales and cultures establish a smooth collaborative relationship?

By constructing an environment taking into account the aforementioned values, CAW improves the value of internal resources of the community and enables increased production and expansion of sales channels of corporates. This is important to build smooth collaboration in the execution stage. The involved parties will strengthen their unity as a community as they expand their business. This promotes communication among community members, which leads to mutual recognition, trust, and further strengthening of internal resources. In other words, CAW contains all the success factors of social collaboration.

However, as noted before, one of the success factors of the execution stage of collaboration was clarifying the rules and responsibilities of the members of collaborative relationships. In this case, there was no such approach. In addition to the fact that both are indispensable as a community in CAW, it is thought that the reason is that the organization is now small and communication among top

leaders is easy. Considering these, it is necessary to conduct research on future business expansion of companies.

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The impact of quality of performance measures on the performance of public sector organisations: Quantitative analysis based on questionnaire survey

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Abstract

Although the introduction of PMS has progressed in many organisations, it has not necessarily been effectively utilised. Since the introduction and use of PMS has become a global trend, it has been reported that perfunctory introduced PMS has a negative impact on organisational performance. The issue of the quality of performance measures, which is shown to have a significant impact on the effectiveness of PMS in public sector organisations, has not been fully discussed. Low-quality performance measures can lead to incorrect decisions and actions and can undermine the credibility of PMS. Furthermore, if PMS constructed with a large amount of tax is not used properly, then it will lead to tax waste. Therefore, it is necessary to maintain and improve the quality of performance measures when designing and using PMS in public sector organisations. Previous studies pointed out that the quality of performance measures have a significant impact on organizational performance, the relationship between the two has not been clarified quantitatively. This study presents empirical evidence that the quality of performance measures (validity, legitimacy, and functionality of performance measures) increase positive outcomes of performance management systems use in public sector organisation and suppress negative outcomes of performance management systems such as loss of usefulness and side effect. Data for analysis was collected by mailing questionnaire survey; it was conducted in FY2016 in 791 Japanese cities (designated cities, core cities, special cities, and other cities) Japan. The number of valid responses was 327 (valid response rate 41.3%).

Keywords

Performance management systems, Quality of performance measures, Validity of performance measures, Legitimacy of performance measures, Functionality of performance measures

(1) Introduction

The use of performance management systems (PMS) has become a global trend in public sector organisations (Pollitt 2006). The use of PMS not only creates incentives to align organisational objectives with individual goals but also provides valuable feedback on the progress of listed goals (Cavalluzzo and Ittner, 2004; Heinrich, 1999; Kravchuk and Schack, 1996). Owing to these benefits, PMS, also called public sector evaluation "gyousei-hyouka", has been introduced by many public sector organisations in Japan since the late 1990s (Matsuo, 2009; Metoki, 2012).

Although the introduction of PMS has progressed in many organisations, it has not necessarily been effectively utilised. Since the introduction and use of PMS has become a global trend, it has been reported that perfunctory introduced PMS has a negative impact on organisational performance (Bevan and Hood, 2006; de Bruijn, 2002; Newberry and Pallot, 2004). Furthermore, PMS in public sector organisations not only impacts positively, but also has the risk of negative consequences; if it is not designed and used appropriately, then it may lead to erroneous decision-making and actions. (Cuganesan et al., 2014; van Dooren et al., 2015). This leads to the question of what considerations should be taken when designing and using PMS.

In this regard, research has shown that the effect of PMS on the relationship between PMS design and use and results in public sector organisations differs depending on how to use of performance management information (Metoki and Senoo, 2012) and various contingency factors inside and outside

the organisation (van Helden and Reichard, 2013). These studies are increasingly clarifying the relationship between PMS design and use and organisational performance in public sector organisations. However, the issue of the quality of performance measures, which is shown to have a significant impact on the effectiveness of PMS in public sector organisations, has not been fully discussed (van Dooren et al., 2015). Low-quality performance measures can lead to incorrect decisions and actions and can undermine the credibility of PMS. Furthermore, if PMS constructed with a large amount of tax is not used properly, then it will lead to tax waste. Therefore, it is necessary to maintain and improve the quality of performance measures when designing and using PMS in public sector organisations.

In this regard, Bouckaert (1993) recognises the three aspects of validity, legitimacy, and functionality as the quality of performance measures important for PMS in public sector organisations. In the case of validity, performance measures are measured as objective measures without being distorted by external influences, and legitimacy means that all organizational members support the design and use of performance measures. Finally, functionality means that the measured performance measure is realistic and suitable for managerial use. In line with Bouckaert (1993), this research considers the quality of performance measures to be composed of 1) validity, 2) legitimacy, and 3) functionality. According to Bouckaert (1993), the quality of performance measures affects the performance of public sector

organisations. Despite their impacts, research only presents the concepts that make up the quality of performance measures, and there is no quantitative analysis of the impact on the performance of public sector organisations. Therefore, in this study, the relationship between the quality of performance measures and the performance of public sector organisations is analysed quantitatively based on the results of a questionnaire survey conducted in 791 cities in Japan.

The rest of this paper is structured as follows. Section 2 summarises related studies and presents the analysis framework of this study. Section 3 employs variables, and Section 4 discusses the results of the analysis. Finally, Section 5 presents the contributions and limitations of this study and draws conclusions.

(2) Previous research and analysis framework

1. Positive and negative consequences of using PMS

Metoki and Senoo (2012), using 264 observations based on a questionnaire survey on Japanese government organisations, revealed that the results achieved by using PMS differ depending on the use of performance management information (financial outcomes/improved responses to residents' needs/psychological empowerment of those in charge of public sector reforms). Additionally, Speklé and Verbeeten (2014) studied the relationship between PMSs usage and organisational performance using 101 observations based on questionnaires targeting Dutch public sector organisations.

It revealed that contractibility which measured by the three concepts of clarity of goals, measurability, and the degree to which managers know and control the transformation process moderates the relationship between the incentive-oriented use of the performance measurement system and performance. However, it has been pointed out that PMS in public sector organisations does not always produce positive results; as stated earlier, it can produce negative results if not properly designed and used (Cuganesan et al. 2014; van Helden and Reichard 2013). In this regard, Bouckaert (1993) pointed out that the use of PMS will facilitate false decision-making and behaviour if the quality of performance measures is not maintained at an appropriate level. Similarly, Melnyk et al. (2014) found that performance measures and target are not modified according to the situation in which the organisation is placed; in other words, in certain cases, organisations continue to use these measures without proper modification. (Melnik et al. 2014). Therefore, it is necessary to clarify the relationship between the quality of performance measures in the PMS of public sector organisations and organisational performance.

2. Building an analysis framework

In this study, we will focus on the concepts of validity, legitimacy, and functionality, and conduct an exploratory analysis of the relationship between the quality of performance measures and the performance of public sector organisations. However, neither Bouckaert (1993) nor van

Dooren et al. (2015), who indicate the importance of the quality of performance measures in public sector organisations, provides a measure of the quality of performance measures. Therefore, we will address this gap in this study. First, validity is the first concept that constitutes the quality of performance measures. Bouckaert (1993) considers validity as a performance measure that is measured objectively, without being distorted by external influences. Additionally, validity is the consistency of measurement, and hence its design must ensure that the measurement's results do not vary due to the influence of external factors, other than the quality of staff behaviour. Therefore, it is important that performance measures are designed and measured appropriately to ensure that measurement results are not distorted by external influences. The second concept that constitutes the quality of performance measures is legitimacy. As per Bouckaert (1993), legitimacy supports the design and use of performance measures by all members of the organisation. Additionally, it is reported that legitimacy is ensured by the participation of the members of the organisation in the design and use of performance measures. This prevents unauthorized manipulation and gaming of performance measures. Therefore, legitimacy is expected to increase by the participation of organisational members in designing, using, and modifying performance measures. The third concept that constitutes the quality of performance measures is functionality. Bouckaert (1993) considers functionality to be a realistic measurement so

that measured performance measures are suitable for use. Therefore, if the performance measures becomes unrealistic because of changing situation, it will be necessary to stop using or redesigning the performance measures.

Conversely, recent studies have pointed out that the effect of PMS in public sector organisations may not be necessarily positive, but also negative (Cuganesan et al., 2014; van Helden and Reichard, 2013). Therefore, when analysing the relationship between the quality of performance measures and the performance of public sector organisations, we consider both positive and negative outcomes.

Based on the aforementioned studies, a multiple regression analysis is conducted with validity, legitimacy, and functionality as independent variables and the performance of the public sector organisation as dependent variables. In the analysis, environmental uncertainty, operational complexity, and the number of employees are taken as control variables in consideration of the varying environments surrounding public sector organisations and the diverse business contents of the responding organisations. The analysis framework of this study is shown in Figure 1.

(3) Employment of data and variables

1. Data

Data for analysis was collected by mailing questionnaire survey; it was conducted in FY2016 in 791 Japanese cities (designated cities, core cities, special cities, and other cities). Prior to sending the questionnaire, we asked two practitioners,

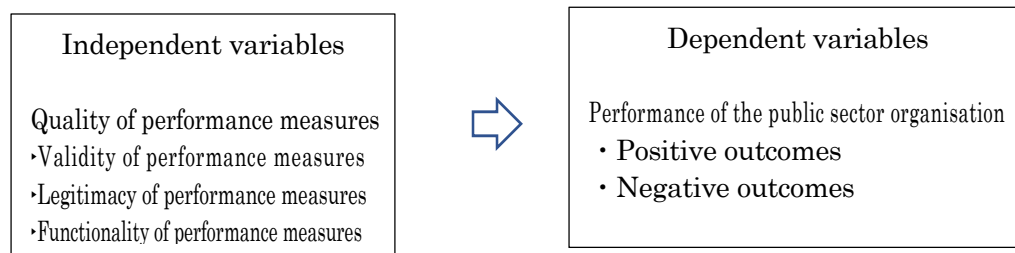


Figure1 The analysis framework

who supervised the related work in the public sector organisation, and two management accounting researchers with specialized knowledge in performance management to check the validity of the wording and question items. The questionnaire was received by the supervisor of the management department of the public sector organisation, and the questionnaire was sent with a request letter and reply envelope. In consideration of incentives for answering the questionnaire, it was clarified that a report on the analysis results will be sent to the applicant. In order to improve the collection rate, a reminder was sent before the collection deadline. The final number of responding organisations was 339 (recovery rate 42.9 %). In the analysis, we used data, excluding the responses of organisations that gave inadequate response and were judged inappropriate for analysis. The number of valid responses was 327 (valid response rate 41.3%). Details of the responding

organisations are shown in Table 1. Additionally, respondents comprised staff at a section manager level or higher in the responding department. A goodness-of-fit test was performed on the data collected from 327 public sector organisations used in the analysis. The results confirmed that the data of the public sector organisation was generally compatible with the group distribution ($\chi^2 = 7.770$, $df = 3$, $p = .051$). Additionally, we conducted a test of the difference between the size of the target organisation and the non-target organisation (public sector organization: number of employees), but no significant difference was found between the two. The results did not show any significant non-response bias in the data.

2. Variable manipulation

2.1 Validity of performance measures

Bouckaert (1993) regards the validity of performance measures as being measured

Table 1 Response distribution

Group classification	Number of sent	Number of valid response (rate)
designated cities	20	14 70.0%
core cities	48	20 41.7%
special cities	36	8 22.2%
other cities	687	285 41.5%
total	791	327 41.3%

as an objective measure without being distorted by external influences. In other words, there is a need to use objective performance measures to produce verifiable results and ensure that they are not changed by external influences. Therefore, we referred to Moers (2006), which analysed the relationship between performance measures' characteristics and performance (Table 2). Specifically, we determined whether the results of the performance measures are set so that they cannot be affected externally and whether the performance measures

accurately reflect the results of the staff's actions, or that the staff's work is good. The questionnaire asked whether it is directly reflected in the performance measures or whether these measures are objective; the responses were sought from 5 points, from '1 (not at all) to 5 (exactly)'. In the variabilisation, these average values are scored ($\alpha = .695$). Although Cronbach's α is slightly below the general level of .70, it is close to .70. Hence, we believe that there is no major problem in validity.

Table 2 Validity of performance measures

		Range	Mean	S. D.
VALID_1	The results of performance measures are appropriately designed to ensure that they are not affected by external influences, other than those emerging from staff's actions.	1 – 5	3.03	.816
VALID_2	Performance measures accurately represent whether the staff exhibited superior performance.	1 – 5	2.86	.784
VALID_3	If staff exhibited superior performance, it was directly reflected in performance measures	1 – 5	2.98	.746
VALID_4	Performance measures are objective and verifiable	1 – 5	3.50	.743

2.2 Legitimacy of performance measures

Bouckaert (1993) considers the legitimacy to be that the design and use of performance measures are supported by all members of the organisation so that the performance measures can be designed and used to prevent unauthorized manipulation and gaming. Legitimacy is ensured by the participation of organizational members in the design and use of the PMS. Therefore, Abernethy and Bouwens (2005) also empirically clarified that the degree of employee participation in the management information system design has a positive impact on the satisfaction levels and

performance of the management information system usage. Based on Bourne et al. (2002), this study discusses the participation of organizational members in the design and use of management systems; moreover, the study sets and amends performance measures, collects data, and conducts analysis to achieve numerical targets for performance measures. Five questions are set regarding the degree of participation of non-managerial staff in processes such as the evaluation of the achievement status of the performance measures (Table 3). The above questions were responded on the basis of 5 points, from '1 (not participate at all) to 5 (Actively participating)'.

Table 3 Legitimacy of performance measures

	Range	Mean	S. D.
LEGIT_1 Setting of performance measures	1 – 5	3.72	.801
LEGIT_2 Selecting the data for setting of performance measures	1 – 5	3.63	.829
LEGIT_3 Amending performance measures	1 – 5	3.60	.822
LEGIT_4 Actions to achieve performance targets	1 – 5	3.88	.713
LEGIT_5 Analysis to achieve numerical targets for performance measures	1 – 5	3.65	.821

While constructing the variables, these average values were scored ($\alpha = .905$).

2.3 Functionality of performance measures

Bouckaert (1993) sees functionality as a realistic measurement so that measured performance measures are suitable for use. Therefore, when there is a difference between the initial performance measure setting and the actual situation, it is important to adjust the settings in accordance with the actual situation; it is also important to determine whether the monitoring can contribute toward facilitating this adjustment. The measures and targets in public sector organisations are often inflexible, which may not be conducive to adjustments made according to the situation and environment. Smith (1995) refers to this type of risk as ossification of performance evaluation. de Bruijn (2002) also argues that once performance measures are set, the continuous reproduction of existing services is encouraged and the demand for change can be ignored. If there is a change in the external or internal environments of organisations, then the measures must be modified appropriately,

failing which they can have a negative impact on organisational performance (Melnik et al., 2014). Therefore, we set four questions to determine whether the target can be changed flexibly in response to environmental changes (Table 4). These responses were given on the basis of 5 points, from '1 (not at all) to 5 (exactly)'. When constructing the variables, these average values were scored ($\alpha = .713$)¹.

2.4 Performance of public sector organisations

The use of PMS brings various benefits to an organisation. Non-financial as well as financial results have been used for performance assessment, as shown in many quantitative studies (e.g. Davis and Albright, 2004; Ittner and Larcker, 2001). However, public sector organisations cannot measure performance using financial results such as sales and profit measures. Therefore, many public sector studies have relied on the items of van de Ven and Ferry (1980), which are considered suitable for measuring public sector performance, and determined the accuracy of productivity and operations. Measurements were made using the following

¹ In order to change the functionality of performance measures, we used four questions. However, when the question item 'Change of target during the period is not

allowed (reversal scale)' was included, Cronbach's α was .596, which made the scale less reliable. Therefore, variablisation was performed, which excluded this item.

Table 4 Functionality of performance measures

		Range	Mean	S. D.
FNCT_1	Targets are updated regularly according to certain criteria	1 – 5	2.88	1.175
FNCT_2	When setting targets, adjustments are made throughout the year for situations that could not have been foreseen when setting targets unforeseen events.	1 – 5	3.15	.982
FNCT_3	Ongoing monitoring was conducted within the organization to assess whether targets are realistic or whether they should be changed.	1 – 5	3.14	1.010

seven items: productivity, accuracy of work, an increase in the number of innovative new projects, satisfaction from and reputation of the work, the achievement of targets, work efficiency, and improvement in staff motivation towards work. In this study, we added six items, such as budget adjustment and cost awareness, which were measured by major PMS studies such as Hall (2008). Additionally, it has been pointed out that PMS yields both positive and negative outcomes. Therefore, we also measured the seven negative outcomes emerging from use of PMS, as described by Cuganesan et al. (2014). We conducted an exploratory factor analysis (using the main factor method and promax rotation) on the performance of public sector organisations, based on these 20 questions. We identified the elements that contribute to the performance of public sector organisations. As a result, as shown in Table 5, it became clear that the performance of public sector organisations is composed of four factors. The first factor was named 'Task performance' because it comprised the result of work activities, such as work quality,

efficiency, and improvement of residents' satisfaction ($\alpha = .826$). The second factor was named 'Behavioural performance'² because items related to the impact on staff behaviour, such as cost awareness and motivation, showed a high factor loading ($\alpha = .806$). The third factor was termed 'Loss of usefulness' because items related to the loss of usefulness of PMS—such as the fact that performance measures are underutilised and poorly indicate organisational performance to residents and parliament—indicated a high factor loads ($\alpha = .707$). The fourth factor was named 'Side effects' because items restricting communication within the organisation, such as the inhibition of organisational flexibility and wrinkles within the organisation, showed a high factor loading ($\alpha = .704$). Additionally, in the variabilisation of each item, the average value of the question items that showed a factor load of .35 or more was scored.

2.5 Control variable

In order to control the analysis results, the number of employees was set as a control

² Items that make up the second factor include items that may not be directly linked to behavioural performance, such as an 'increase in the number of innovative new

project. However, these items are also considered to be indirectly generated by behavioural changes, and hence the second factor is named 'behavioural performance'.

Table 5 Factor analysis on the performance of public sector organisations

		Range	Mean	S.D.	Factor1 Task performance ($\alpha = .826$)	Factor2 Behavioural ($\alpha = .806$)	Factor3 Loss of usefulness ($\alpha = .707$)	Factor4 Side effects ($\alpha = .704$)
EFT_2	Quality or accuracy of work	1 – 5	3.41	0.683	0.861	-0.149	0.036	-0.008
EFT_5	Improvement in the achievement of business and departmental targets	1 – 5	3.65	0.694	0.755	-0.005	-0.008	0.008
EFT_4	Improvement in operational efficiency	1 – 5	3.47	0.749	0.611	0.203	0.105	0.017
EFT_1	Increase in business volume (production volume) and service provision	1 – 5	3.18	0.685	0.537	0.063	0.063	-0.034
EFT_12	Improvement in information collection and recording methods for measuring output and outcomes	1 – 5	3.23	0.732	0.421	0.222	-0.039	-0.015
EFT_6	Increase in the satisfaction and reputation of residents and users	1 – 5	3.21	0.751	0.398	0.174	-0.116	0.065
EFT_8	Coordination of Budgets and plan with other departments	1 – 5	3.25	0.831	-0.116	0.805	0.028	-0.067
EFT_13	Information exchange with staff in other departments	1 – 5	3.17	0.778	-0.033	0.679	-0.021	0.068
EFT_11	Reduction in the time incurred for making decision associated with targets, policies, and work schedule	1 – 5	3.01	0.750	0.004	0.574	-0.053	-0.040
EFT_9	Improvement in cost reduction awareness	1 – 5	3.38	0.764	0.160	0.570	0.014	0.015
EFT_7	Improvement staff motivation towards work	1 – 5	3.18	0.713	0.213	0.432	-0.147	0.011
EFT_3	Increase in the number of innovative new business projects	1 – 5	2.88	0.727	0.228	0.428	0.085	-0.011
EFT_15	Performance measures and related information are underutilised	1 – 5	2.91	0.891	0.082	-0.048	0.816	-0.070
EFT_16	Performance measures are not tied to organisational targets	1 – 5	2.69	0.889	-0.027	-0.016	0.753	-0.025
EFT_14	Performance measures tend to be poor measures of performance to residents and parliament.	1 – 5	2.45	0.887	-0.275	0.165	0.485	0.117
EFT_18	Performance measures are not designed to reflect business results or workload	1 – 5	2.80	0.862	0.154	-0.050	0.400	0.127
EFT_17	Measurement and evaluation of performance measures has led to the creation of traps and excessive competition within the organisation	1 – 5	1.99	0.698	-0.004	0.039	-0.021	0.789
EFT_19	Measurement and evaluation of performance measures has led to reduced organisational flexibility and disrupted change	1 – 5	2.29	0.752	-0.010	-0.082	0.089	0.662
Eigenvalue					6.068	1.858	1.260	1.008
Factor correlation					—	—	—	—
					Factor2	0.670	—	—
					Factor3	-0.562	-0.545	—
					Factor4	-0.240	-0.111	0.427

variable; this is because items such as environmental uncertainty, business complexity, and organisation scale are expected to affect the performance management of public sector organisations. Regarding environmental uncertainties and operational complexity, we referred to Speklé and Verbeeten (2014) and Oura and Matsuo (2017) to set questions and conduct exploratory factor analysis (main factor method and promax rotation)³. Additionally, when conducting factor analysis, items for which the ceiling effect was confirmed and items that showed only factor loadings below .35 for all factors were deleted. As a result, the first factor denoting the uncertainty of the work environment had a high factor loading in the item indicating uncertainties related to the future predictability of work, and therefore this factor was termed 'Task predictability' ($\alpha = .666$). The second factor was named 'Business design difficulty' ($\alpha = .776$) because it showed a high factor loading in the items indicating difficulty in predicting needs and effects related to business design (upper part of Table 6). Although Cronbach's α of 'business predictability', which is the first factor, is below the general standard of .70, there is no major problem in validity because it is close to .70. It was judged. The first factor of business complexity is 'Business process clarity' ($\alpha = .790$) because it had a high factor

loading in the item indicating whether business procedures and processes were clarified by manuals and regulations. The second factor was named 'Measurable outcome' ($\alpha = .714$) because it showed a high factor loading on the items related to the measurable outcome of the department (lower part of Table 6). Additionally, in the variabilisation of each item, the average value of the question items that showed a factor load of .35 or more was scored. Finally, in order to control the scale of the organization, the value obtained by logarithm conversion of the number of employees is used in the analysis.

(4) Analysis results

Based on the above variables, we conducted a multiple regression analysis; validity, legitimacy, and functionality of performance measures were taken as independent variables, and the performance of public sector organisations was taken as a dependent variables⁴. Environmental uncertainty, operational complexity, and scale (number of employees) were set as control variables. The correlation coefficient between variables (Table 6) and the results of multiple regression analysis (Table 7) are as follows. As a result of the analysis, it became clear that any variable that makes up the quality of performance measures affects the performance of public sector organisations.

³ Speklé and Verbeeten (2014) do not perform factor analysis for each question item on both uncertainty of work environment and work complexity, but they are variabilised by the simple average method. However, as a result of performing the same operation in this study, the value of Cronbach's α became low,

and hence factor analysis was performed for enhancing the accuracy of the analysis.

⁴ The variance of inflation of the input independent variable was confirmed, but the maximum value was 1.325, and hence it is concluded that the problem of multicollinearity does not exist.

First, it improves operational results such as the validity of performance measures, legitimacy of performance measures, functionality of performance measures, productivity, and work efficiency (validity of performance measures: $B = .217$, $\beta = .228$, $t = 4.504$; legitimacy of performance measures: $B = .203$, $\beta = .262$, $t = 5.405$; and performance measures functionality: $B = .150$, $\beta = .242$; $t = 4.857$).

Table 6 Factor analysis on the control variables

Uncertainty of the task environment		Range	Mean	S.D.	Factor1 Task predictability ($\alpha=.666$)	Factor2 Business design difficulty ($\alpha=.776$)
ENVDYN_1	There is a high possibility that unpredictable events will occur in daily operations	1 – 5	3.11	0.888	0.767	-0.130
ENVDYN_2	It is difficult to predict when a new project will start	1 – 5	3.11	0.965	0.702	-0.001
ENVDYN_4	It is difficult to estimate the required budget for the following year accurately	1 – 5	2.76	0.945	0.410	0.238
ENVDYN_3	Achievement of targets depends heavily on the external environment	1 – 5	3.28	0.779	0.382	0.108
ENVDYN_6	When designing a business, it is difficult to predict needs	1 – 5	2.72	0.739	-0.058	0.797
ENVDYN_7	When designing a business, it is difficult to predict the effect	1 – 5	2.84	0.804	0.069	0.794
Eigenvalue					2.376	1.343
Factor correlation				Factor1	—	
				Factor2	0.311	—

Business complexity		Range	Mean	S.D.	Factor1 Business process clarity ($\alpha=.790$)	Factor2 Measurable outcome ($\alpha=.714$)
ENVHOST_2	There is an appropriate and efficient process for conducting business	1 – 5	3.02	.930	.794	.010
ENVHOST_1	There is a standard procedure that should be referenced for addressing differences in business execution	1 – 5	2.93	1.067	.757	-.019
ENVHOST_4	Procedures for conducting business are clearly shared among various departments	1 – 5	3.26	.902	.673	.071
ENVHOST_3	Procedures for conducting business are stipulated through laws, regulations, and rules, among others	1 – 5	3.21	.982	.534	-.001
ENVHOST_6	Quantitatively understand what the department should achieve	1 – 5	2.88	.937	-.060	.977
ENVHOST_5	A single quantitative measure can grasp the results of each business	1 – 5	2.53	.956	.027	.656
ENVHOST_7	Current performance measures accurately represent what the department should achieve	1 – 5	3.23	.781	.189	.362
Eigenvalue					3.104	1.281
Factor correlation				Factor1	—	
				Factor2	.447	—

ENVDYN_1 to ENVDYN_7 asked about uncertainties in the work environment and measured them on a five-point scale (“1 not at all” – “5 exactly”). ENVDYN_5 was removed for factor analysis because both factors showed factor loadings less than .35. ENVHOST_1 to ENVHOST_10 asked about the complexity of the business and measured it on a 5-point scale (“1 not at all” – “5 exactly”). Since ENVHOST_9 confirmed the ceiling effect, ENVHOST_8 and ENVHOST_10 showed factor loadings less than .35 for both factors, and hence were excluded from the factor analysis.

Table 7 Correlation coefficient between variables

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)TSK_PERF	1										
(2)BEH_PERF	.661**	1									
(3)RER_NPERF	-.446**	-.446**	1								
(4)SIDE_NPERF	-.218*	-.157**	.393**	1							
(5)VALID	.419**	.408**	-.342**	-.125*	1						
(6)LEGIT	.419***	.342**	-.289**	-.282**	.263**	1					
(7)FNCT	.415*	.377**	-.397**	-.075	.304**	.284*	1				
(8)PREDICT	-.084	-.029	.112*	.023	-.165**	-.081	-.112*	1			
(9)DIFFICULT	-.126*	-.144**	.118*	.127*	-.166**	-.118*	-.120*	.292**	1		
(10)CLARITY	.179**	.257**	-.216**	-.035	.283**	.155**	.293**	-.282**	-.191**	1	
(11)MEASURABLE	.350**	.309**	-.250**	-.069	.333*	.199**	.244**	-.237**	-.177**	.400**	1

1) Pearson's correlation coefficient

2) TSK_PERF: Task Performance, BEH_PERF: Behavioural performance, RER_NPERF: Loss of usefulness, SIDE_NPERF: Side effects, VALID: Validity of performance measures, LEGIT: Legitimacy of performance measures, FNCT: Functionality of performance measures, PREDICT: Task predictability, DIFFICULT: Business design difficulty, CLARITY: Business process clarity, MEASURABLE: Measurable outcome

3) **p<0.01, *p<0.05 (two-sided)

Table 8 The results of multiple regression analysis

	Task Performance			Behavioural performance			Loss of usefulness			Side effects		
	B	β	t-value	B	β	t-value	B	β	t-value	B	β	t-value
Constant term	.960		3.007***	.729		2.110**	5.299		12.476***	3.328		7.253***
VALID	.217	.228	4.504***	.243	.246	4.617***	-.209	-.178	-3.235***	-.045	-.040	-.658
LEGIT	.203	.262	5.405***	.159	.193	3.792***	-.123	-.130	-2.464**	-.239	-.257	-4.444***
FNCT	.150	.242	4.857***	.127	.201	3.822***	-.197	-.260	-4.809***	.015	.020	.340
PREDICT	.032	.038	.775	.088	.103	2.009**	.016	.015	.289	-.036	-.037	-.626
DIFFICULT	-.016	-.021	-.432	-.041	-.053	-1.055	.017	.018	.347	.095	.105	1.835*
CLARITY	-.045	-.065	-1.253	.049	.069	1.259	-.019	-.022	-.393	.031	.038	.605
MEASURABLE	.143	.195	3.749***	.096	.129	2.343**	-.088	-.098	-1.738*	-.013	-.015	-.238
Number of staff	.030	.047	1.010	.016	.024	.494	-.103	-.130	-2.607*	-.063	-.081	-1.476
R ²		.368			.306			.261			.097	
Adj. R ²		.352			.288			.241			.074	
F-value		22.500***			16.881***			13.531***			4.154***	

1) Estimation based on ordinary least squares (OLS) method

2) B: Non-standard regression coefficient, β : Standard regression coefficient, R²: Coefficient of determination, Adj. R²: Modified coefficient of determination

3) *** p < 0.01, ** p < 0.05, * p < 0.1 (two-sided)

Additionally, an improvement in positive outcomes was observed, such as improvement of staff motivation and the active exchange of information with other legitimacy of performance measures: B = .159,

β = .193, t = 3.792; and performance measures of functionality: B = .127, β = .201; t = 3.822).

As pointed out by Bouckaert (1993) and van Dooren et al. (2015), it is important to improve the quality of performance measures when designing and using PMS in public

sector organisations. This suggests that improving the validity, legitimacy, and functionality of measures improves the performance of public sector organisations. In other words, when designing and using PMS for public sector organisations, the performance measures are designed in a manner that they are not distorted by external influences. It is essential to build a mechanism that will allow managers and non-managerial staff to participate in the design and use of performance measures; this mechanism will contribute towards improving task and behavioural performance. Groen et al. (2017) clarified that the involvement of operational employees in the design and implementation of performance measures improves the job performance of employees. It can be said that this is consistent with previous studies. Additionally, the measurability of outcomes affects the relationship between each variable related to the quality of performance measures and task and behavioural performance. In other words, it is suggested that it is necessary to give sufficient consideration to the quality of performance measures when the business or project allows the quantitative measurement of the results of each department or project. These variables related to the quality of performance measures not only increase positive outcomes but also show the potential to suppress negative outcomes. In other words, the validity, legitimacy, functionality of performance measures suppresses negative outcomes of performance management systems such as loss of usefulness (validity of performance measures: $B = -.209, \beta =$

$-.178, t = -3.235$; legitimacy of performance measures: $B = -.123, \beta = -.130, t = -2.464$; and functionality of performance measures: $B = -.197, \beta = -.260, t = -4.809$). Additionally, legitimacy of performance measures, that is, staff participation in setting and using performance measures is also suppressed side effects of PMS use, such as excessive competition in the body and reduced flexibility of organisation ($B = -.239, \beta = -.257, t = -4.444$). Although Cuganesan et al. (2014) mentions the possibility that the use of PMS in public sector organisations not only produces positive outcomes but also negative outcomes, it has not been revealed that how to suppress these negative outcomes of PMS. In this respect, an improvement in the quality of performance measures, such as validity, legitimacy, and functionality of performance measures may suppress the negative outcomes.

In public sector organisations, once performance measures are set, they are often not reviewed for reasons such as year-on-year comparisons and comparisons with other organisations. Ensuring comparability is, of course, important in fulfilling accountability of the government. But leaving improvements of quality of performance measures can also lead to poor performance of public sector organisations. Therefore, it is necessary to verify and review the performance measures periodically to sustain the quality of the performance measures.

(5) Contribution of this research and future issues

Although previous studies pointed out that the quality of performance measures has

a significant impact on organizational performance (van Dooren et al., 2015), the relationship between the two has not been clarified quantitatively. In this regard, this study presents empirical evidence that the validity, legitimacy, and functionality of performance measures increase positive outcomes. This is the first contribution of this study. Additionally, although negative outcomes from the use of PMS have been pointed out (Cuganesan et al., 2014), the means to suppress them have not been presented. This study addresses this gap by demonstrating that negative outcomes can be suppressed by improving the quality of performance measures, that is, the validity, legitimacy, and functionality of performance measures. However, while making the above-mentioned contributions, it must be pointed out that this research has its limitations. This study analyses the quality of performance measures by focusing on the validity, legitimacy, and functionality of performance measures presented by Bouckaert (1993). Additionally, it attempts to grasp the quality of the performance measures by considering the validity of the construct, as much as possible, relying on previous research. However, since the concept of quality of performance measures is composed of various elements, this study does not capture all aspects. For example, the measures' characteristics such as measurement, importance, measurement cost, sensitivity, and noise discussed in Kawai (2016) are considered to be factors related to the quality of performance measures in public sector organisations. Additionally, when measuring negative outcomes, the study formulated

question items by relying on the literature on negative outcomes of PMS use, such as the study by Cuganesan et al. (2014). There is a possibility that the negative outcomes may not be fully understood. The points comprise the limitations of this research, which must be evaluated in future research.

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