

Exploring Local Managers' Motivations to Seek Problem-Solving in Response to Citizens' Feedback Signals on Service Quality

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Abstract

Performance management has become a global trend in government reform movements. Previous studies have emphasized performance feedback, referring to the fact that local governments have adopted numerous performance practices to enhance local service performance. Accordingly, while many studies sought mechanisms that motivate managers to seek performance feedback, they have not clarified how the different performance information signals foster managers' problem-solving activities.

This study conducted a survey experiment to assess local managers' agreement with a problem-solving system such as performance consulting when presented with the performance information on citizen satisfaction with service quality. The results indicate that local managers with low citizen satisfaction scores are more reactive to the performance information, supporting problem-solving system, and the managerial reactions to performance information increase with detailed information.

Keywords: performance feedback, problem-solving, citizen satisfaction signals.

1. Introduction

Performance management has become a global trend for government reform. The doctrine of new public management has strengthened the belief that poor government performance can be remedied by measuring or evaluating public services' inputs and outputs (Kettle, 1993). However, despite many terms and practices of performance management, it is unclear what mechanisms lead public managers to seek feedback on their performance. Performance feedback is an ongoing communication process where information is exchanged between senders and receivers to improve performance (Ashford and Cummings, 1983; Cyert and March, 1963; Larson, 1984; Min and Oh, 2020).

Cyert and March (1963) explain the two stages of performance feedback processes in a behavioral theory of the firm. Managers identify problems and search for solutions when confronted with various feedback signals. In the first stage, managers identify problems when they cognitively perceive, interpret, and react to feedback. The next step underlines a solution-searching process. This process captures managers' problem-solving strategies because they aspire to improve their job performance by actively searching for solutions to problems. Despite the importance of performance feedback processing, questions remain about the link between problem identification from feedback signals, seeking answers to problems, and exposing managers to performance information. This study considers the following questions clarifying the missing link in the performance feedback process: (1) Do citizens' feedback signals on public service quality affect public managers' motivation to seek problem-solving? (2) Do managers' motivations in response to citizens' feedback signals differ according to either their performance levels or the specificities of feedback signals?

Notably, the performance feedback process has become salient among local governments because citizens' evaluations of local service quality legitimize local managers' work. Therefore, local managers attempt to identify problems through various performance feedback signals on citizens' preferences concerning local service delivery (Melkers and Willoughby, 2005). Local managers also actively search for solutions to enhance local service quality because they are sensitive to citizen feedback on local service. Due to the importance of the performance feedback process at the local level, we established a survey experiment targeting local managers in South Korea. We presented local managers with different information formats related to citizen satisfaction with local services quality. Local contexts in South Korea are unique from local performance management's perspective because local governments are subject to various performance evaluations from the central government. The Ministry of the Interior and Security conducts annual evaluations across all 226 local governments. These central evaluations assess whether local public services reach defined performance targets, including citizen satisfaction with service quality. Local managers are sensitive to the central assessment because local governments' national grants depend on these evaluation results. To respond to such intense performance systems in South Korea, most local governments operate various performance advisory or consulting groups composed of citizens, professors, professional policy analysts, etc.

By conducting our research in a unique empirical setting, this study clarifies when and how local managers are motivated to seek advice in solving performance problems in response to citizen satisfaction feedback on service quality. The empirical evidence matters because it provides meaningful insights into when feedback signals motivate managerial problem-solving for performance improvement. Furthermore, empirical results indicate that how feedback is formatted, processed, and reported impacts whether managers actively search for solutions to public service performance problems. Our study also takes methodological advantage of current performance management studies' internal validity by examining managers' behavioral motivations to seek problem-solving through a locally administered randomized survey. Finally, in response to intense performance systems in South Korea, this study focused on local governments that are highly reliant on external advisory groups. As a result, the study's external validity is enhanced compared with previous international studies concentrating on Danish, Flemish, American, and English samples where local managers may have differing approaches to local performance management.

2. Performance feedback processes in performance management

Cyert and March (1963) suggested that performance feedback explains how individuals identify problems and search for solutions during the feedback process (Ashford and Cummings, 1983). For example, managers identify problems in the performance feedback process by recognizing and interpreting feedback signals and finding solutions through communication and interaction with others (Luckett and Eggleton, 1991). Ashford and Cumming (1983) conceptualize the performance feedback process by capturing direct and indirect feedback mechanisms. The first feedback mechanism indicates indirect processes that lead to managerial feedback-seeking. This process identifies managers' performance shortcomings based on their cognitive responses to performance feedback signals (Jones and Gerard, 1967); managers rely on various sources of feedback to discover problems in their work. The second mechanism is more direct than the first. Managers directly involve themselves in the problem-solving process based on their interpretation of feedback. In this process, managers directly interact or communicate with others for problem-solving. Morrison and Weldon (1990, p. 47) explain this direct feedback as actions or activities that 'involve the creation of a feedback channel when none exists'. Therefore, direct feedback demonstrates managers' efforts to search for solutions to correct problems in the decision-making process by interacting with elected officials, citizens, and third party experts. A vital performance feedback system in a manager's problem-solving process is performance consulting. The prior study emphasized performance consulting in the managerial problem-solving process (James and Moseley, 2014). Performance consulting is a process that searches for solutions to problems to improve organizational performance (Holton *et al.*, 1998). Even though the private sector more frequently uses performance consulting, public organizations also operate performance consulting systems where advisory groups such as citizens, professors, and policy analysts participate. As a result, public managers can discover practical solutions from multiple experts in the performance consulting process.

Due to its importance, scholars clarify why managers seek performance feedback. For instance, public management studies draw attention to the role of external influences in seeking managerial performance feedback (Yang and Hsieh, 2007; Bourdeaux and Chikoto, 2008). Researchers demonstrated that public managers are responsive to external stakeholder groups, such as elected officials, interest groups, media, and citizens (Nalbandian, 1999). External pressure from such groups drives local managers to identify problems and search for solutions more frequently. Thus, amenable and diverse external stakeholders can play a critical role in managers seeking performance feedback. However, managers are engaged in performance feedback processes to respond to stakeholders in fragmented environments (Bourdeaux and Chikoto, 2008), while political support serves as a buffer from external pressures with the credibility of elected officials (Yang and Hsieh, 2007).

At the local level, citizen satisfaction data with service quality is an essential feedback signal motivating local managers to solve problems that contribute to public service performance. Residents' satisfaction with local services is one of the most critical measures for assessing residents' life quality. Therefore, feedback is essential on the effectiveness of local government public services. Scholars regard citizen satisfaction as a significant external feedback signal identifying local public service performance and initiating managers' problem-solving. Notably, the principal-agent relationship and accountability theories explain local managers' active engagement in problem-solving processes when exposed to feedback, such as citizen satisfaction data on service quality (Wang, 2001). Local managers are accountable for residents' service satisfaction in local service delivery. Local managers (as agents) feel accountability pressures because residents, as principals, are the external source of local managers' authority and legitimacy. Accordingly, local managers are susceptible to citizens' satisfaction with local service quality as external feedback signals and make efforts to hear from various stakeholders when searching for solutions to problems (Halachmi and Holzer, 2010).

Here, an important consideration is identifying which citizen feedback signals' content and framing affect local managers' motivations to seek solutions. First, the content of external performance signals relates to managers' problem-solving. For instance, negative signals can influence managers' decision-making more actively than positive signs, causing negativity bias. The performance gap theory explains that managers are more reactive to performance shortfalls. When current performances fall short of either past performance or peers' performance, managers actively seek potential solutions to the problems identified by negative performance signals (Greve, 1998; Salge, 2011). In particular, local managers are more sensitive to negative citizen satisfaction signals to avoid external blame for poor public service performance (James *et al.*, 2016). Consequently, local managers are more actively involved in problem-solving behaviors when they belong to the poor performance group reflecting low citizen satisfaction with service quality.

Next, the framing of performance feedback signals is also important. The information framing's psychological theory indicates that detailed information is more salient in individual cognitive processes than either general or brief information (Kim *et al.*, 2017; Wiemer-Hastings and Xu, 2005). In the local context, managers are highly interested in

citizens' detailed feedback information. Providing detailed citizens' satisfaction data on the quality of various local services can help local managers discover where problems exist and search for solutions.

Despite the importance of citizen satisfaction on managers' cognitive processes, a concern is that researchers have paid little attention to how the feedback signals on citizen satisfaction with service quality affect managers' motivation to seek solutions in more rigorous ways at a local level. In response, the present study uses an experimental approach to explore local managers' agreement to a problem-solving system such as performance consulting in response to different citizen satisfaction feedback signals.

3. Hypotheses development

One of the missing points in studying performance information is what motivates managers to be involved in problem-solving seeking in response to various performance feedback signals. Performance feedback information creates accountability expectations that influence managerial decision-making (Romzek and Dubnick, 1987). Psychological experimental studies indicate that citizens and politicians respond to performance information cues as a feedback signal (James and Van Ryzin, 2017a; Walker *et al.*, 2018).

Accountability expectation is an instrument that motivates managers to respond to informational cues because external environments regulate human actions (Behn, 2001; Romzek and Dubnick, 1987). Performance data are the critical feedback sources that determine managers' accountability because the new public management doctrine's result orientation emphasizes managers' responsibility for better outcomes (Behn, 2001; Moynihan, 2008). In the recent development of performance management, various performance data exist to hold managers accountable for their success or failure. In this sense, managers are sensitive to public service performance information due to high accountability pressure. Prior studies indicated that external environments are one of the driving forces that lead public managers to use performance information (Yang and Hsieh, 2007). Citizen evaluation of public service quality is vital because this evaluation is an external source of feedback information indicating local governments' effectiveness. Accordingly, performance information on citizens' assessment of local public services strongly affects managerial motivations to seek problem-solving by helping managers identify problems from citizens' feedback signals.

In particular, local managers feel pressure related to citizen satisfaction data with local public services' quality because they need to manage citizen satisfaction with public services to legitimize their work (Van Ryzin, 2013). In the principal-agent relationship, agents do not neglect principals' perceptions, beliefs, and voices (Eisenhardt, 1989). In short, managers are highly susceptible to citizens' perceptions of service quality as critical feedback signals. Therefore, local managers will more strongly agree with problem-solving processes through performance consulting to manage service quality when provided with citizens' satisfaction data on service quality compared to no feedback signals from citizens.

As such, we developed hypothesis 1: Local managers more strongly support problem-solving systems in the presence of citizen satisfaction signals than without signals.

Due to their accountability expectations, managers are motivated to seek problem-solving from performance information signals. Such signals' effects on managers' cognitive processes may vary based on the content of information derived from their performance levels. Recent experimental studies in public administration also indicate that citizens' and politicians' responses to performance information cues vary by the types, sources, and credibility of data (James and van Ryzin, 2017a; Olsen, 2017b; Walker *et al.*, 2018). A topic that performance information studies have addressed most frequently is negativity biases in actors' information processing. Humans are more reactive to negative (rather than positive) events, images, and signals (Charbonneau and Van Ryzin, 2015). Such biases have been theorized and empirically tested in performance management studies as performance gaps compared to past and outside performance (Cyert and March, 1963; Meier, Favero and Zhu, 2015; Zhu and Rutherford, 2019).

As Cyert and March (1963) suggested in the behavioral model, managers make decisions based upon historical comparisons with their past performance or social comparisons with peer organizations' performance. Poor performers are more reactive to negative information, indicating that their current work is lower than their past performance or their peers' performance. In this way, negative performance feedback information actively inspires managers to involve more problem-solving activities to remedy their poor performances. Prior researchers have also confirmed the cognitive biases derived from negative performance information (Charbonneau and Van Ryzin, 2015; James, 2011; James and Moseley, 2014; Nielsen and Baekgaard, 2015; Olsen, 2017a).

'Blame-avoidance' explains why local managers attempt to minimize the repercussions of negative performance signals (James *et al.*, 2016; Schwarz, 2013). Managers seek to avoid blame related to poor performance by overcoming failures (Nielsen and Baekgaard, 2015). Accordingly, managers' dissatisfaction with organizational performance activates their problem-solving seeking in the performance feedback process (Cyert and March, 1963; Moynihan, Nielsen and Kroll, 2017). Furthermore, low performance strengthens managers' accountability expectations because managers are highly motivated to remedy poor performance to avoid blame for poor performance (Romzek and Dubnick, 1987). These mechanisms foster managers' problem-solving actions to identify and correct problems. Consequently, when local managers belong to low-performance groups, they are more eager to operate problem-solving systems such as performance consulting to remedy their failures in response to the negative information of citizen satisfaction with local services.

As such, we have developed hypothesis 2: Local managers more strongly support problem-solving systems in response to negative citizen satisfaction signals when they belong to a low-performance group than a high-performance group.

Detailed feedback information can also affect local managers' motivation to search for solutions actively. Psychological and communication theories have confirmed the cognitive importance of detailed information by explaining 'abstract-concrete information framing effects' (Wiemer-Hastings and Xu, 2005; Zillmann, 2006). Psychological research demonstrates that human responses are more susceptible to tangible examples than general or brief descriptions because detailed information is more salient, convincing, and intriguing

(Kim *et al.*, 2017). Communication studies also indicate that a detailed description of outcomes is more persuasive than a simple aggregation of information because it elicits vivid information (Zillmann, 2006). Borgida and Nisbett (1977) found that detailed and meaningful information in face-to-face communication about a psychological course more positively influenced students' course choice than a course evaluation's base information.

Some performance measurement scholars have indicated the value of detailed performance information. Such researchers argue that a brief description of performance information leads to uncertain assumptions among managers' information processes; therefore, performance information should prevent a vague description of performance targets and events (Olsen, 2015; Holzer and Yang, 2004; Moynihan, 2008). Likewise, some experimental studies on public administration indirectly report the possibility of detailed information framing effects by showing the results of an episodic and symbolic description of performance data on citizens' judgmental processes toward public performance (Olsen, 2017b; Walker *et al.*, 2018). More episodically described performance information can provoke citizens' emotional responses to service performance more directly.

In this sense, detailed feedback signals (as opposed to brief ones) are more influential on local managers' attitudes toward performance feedback-seeking. Detailed information is a more remarkable feature of cognitive processes due to the salient identification of problems and possible solutions, strengthening local managers' accountability expectations. According to the information's details, local managers acquire more clear signals that evoke their performance feedback-seeking activities (Ashford and Cummings, 1983). Therefore, when local managers confront more detailed information on citizen satisfaction with service quality, they are more motivated to seek problem-solving by operating performance consulting systems to search for salient problems and solutions in performance management processes.

As such, we have developed hypothesis 3: Local managers support more strongly the problem-solving system more in the presence of citizen satisfaction signals formatted by detailed performance information than without detailed signals.

Even though psychological studies theorized and tested negative biases and detailed framing effects, their combined effects remain unclear. Thus, clarifying these feedback signals' impact on managerial problem-solving seeking in the performance feedback process adds value to performance information studies. In particular, the negative feedback may be more synergistic in conjunction with detailed feedback by conveying a more noticeable description of poor performance to local managers accountable for local service quality. Consequently, detailed negative information may prompt managers to find constructive solutions to problems within their performance feedback processes.

For example, Olsen (2017b) indirectly confirmed that episodic performance information more strongly affected citizens' evaluations of public service performance. Such specific information is more vivid and convincing, especially regarding the detailed contexts of poor public service performance. Negative information from poor performance prompts human cognition to seek solutions to hostile events because it acts as a warning regarding accountability. Notably, a poor performance's detailed description helps low

performers overcome their failures in the feedback processes. Local managers are motivated to solve the problems by clearly identifying problematic targets (London, 2003). In short, local managers in the low-performance group prefer the feedback systems to seek problem-solving in response to the negative and detailed feedback signals for citizen satisfaction. Such feedback signals enable local managers to find where problems exist and how to solve them efficiently.

As such, we have developed hypothesis 4: Local managers in a low-performance group more strongly support problem-solving system in response to negative citizen satisfaction signals formatted by detailed performance information.

4. Data and methods

4.1. Data and survey experiment settings

We conducted a survey experiment to explore whether (and how) South Korean local government managers seek problem-solving. Randomized control studies are advantageous because they overcome the endogeneity problems that threaten internal validity in non-randomized studies. To examine local managers' agreement to operate problem-solving systems such as performance consulting, we set a population sample with local managers responsible for performance management and evaluation in the South Korean government at the municipal level. In South Korea, the local government provides various public services, such as cultural activities, park and leisure facilities, police, fire and disaster protection, social welfare facilities, education, childcare, healthcare facilities, local markets, and employment. Internal and external performance evaluation systems assess the quality of local public services.

We surveyed our research subjects in 2016 using the following approach. We first checked the organization charts of all 226 local government websites and identified a single manager¹ representing performance management and evaluation in each local government. Then, we sent the local managers an e-mail that included the survey questionnaires and different performance information types. In our survey request, we specified the participation of a single manager in charge of the performance evaluation and management of the local government where they worked. The performance information was presented in various formats, displaying the degree of citizens' satisfaction recorded for their local services' quality. Of the 226 survey targets, we received 159 responses (a response rate of approximately 70 percent), resulting in 159 local governments participating in the study.

To determine whether the managers who responded to the survey represented all South Korean local governments at the municipal level, we compared the differences between

1 This study selected a single manager who was directly identified in the organizational chart on the local websites. Accordingly, we did not use the cluster option in our analysis because a single, targeted manager fully represents a local government.

respondents and non-respondents across the variables of municipal characteristics. Notably, we conducted a series of t-tests to analyze mean differences across our control variables (see variables), which reflect the situations or environments local governments confront, as displayed in table 1. As a result, the sample's representativeness for South Korean local governments was satisfactory because we found no statistically significant differences between respondents and non-respondents.

Table 1: Balance tests of mean differences between respondents and non-respondents

Group	N	Population	Fiscal Size	Fiscal Balance	Public Debt
Respondents	159	11.897	13.226	-8.893	2.224
Non-Respondents	67	11.685	13.154	-9.444	1.632
Difference		0.212	0.072	0.551	0.592

Note: Population and Fiscal Size – logarithmic value, Fiscal Balance and Public Debt – percentage

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

We randomly placed jurisdictions into either a treatment or control group in our experimental survey setting, and local managers received differently formatted survey instruments in each group. In the treatment group, managers read public service performance information relating to citizen satisfaction with service quality. In contrast, managers in the control group responded to the survey items without being exposed to the performance information. The treatment group was also randomly assigned into two treatment groups (treatment-detailed vs. treatment-brief) based on the provided performance information's specificity, as displayed in the Appendix. The treatment-detailed group received citizen satisfaction scores, ranking, and percentages of rankings across all ten local service areas. In contrast, the treatment-brief group received only the citizens' average satisfaction scores aggregated from the ten public service areas. The citizen satisfaction scores were actual, and we extracted the data from the Korean Gallup citizen survey² in 2013. Table 2 displays the experimental setting of this study.

Table 2: Experimental setting

Group	Treatment-PI		Control
Detailed PI	Treatment-detailed PI: Citizen satisfaction score ranking and percentage of ranking across 10 local service areas	Treatment-brief PI: Average citizen satisfaction score ranking and percentage of ranking	No PI

Note: PI – Performance information on citizen satisfaction with service quality.

2 To ensure the representation of the survey, we selected more than 100 citizens from each local government by quota sampling based on gender, age, and district, for a total of 21,050 responses from citizens from all municipalities in South Korea. We conducted the structured survey questions through computer-assisted telephone interviews.

Experimental studies' essential consideration ensures equivalence between the treatment and control groups through random assignment (Shadish, Cook and Campbell, 2002). That is because selection bias in the randomization process may threaten data reliability and validity. Therefore, we compared the different randomized groups through a series of mean comparison tests. Table 3 reports the balance test results between different groups across municipal characteristics variables used in the representation test. In all the experiments we conducted, the mean values between different groups were balanced, showing no statistical difference across municipal attributes between treatment and control respondents. In addition, we calculated the power using G-power 3.0 software to estimate how many samples were needed to explain the statistical relevance of our experiment. The power test indicated that the 159 samples in our study explain 95.8% (actual power: 0.958) at the significance level of 0.05 (effect size: 0.15) for the F tests of our regression analyses with seven predictors.

Table 3: Balance tests of mean differences between groups in each experiment

Group	N	Population	Fiscal Size	Fiscal Balance	Public Debt
Treatment PI	70	11.903	13.226	-8.872	2.200
<i>Treatment-detailed PI</i>	34	11.867	13.244	-8.651	2.201
<i>Treatment-brief PI</i>	36	11.938	13.208	-9.082	2.200
<i>Difference</i>		-0.071	0.032	-0.431	0.001
Control	89	11.891	13.226	-8.909	2.243
<i>Difference</i>		0.012	0.000	0.037	-0.043

Note: PI – Performance information on citizen satisfaction with service quality

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

4.2. Variables

We utilized a survey questionnaire for the dependent variable to capture managers' agreement to receive performance experts' consulting in the problem-solving processes. Recent studies emphasize performance consulting as a feedback system to hear citizens' or experts' advice; various advisory groups' consulting can help managers discover problems and solutions in performance feedback processes (James and Moseley, 2014). To measure managers' attitudes toward problem-solving system, we posed the following survey question to local managers: How much do you agree with performance consulting to enhance the quality of your local services? The questions used a 10-point Likert scale (1 = strongly disagree to 10 = strongly agree).

The independent variables were the treatments in the survey experiment and performance groups categorized by citizen satisfaction scores. We created two dummy variables in the treatments. The first dummy variable was whether local managers saw citizen satisfaction scores before starting the survey. If they saw the information, the variable was coded as 1 and, respectively, coded as 0 if managers were not exposed (see Appendix). Because citizen satisfaction signals included two formats of detailed and brief information,

the second dummy variable was coded as 1 when managers saw the detailed information on citizen satisfaction with service quality and coded as 0 if they saw the brief information.

In addition to the treatment-based variables, we created an additional dummy variable identifying how local managers in the low-performance group are responsive to negative information in the performance feedback process. Accordingly, the dummy variable was coded as 1 if local managers belong to local governments where citizen satisfaction scores within their jurisdictions were under 50 percent among all municipal governments. Respectively, the dummy variable 0 indicated managers who worked in local governments ranked over 50 percent by citizen satisfaction scores.

Our survey presented local managers in the low-performance group with negative citizen satisfaction signals; therefore, we created two interaction terms between treatment-based and low-performance group variables. We generated the first interaction term by multiplying the low-performance group variable to the treatment group variable that looked at citizen satisfaction information. We also included an interaction between the low-performance and treatment groups that looked at the detailed performance information.

To control for other effects on the problem-solving system, we set up several control variables. Because the analysis unit in this study was municipalities, we controlled community characteristics as environmental variables that affected managers' agreement to proactive problem-solving systems. Specifically, we selected population, fiscal size, fiscal balance, and local public debt because these variables can influence internal management practices, such as the feedback of performance data. We already used these variables for both balance and representation tests.

4.3. Analytical procedures

We used regression analysis to study the effect of feedback information on managers' agreement to use performance consulting in their problem-solving processes. The regression analysis with experimental data has an advantage because it can increase statistical precision by reducing standard error through control variables in the estimation model while using the same experimental variable (Bloom, Richburg-Hayes and Black, 2007). Also, a regression analysis can test the moderating effect by explicitly including the interaction terms used in our study. Recent experimental studies in public administration also test the regression models with interaction terms in the survey's experimental approach (Baekgaard and Serritzlew, 2016; James, 2011; Olsen, 2017a). We also provide the t-test results for the effect of treatment-based variables in the Appendix.

5. Results

5.1. Descriptive analyses

Table 4 summarizes the descriptive statistics. On average, managers' agreement to performance consulting was 6.79 per 10-point Likert scale. The managers' ratios of the treatment-performance information and treatment-detailed performance information were 44.0% and 21.4%, and the ratio in the low-performance group was 49.1%. The treatment-

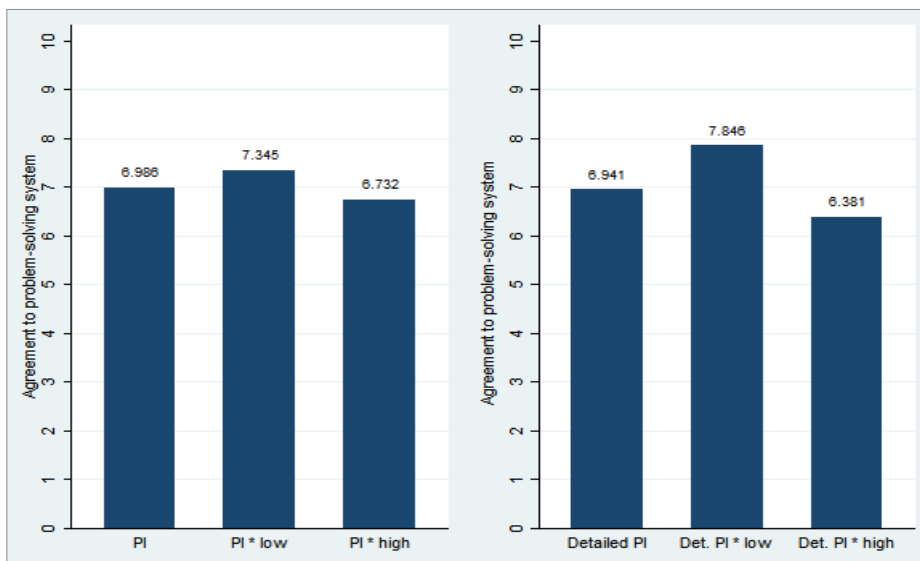
performance information and treatment-detailed performance information ratios in the low-performance group were 18.2% and 8.2%. On average, population size and fiscal size were 11.9 and 13.2 in logarithmic value, whereas fiscal balance and public debt were -8.9% and 2.2%.

Table 4: Descriptive statistics

Variable	N	Mean	Std. Dev	Minimum	Maximum
Performance consulting	159	6.786164	1.564498	3	10
Treatment PI	159	0.440252	0.497986	0	1
Treatment-detailed PI	159	0.213837	0.411308	0	1
Low-performance group	159	0.490566	0.501491	0	1
PI * low	159	0.18239	0.387386	0	1
Detailed PI * low	159	0.081761	0.274866	0	1
Population	159	11.89659	1.031532	9.782054	13.87746
Fiscal size	159	13.22587	0.536735	12.02695	14.89916
Fiscal balance	159	-8.8927	5.232624	-34.49	1.39
Public debt	159	2.22434	3.120276	0	17.77

Note: PI * Low – Treatment PI * Low-performance group,
Detailed PI * Low–Treatment-detailed PI * Low-performance group.

Before the regression analysis, we preliminarily analyzed how the dependent variables vary by the performance level. As shown in Figure 1, local managers' agreement to the performance consulting system seeking problem-solving was higher in low-performance



Note: Det(ailed). PI (Performance information) – Treatment-concrete PI, Low – Low-performance group, High – High-performance group.

Figure 1: Agreement to problem-solving system by group

groups than in high-performance groups. Also, the managerial agreement levels to the performance consulting system in low-performance groups were larger when managers had detailed feedback information than when they had general feedback information.

5.2. Regression analyses

To test our hypotheses, we conducted regression modeling. Table 5 shows the results of the ordinary least squares (OLS) regression analyses. The models' estimated results did not support hypotheses 1 and 3; the results supported hypotheses 2 and 4. Only providing performance feedback information on service quality did not foster local managers' motivation to support performance consulting regardless of the formats of the feedback signal, when there was no consideration for heterogeneity in the performance group. However, the interaction terms reflecting the performance group's heterogeneous effects showed different empirical evidence consistent with hypotheses 2 and 4. Local managers in the low-performance group saw the negative citizen satisfaction scores, and they agreed with the performance consulting (model 2). Specifically, the coefficient was 0.998 ($p < 0.05$) in the model. The second interaction term (model 4) was statistically significant. Managers in the low-performance groups were inclined to support problem-solving systems when they received detailed and negative performance information. The coefficient was 1.700 ($p < 0.001$) in the performance consulting model.

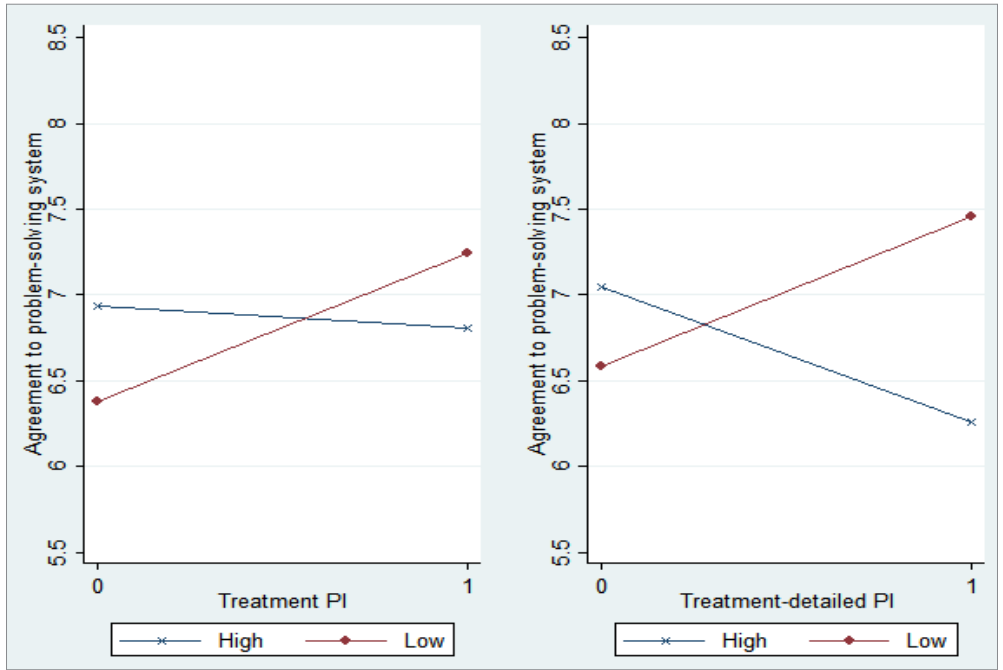
Table 5: Results of Ordinary Least Squares (OLS) Regression

Model	(1)	(2)	(3)	(4)
Dependent Variable	Performance Consulting			
Treatment PI	0.346	0.341		
PI * Low		0.998**		
Treatment-detailed PI			0.152	0.260
Detailed PI * Low				1.700***
Low Performance Group	-0.125	-0.0933	-0.158	-0.0967
Population	-0.228	-0.228	-0.227	-0.196
Fiscal Size	0.410	0.358	0.405	0.368
Fiscal Balance	0.0273	0.0213	0.0270	0.0137
Public Debt	0.1000***	0.105***	0.101***	0.104***
Constant	4.016	4.771	4.193	4.192
N	159			
R-squared	0.0914	0.1160	0.0811	0.1270

Note: PI * Low – Treatment PI * Low-performance group,
Detailed PI * Low – Treatment-detailed PI * Low-performance group.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

These findings indicate the moderating effects of the low-performance group on the relationship between citizen feedback information on service quality and problem-solving system, as shown in Figure 2. Therefore, offering performance feedback information

does not directly affect the managers’ agreement to seek problem-solving. However, the negative information derived from the low-performance group moderates the effects of performance feedback information on managers’ attitudes toward their problem-solving system. Furthermore, the low-performance group’s moderating effects are higher when including detailed performance information (coefficient: 1.700) than only including brief performance information (coefficient: 0.998).



Note: PI – Performance information on citizen satisfaction with service quality,
Low – Low-performance group, High – High-performance group.

Figure 2: Heterogeneous effects by performance group

6. Discussions and conclusions

Over the past 30 years, performance-oriented management has been a significant issue in government reforms. Our results confirm the importance of performance feedback in the public sector by clarifying local managers’ cognitive reactions to different citizen feedback signals on service quality. Notably, our empirical models first examined the link between different feedback processes conceptualized by prior studies of performance feedback (Ashford and Cummings, 1983; Cyert and March, 1963). Overall, the results show that detailed feedback signals on public service performance affect public managers’ motivation to solve problems for local managers suffering from low service quality. In addition, the empirical evidence provides theoretical insight on how performance information as a feedback signal can contribute to public service performance. The performance

information clarifies the roles of feedback signals, thereby identifying problems in managerial problem-solving activities in the performance feedback process.

First, our findings indicate that providing performance information does not significantly affect managers' attitudes about problem-solving motivation, even when the information includes detailed feedback on public service performance. These results corroborate the empirical evidence from prior studies that the content of performance data matters (James and Van Ryzin, 2017b; Olsen, 2017a; Walker *et al.*, 2018). From a practical perspective, these results imply that providing performance data for all managers without particular purposes may not be effective because managers do not respond to general information not related to their accountability.

Furthermore, we did not identify the effect of detailed information framing in our study. Detailed information triggers cognitive reactions to particular events, emotions, and insights because it is more salient and descriptive (Kim *et al.*, 2017; Wiemer-Hastings and Xu, 2005). However, our study's detailed performance information failed to trigger local managers' motivations to support performance consulting systems that help managers seek solutions to problems. A possible insight is that detailed performance information is useless when it does not include either comparative or episodic information specifying particular performance contexts around local service delivery.

Empirical evidence indicates that local managers exposed to negative citizen satisfaction signals in the low-performance group agree with problem-solving systems such as performance consulting. This finding means that local managers in the low-performance group are very reactive to social performance gaps. Their current performance falls short of peer performance. They aspire to remedy their failures by discovering solutions to poor performance with the help of advisory groups in the performance consulting process. These findings are similar to prior studies that indicated negative signals are much stronger than positive ones (Holm, 2017; Nielsen and Baekgaard, 2015). It seems that negative information elicits poor performers' cognitive reactions to citizen satisfaction signals more strongly. Blame avoidance for residents' dissatisfaction with service quality fosters managers' aspirations to enhance poor performance, which leads to increased activity to solve problems. In practical terms, the implication is clear: if local governments want to motivate managers to solve problems and improve performance, it is more effective to provide negative performance information to low performers than high performers. Low performers are more sensitive to negative signals. Local governments regularly report citizens' service dissatisfaction to local managers, resulting in increased searching for solutions to problems to produce better outcomes.

Finally, the study's compelling finding is that local managers in the low-performance group seek problem-solving more actively when negative citizen satisfaction signals include detailed reports across specific policy areas. Although providing only detailed feedback failed to change managers' agreement to problem-solving systems, it can play a meaningful role in local managers' problem-solving activity when managers perform below their optimal level. As the literature on performance feedback suggests, negative information initiates the identification of problems and searches for (and implementation of) solutions

(Argote and Greve, 2007; Salge, 2011). In this process, we encourage practitioners to report more detailed data for managers who suffer from poor performance because detailed feedback performance information is conducive to remedying poor performance. A specific description of poor performance helps managers easily identify the causes and effects of problems and search for solutions in the feedback processes.

Despite the meaningful findings in our study, further developments can ensure external validity. For example, we relied on local managers' agreement to performance feedback systems through a survey. Now, we need field experiments to confirm that managers in real-world contexts are more actively engaged in problem-solving seeking when they receive different citizen satisfaction signals. We also conducted this study locally in South Korea, where managers are susceptible to intense performance management systems and thus highly rely on advisory groups' advice or consulting in performance feedback processes. Accordingly, our study's local managers' perceptions reflect the unique South Korean government contexts that excessively emphasize local performance management. Therefore, we do not know how local managers react to different performance information to seek solutions in countries like the United States, Europe, and other Asian countries. To overcome this limitation, we encourage future researchers to conduct comparative analyses on how local managers in different cultures and systems of performance management engage in performance feedback processes in response to various performance feedback signals.

Despite the study's external validity limitation, our research is the first exploration of the managerial performance feedback-seeking behavioral perspective in public organizations in an Asian performance management context. We expect that our approach will guide future performance research to advance more theoretical insights and rigorous methods to search for performance feedback-seeking drivers.

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Appendix

Table A1: Example of detailed citizen satisfaction signal (Gangnam-gu district, Seoul).

Citizen Satisfaction on Service Quality	Score	Nationwide	Rating	Bottom percent
Average scores	3.66	3.23	3	98.69
1. Cultural Activities	3.80	3.01	5	97.81
2. Park and Leisure Facilities	3.62	3.20	24	84.48
3. Police	3.80	3.53	42	81.58
4. Fire and Disaster Protection	3.87	3.92	143	37.29
5. Social Welfare Facilities	3.50	3.25	44	80.71
6. Education	3.78	3.29	7	96.93
7. Childcare	3.14	3.28	163	28.51
8. Healthcare Facilities	4.11	3.05	1	99.57
9. Local Markets	3.94	3.39	14	93.87
10. Employment	3.07	2.40	4	98.25

Table A2: Example of brief citizen satisfaction signal (Hwaseong-si district, Gyeonggi).

Citizen Satisfaction on Service Quality	Score	Nationwide	Rating	Bottom percent
Average scores	3.10	3.23	180	21.10

Table A3: Results of t-tests.

Group	N	Mean	Std. Dev	Difference	p-value
Treatment PI	70	6.9857	1.5275	0.3565	0.1544
<i>Treatment-detailed PI</i>	34	6.9412	1.6686	-0.0866	0.8146
<i>Treatment-brief PI</i>	36	7.0278	1.4038		
Control	89	6.6292	1.5839		

Note: PI – Performance information on citizen satisfaction with service quality.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.