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Determinants of Positive Job Attitude and Behaviour in the Asian Work Context: Evidence from Korean central government agencies

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Abstract

This study probes and tests the impacts of organizational commitment (OC) and organizational citizenship behaviour (OCB) among public employees in the Asian context. Using a 2010 Korean Central Government Survey of forty Korean central government agencies (totalling 1,122 respondents), an antecedent-outcome model is developed which analyses how different types of interpersonal and organizational characteristics affect OC and OCB using hierarchical and multi-level ordering statistical techniques. The research finds that certain predictors, such as trust in colleagues (TC), formalized structures, and group culture, play significant roles in fostering OC and OCB among employees. In conclusion, suggestions are made for further research, and practical implications for Asian civil servants are considered.

Key words

Positive job attitude and behaviour, interpersonal trust, organizational structure, organizational culture, Korean public agencies

DETERMINANTS OF POSITIVE JOB ATTITUDE AND BEHAVIOUR IN THE ASIAN WORK CONTEXT

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INTRODUCTION

Public sector organizations currently operate in turbulent environments driven by changes in managerial, political, and technical arenas as the organizations seek to improve performance, effectiveness, and accountability (Berry 2007). Government organizations are typified as working under cumbersome and restrictive personnel systems that prevent effective delivery of services (Rainey 2009). General reforms and reforms in the human resources (HR) departments of public agencies are focused on redirecting mechanistic, bureaucratic rigidities towards flexible and organic systems. For example, decentralization is commonly understood as a way of empowering agencies to make their own staffing decisions and of enabling other actions that loosen the bureaucratic system (Carnevale and Housel 2001). Characteristically, Western prescriptions such as these, however, are somewhat at odds with East Asian bureaucratic structures and cultures. Indeed, the bureaucratic structures and cultures of East Asia are more hierarchical, centralized, and formalized, in addition to being based around Confucian values.

This study explores the nature of Asian public management/administration in relation to dominant Western models and analyses the most crucial features. More specifically, this study examines whether hierarchical, centralized, and formalized structures associated with Confucian societies are able to nurture positive job attitudes and behaviours of public employees, as anticipated in Western texts. For example, previous studies found that hierarchical, centralized, and formalized structures have significant and typically negative effects on positive job attitudes and behaviours (see, for example, George and Jones 1997; Lawrence and Lorsch 1967). Using quantitative methods, this study adds to the existing literature by focusing on central government agencies in Korea. It addresses the central questions of how and to what extent do individual, cultural, and structural factors in a Confucian-based bureaucracy affect the current job attitudes of public employees and organizational behaviours, as expressed by organizational commitment (OC) and organizational civic behaviours.

The study is presented in five parts. The first section briefly overviews Korean civil service systems and reviews existing literature about the two main outcome variables, i.e., OC and organizational citizenship behaviour (OCB). The second section, drawing on different types of theories of management and applied psychology, as well as testing a number of research hypotheses, explores and analyses the determinants of OC and OCB in the hierarchical and multi-level structure of the Korean central government bureaucracy. A conceptual research framework is provided, followed by a set of research hypotheses. This is followed by methods, where data and measures are described. Fourth, using hierarchical linear modelling (HLM), this study empirically tests the effects on OC and OCB of demographic, interpersonal, structural, and cultural factors across Korean public agencies. Finally, a discussion of findings draws research implications and assesses the limitations of this study.

AN OVERVIEW OF KOREAN CIVIL SERVICE SYSTEMS

The Korean career civil service system is intended to attract and retain outstanding young people with a high sense of honour and morality for public office. The modern career civil service system, which is usually based on a merit system, has qualification standards such as knowledge, skills, and abilities that are rigorously evaluated during the recruiting and selection process. Conventional types of career civil service systems typically refer to generalist-driven, rank-in-person-based, closed, and seniority-based career systems. A stable, hierarchical, and merit-based (i.e., rank-in-person) system was developed during a period of Korean military control in 1961–87. Korean bureaucracy, however, has been consistently criticized for ‘its closeness, rigid structure and culture, lack of flexibility, and lack of global competitiveness’ (Kim 2010, p. 383). In order to renew and innovate outdated personnel systems in pursuit of more efficient, performance-based, and business-like civil service systems, the Korean government has reformed and overhauled the major functions of public sector HR departments, including recruitment, compensation and pension, training and development, and performance evaluation. For example, the Korean government established the Senior Civil Service (SCS) to accomplish an open and proactive recruitment system and a rank-in-job system. In addition, in order to nurture Korean employees as specialists rather than generalists, the Korean training and education systems are redefining organizational and individual capacity, with an emphasis on decentralization, openness, competitiveness, performance, and responsibility (World Bank 2009).

On the other hand, efforts towards devolvement of authority and increasing flexibility for the personnel system of the central government might bring about profound and potentially adverse consequences for Korean ‘career’ civil service systems. In other words, these performance-based civil service reform tasks, which focus on systems and cultures of productivity improvement, reinvention, process re-engineering, entrepreneurial leadership, privatization, and performance measurement, have been argued to undermine the values of equity and fairness that have traditionally been associated with the civil service and with the ‘public ethos’ that provides civil service with a constitutive role in a system of governance (Park and Joaquin 2012; Thompson 2001). In addition, it might be true that the reforms have not led to any significant behavioural or institutional changes for employees or organizations. Indeed, certain aspects of current reform initiatives might actually create more problems than they might solve. Due to these civil service reform initiatives, current Korean civil service cultures and structures, as well as the overall attitudes of public employees, are constantly changing and transforming.

OC AND OCB IN THE KOREAN PUBLIC SECTOR

According to both Weberian views, ‘the source of bureaucracy’s dominance over [other forms of] governance lies in its capacity for rationally calculating the most precise and

efficient means for the resolution of problems' (Heugens 2005, p. 551). Indeed, even as diversified, privatized, and decentralized organizational environments are becoming dominant in the public sector, bureaucratic forms and institutions are still shown to yield high organizational efficiency and effectiveness. Although the existing research on bureaucratic organizations indicates both positive and negative implications, the rigidity of bureaucratic environments tends to yield negative reactions from employees regarding their job attitudes and behaviours (e.g., Bhargava and Kelkar 2000).

ORGANIZATIONAL COMMITMENT (OC)

OC is concerned with attitudinal, behavioural, and cultural antecedents among employees (Park and Rainey 2007). For example, the aspect of 'social capital' – found in relationships characterized by high levels of trust and shared cultures – tends to generate higher levels of OC among employees. In turn, highly committed employees are more likely to retain their jobs long-term. Highly committed employees also show high levels of job satisfaction, quality of work, and job performance. OC can be conceptualized as a multi-layered variable, comprised of three aspects of commitment, including affective, normative, and continuance aspects.¹ A common theme in existing research about OC is analysis of means to enhance employee commitment and, in turn, how to improve other organizational and social consequences, such as job satisfaction, turnover intentions, organizational performance and accountability, and volunteer activities among employees. For example, Park and Rainey (2007) found that there are three distinctive constructs of OC in US federal agencies, and that certain antecedents, such as empowerment, goal clarity, and perceptions of procedural equity, have direct and indirect effects on OC. Also, a number of empirical studies indicate that decentralized team structures increase the job satisfaction of Korean public sector employees (Kang 2006; Lee and Kim 2011), but that bureaucratic cultures and centralized structures still have strong positive relationships with OC in Korean police departments (Lee and Park 2011a; Yoo 2010).

ORGANIZATIONAL CITIZENSHIP BEHAVIOUR (OCB)

OCB has been defined, operationalized, and applied in various ways (e.g., Graham 1991; Organ 1988). Basically, OCB includes positive work-related informal behaviours by employees that transcend the rules and regulations formally dictated by organizational policies and job descriptions. According to Meyer and Allen (1997), OCB typically includes things such as 'providing extra help to co-workers, volunteering for special work activities, being particularly considerate of co-workers and customers, being on time, and making suggestions when problems arise' (p. 33). Similarly, Organ (1988) defined OCB as 'individual behavior that is discretionary, not directly or

explicitly recognized by the formal reward system, and that in aggregate promotes the effective functioning of the organization' (p. 4). Organ (1988) also proposed a multi-dimensional OCB construct, including aspects of altruism, conscientiousness, sportsmanship, courtesy, and civic virtue. Work by Podsakoff et al. (2003) describes OCB as consisting of seven dimensions, i.e., helping behaviour, sportsmanship, organizational loyalty, organizational compliance, individual initiative, civic virtue, and self-development. Previous works report that OCB benefits organizations in general by means of positive employee attitudes towards work or adherence to informal rules to keep order, among other examples.

In Korea, in particular, public bureaucrats tend to have distinctive values, motives, and goals compared to the public employees of other countries (Kim 2010; Lee and Moon 2007). The cultural, institutional, and structural environments affect the perceptions and behaviours of Korean public bureaucrats. That is, specific types of idiosyncratic organizational cultures (e.g., either hierarchical or group cultures) that characterize Korean bureaucracy tend to significantly affect certain organizational outcomes. For example, many empirical studies on OCB in Korean bureaucracy suggest that organizational justice and organizational trust are the most critical factors for enhancing OCB among Korean public officials (Bae 2007; Moon and Kim 2006; Park and Kim 2003), and that bureaucratic cultures and hierarchical structures still have strong positive relationships with OCB among street-level bureaucrats in a representative Korean local government (Song and Kim 2002). Given the fact that Korean personnel management reform initiatives are currently racing in pursuit of procedural changes, process innovations, and technological applications, it is sufficiently worthwhile to evaluate how the structural or interpersonal factors in a changing environment affect OC and OCB among Korean public employees. For the purposes of analysing the main impacts of interpersonal-bureaucratic cultures and structures in Korean bureaucracy, this study focuses on two outcome variables at the reaction level of public employees, namely, OC and OCB.

THEORIES AND RESEARCH HYPOTHESES

The present study focuses primarily on the roles of trust, structure, and culture as antecedents of OC and OCB. The specific pattern of relationships examined in this study is shown in Figure 1. Even though considerable research has examined the empirical antecedents of OC and OCB, much of the existing work has focused on these outcomes in private business sectors rather than in government organizations, with even fewer studies in Confucian culture-based bureaucracies (e.g., Farh et al. 1997). This study expects that OC and OCB are differently associated with various types of organizational trust, structures, and cultures in Korean central agencies.

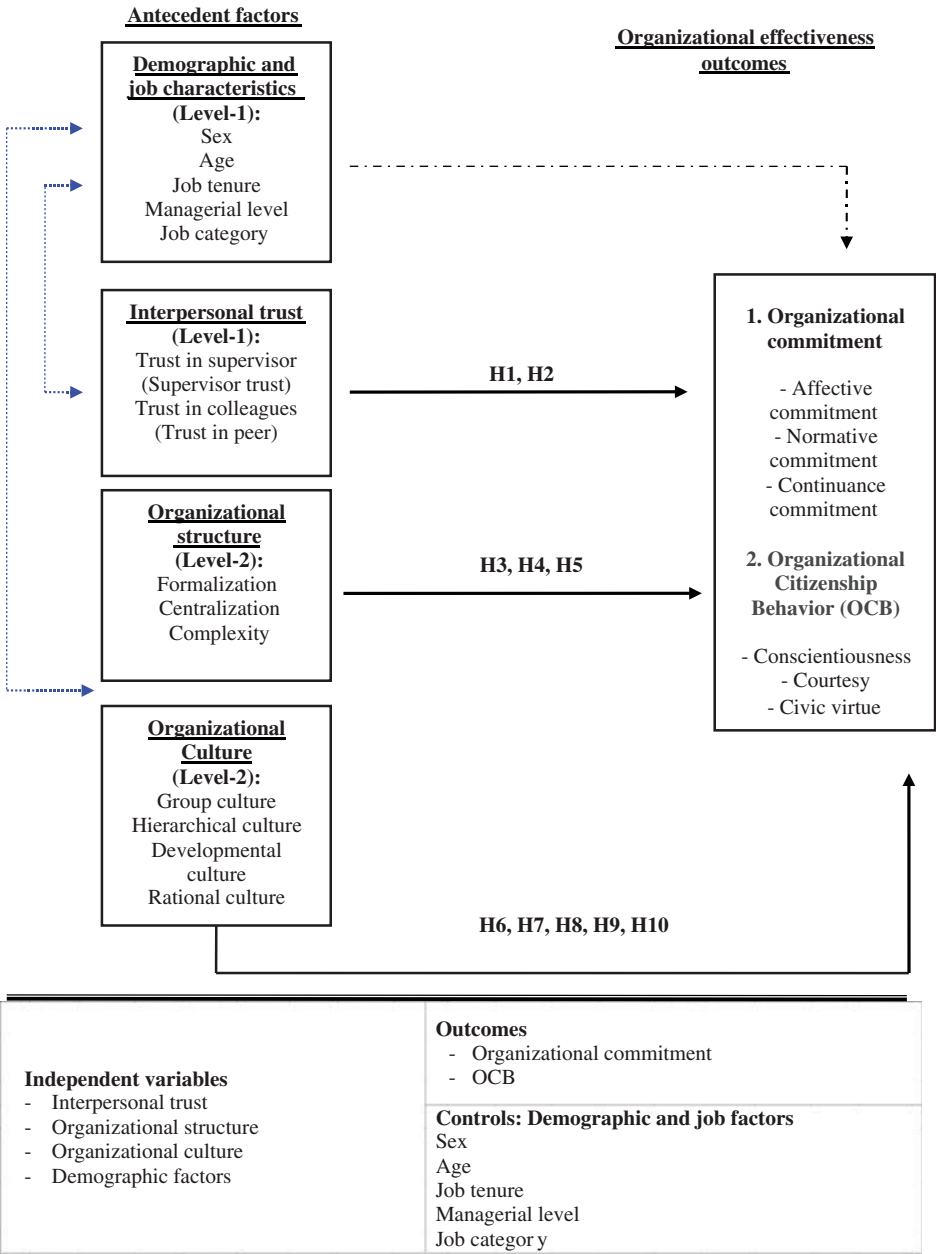


Figure 1: Hierarchical linear model (HLM): determinants, controls, and outcomes

INTERPERSONAL TRUST, OC, AND OCB

Trust is defined as the optimistic expectation of one party about the behaviour of another party, characterized by conditions of vulnerability and dependence, in situations when the party must make a decision about how to act (Hosmer 1995). Distrust produces excessive monitoring and control costs beyond any necessary standard and subsequently bring outs a defensive attitude by the distrusted party. This type of negative exchange leads to a vicious circle of distrust in organizations (Shapiro 1987). Therefore, affective and interpersonal management strategies based on trustworthiness have many merits to achieve successful organizational outcomes such as OC and OCB. For example, increasing trust among the members of an organization reduces the need to monitor the behaviours of colleagues, minimizes transaction costs (including monitoring and negotiation costs), increases flexibility by reducing unnecessary procedures and regulations, encourages participation, and facilitates informal cooperation among members, thereby enhancing OC and job involvement among employees. Accordingly, trust has the potential to solve the principal–agent problem in an organization and thereby raise the level of managerial accountability and effectiveness of the organization in the long run (Shapiro et al. 1992; Smith et al. 1995). Empirical research has detected the benefits of trust in many contexts. Trust reduces conflict (Zaheer et al. 1998), improves individual performance (McAllister 1995), promotes inter-organizational cooperation (Ring and Van de Ven 1994), and increases the commitment of foreign subsidiary managers (Kim and Mauborgne 1993). At the highest level of analysis, studies have shown empirically that societies with greater levels of trust are actually more economically developed (La Porta et al. 1997).

Empirical research has detected the benefits of trust in many contexts (e.g., Podsakoff et al. 1990). For example, trust between supervisors and subordinates improves the quality of communication (Muchinsky 1977; Yeager 1978), overall citizenship behaviour (McAllister 1995), and the problem-solving and decision-making of employees (Barnes 1981). Trust in the workplace is a manifestation of a social exchange process. Processes of social exchange, in turn, contribute to OCB by encouraging employees to behave in ways that are not strictly mandated by their employers (Rousseau and Parks 1993). It follows that employees with higher levels of trust in their organizations are likely to display more OCB, regardless of the type of organization for which they work. A study by Deluga (1994) found that the trust-building behaviour of supervisors is closely associated with OCB among employees. As a consequence of social exchange, trust in supervisors (TS) by employees is likely to affect the OCB of employees.

While there is evidence of significant positive associations among trust in peers, job satisfaction, and commitment among employees in public organizations (e.g., Lehmann-Willenbrock and Kauffeld 2010), trust researchers have neglected to examine the effects of interpersonal trust among peers in the workplace on organizational outcomes

in the public sector (Chattopadhyay and George 2001; Ferres et al. 2004; Tan and Lim 2009). As the presence of trust within organizations facilitates cooperative behaviour, reduces conflict, and decreases transaction costs at work (Rousseau et al. 1998), we strongly believe that these positive impacts of interpersonal trust will be effective and applicable in the Korean public sector in a similar manner. For example, Kim and Son (2009) found that two types of organizational justice and supervisory trust in the Korean public sector have significant influence on OC among employees. Empirical research by Bae (2007) also confirms the positive impact of interpersonal trust on the collaborative behaviour of employees, while Hong (2010) identified that organizational trust, trust in superiors, and TC (as perceived by revenue officers in Korea) provide positive effects on team commitment, and that higher team commitment leads to higher job productivity. Drawing upon these previous findings, the current study hypothesizes that TS and TC (i.e., trust in peers) are important predictors of positive organizational outcomes such as OC and OCB (Van Dyne et al. 2000).

H1: In Korean public agencies, as the degree of trust in supervisors increases, the degrees of OC and OCB among employees will increase.

H2: In Korean public agencies, as the degree of trust in colleagues increases, the degrees of OC and OCB among employees will increase.

ORGANIZATIONAL STRUCTURE, OC, AND OCB

From an agency theory perspective, the critical issue of public management seems to be the extent to which an organization requires strict control and close monitoring of employees. According to the principal-agent theory, the actions of managers – acting in the role of principals – are usually dictated by such organizational factors such as structure, policies, and culture, and managers are expected to exert these concerns over the actions of their employees. Many public management researchers have investigated whether government bureaucracies have distinctive and peculiar structural and legal characteristics, as well as how and to what extent these characteristics impact organizational performance (Brewer and Walker 2013; Downs 1967).² While an overall, single measure of organizational structure has not been established, the use of discrete dimensions of organizational structures to evaluate performance includes features of formalization, centralization, and complexity.

Formalization refers to the degree to which organizational information is encapsulated in documentation that is easily accessible to employees. Organizational documentation is one of the extrinsic sources from which employees can seek feedback. Accordingly, in more formalized organizations, we expect more feedback behaviours among employees. In turn, we expect that the employees of more formalized organizations will be more likely to be satisfied and committed to their jobs. The aspect of

centralization evaluates where the locus of power to influence decisions resides in the hierarchy of an organization. The higher this locus is located in a hierarchy, the more centralized is the organization. Hage and Aiken (1967) distinguished two types of centralization as involving participation in decision-making and hierarchy of authority. The lower the degree of participation in decision-making, and the higher the degree of hierarchy of authority, the more centralized is the organization (Krasman 2011, pp. 16–17). The complexity of an organization is usually measured by the number of subunits, levels, and specializations (Rainey 2009). Bureaucratic organizations are characterized by high levels of formalization, specialization, and hierarchy, as well as a lack of flexibility. Several studies have indicated the benefits of such characteristics for organizational efficiency. For example, formalization, a central dimension of bureaucracies, serves to support constitutional order and thereby assists employees in mastering their tasks more efficiently (Lawrence and Lorsch 1967).

The argument for structure as an antecedent to the organizational outcome of OCB is that organizational contexts either provide opportunities to engage in OCB or impose constraints against these behaviours. A study by George and Jones (1997) further argues that OCB levels should be higher in less structured, organic organizations than in more structured, mechanistic organizations. The implication is that organizational structure may be a predictor, or antecedent, of OCB, and that the degree of OCB among public employees varies significantly depending on the structural variances and idiosyncrasies in different public agencies.

In any centralized Korean HR system, the bureaucratic structure is an influential factor on the behaviour and attitudes of employees. This study posits that, while excessively formalized, centralized, and complex organizational structures provide negative impacts on the job attitudes of public employees in general, the levels of OC and OCB among employees could increase (at least marginally) with the influences of formalization and centralization. There are two mechanisms through which structure may enhance OC and OCB. First, this hypothesis is in keeping with the uniquely Asian perspective of paternalistic leadership, Confucian norms, and authoritarian cultures, because Korean public employees recognize the positive impacts of a firmly structured and well-developed civil service system. In other words, by utilizing structural mechanisms, such as emphasizing organizational loyalty and organizational compliance, different dimensions of structural environments in Korean public agencies (i.e., formalization, centralization, and complexity) will enhance OC and OCB among Korean public employees. For instance, the research of Ryu et al. (2010) confirms that organizational structures are positively associated with affective commitment (AC) and normative commitment (NC), and that there is a positive relationship among formalization, complexity, and job satisfaction in employees.

Second, it is believed that the traditional career civil service system in Korea (including a closed and centralized recruitment system, a rank-in-person system, and a tenured and merit system) partially relies on the control and exploitation of the

superior. In other words, subordinates tend to show conformity and dependence in order to receive rewards or avoid punishment. Hence, public employees, as self-interested actors and rational utility maximizers with divergent interests and conflicting goals, are expected to engage in OC and OCB through this structure-conformity dyadic mechanism. To this end, we develop the following hypotheses:

H3: *In Korean public agencies, as the degree of formalization increases, the degrees of OC and OCB will increase.*

H4: *In Korean public agencies, as the degree of centralization increases, the degrees of OC and OCB will increase.*

H5: *In Korean public agencies, as the degree of complexity increases, the degrees of OC and OCB will increase.*

BUREAUCRATIC CULTURE, OC, AND OCB

Organizational culture can be defined as a pattern of basic assumptions that are invented, discovered, or developed by a given group as the organization learns to cope with the problems of external adaptation and/or internal integration (Schein 1992). The framework is built upon two dimensions with two axes, each representing a superordinate continuum. The first dimension is the flexibility–control axis, and the second dimension is the internal–external axis. The combination of these two dimensions results in four quadrants of cultural dimensions, namely group, developmental, hierarchical, and rational cultures.³ Certain types or styles of organizational cultures have been associated with either positive or negative outcomes for either the effectiveness of the organization or for the effectiveness of individual employees within the organization (Schein 1996). For example, a study by Likert (1967), among many other studies, suggests that the type of positive, employee-focused management practices that are consistent with group culture values are likely to inspire employees to make greater efforts with their work, which should result in higher levels of OC. Organizational culture is also associated with OCB in that the culture provides guidance to behaviour in any society of employees, in ways that are both apparent and sometimes unnoticeable. A study by Moorman and Blakely (1995) suggests that individuals from collectivist cultures will exhibit higher levels of OCB than individuals from individualist cultures, based on the assumption that individuals in collectivist cultures will place greater emphasis on harmony and inter-personal cooperation within in-groups than individuals in individualist cultures.

In the Korean context, a study by Kim (2002) examines the impact of organizational culture on organizational effectiveness in local government. Three major findings of this research indicate that (1) some organizational cultures differ significantly across local governments, as well as across units of local governments, (2) the type of organizational culture has an impact on OC and job satisfaction among employees, and (3) strong comprehensive cultures, in contrast to other culture profiles, more significantly impact

OC and job satisfaction. Research by Seo and Lee (2006) also presents a model of relationships among organizational cultures, leadership styles, leader trust, OC, and OCB. The results support the indirect effect of leadership style on OCB, showing the mediating effect of leader trust and OC combined between leadership styles and OCB. Han's study (2009) also finds that organizational cultures act as effective antecedents of factors of organizational effectiveness, such as OC and OCB. While the Asian cultural traditions of Confucianism, legalism, and hierarchism are widespread in the Korean public sector, the current study hypothesizes that the four quadrants of cultural dimensions characterize Korean central agencies in ways that are not exhaustive, but are still distinctive. That is, some agencies feature more internal, flexible cultures, while other agencies are more likely to be oriented towards external and controlled cultures. These idiosyncratic cultural factors will be differently related to organizational outcomes. Based on previous studies, we test the impacts of organizational culture on OC and OCB. As follows, we hypothesize that, while four types of organizational cultures will provide significant impacts on OC and OCB, internal and flexible cultures more positively affect OC and OCB than external and controlled cultures.

H6: In Korean public agencies, as the degree of group culture increases, the degrees of OC and OCB will increase.

H7: In Korean public agencies, as the degree of developmental culture increases, the degrees of OC and OCB will increase.

H8: In Korean public agencies, as the degree of rational culture increases, the degrees of OC and OCB will increase.

H9: In Korean public agencies, as the degree of hierarchical culture increases, the degrees of OC and OCB will increase.

H10: In Korean public agencies, group and developmental cultures are more strongly associated with OC and OCB than rational and hierarchical cultures.

RESEARCH METHODS

Data and measurements

The empirical portion of this study utilizes our primary data, 2010 Korean Central Government Survey data, which includes forty Korean central government agencies [with a total of 1,122 Korean public employees and a response rate of 93.5 per cent (ranging from a low of 76.67 per cent to a high of 100 per cent)]. In order to ensure the presence of key subgroups within the sample, a stratified random sampling method was used. To obtain a stratified sample of Korean central officials, we divided the entire target population into forty different subgroups (ministry-level) and then randomly selected thirty public employees (employee-level) from each subgroup.⁴ Division managers of the agencies were responsible for internal distribution and collection of

Table 1: Characteristics of respondents in Korean central agencies (number of agencies = 40; number of respondents = 1,122)

| Variables | | Frequencies | % | Variables | | Frequencies | % |
|----------------------------------|-------------------|-------------|-------|------------------|-----------------------|-------------|-----------|
| Sex | Male | 785 | 70.47 | Managerial level | Level-3 and higher | 13 | 1.19 |
| | Female | 329 | 29.53 | | Level-4 | 123 | 11.29 |
| Age | 20's | 60 | 5.48 | | Level-5 | 273 | 25.07 |
| | 30's | 417 | 38.08 | | Level-6 | 354 | 32.51 |
| | 40's | 495 | 45.21 | | Level-7 | 181 | 16.62 |
| | 50's | 123 | 11.23 | | Level-8 | 145 | 13.31 |
| | 60's and over | 0 | 0.00 | Job Category+ | Category 1 | 726 | 65.41 |
| Job tenure (current position) | Less than 5 years | 161 | 14.84 | | Category 2 | 142 | 12.79 |
| | 5–10 years | 237 | 21.84 | | Category 3 | 68 | 6.13 |
| | 10–20 years | 411 | 37.88 | | Category 4 | 122 | 10.99 |
| | 20–30 years | 226 | 20.83 | | Category 5 | 18 | 1.62 |
| | 30 years and more | 50 | 4.61 | | Category 6/ others | 15/19 | 1.35/1.71 |

surveys. Prior to distributing surveys, the division managers clearly communicated to all participants the purpose of the study, assured their voluntary participation, and ensured that their responses would remain anonymous (see [Tables 1](#) and [2](#)).

First, we measured two dimensions of organizational outcome variables, including OC and OCB. As suggested by a study by Meyer and Allen (1991), OC is a psychological state among employees that characterizes their relationship with the organization, with implications for employee decisions about whether or not to continue membership in the organization (Wasti 2003). To measure the OC of public employees in Korea, we included three distinct indicators of sub-dimensions of commitment (i.e., affective, normative, and calculative) (Park and Rainey 2007). Utilizing Organ's (1988) OCB typology, we also included OCB as an outcome variable. Fifteen relevant survey items were utilized to capture three sub-dimensions of the OCB concept. The sub-dimensions include conscientiousness (e.g., a co-worker in our department is conscientious), courtesy (e.g., a co-worker in our department is always careful in his or her behavioural habits that impact the work of other employees), and civic virtue (e.g., I try to solve problems when they happen, rather than complain and assign blame). Based on these theoretical and heuristic arguments, which propose that there are distinctive and latent factor constructs nested in Korean bureaucracy, this study performed

Table 2. Agencies and response rate (%)

| Agencies | Surveys | Response rate (%) | Agencies | Surveys | Response rate (%) | | | |
|----------------|---|-------------------|----------|---------|--|----|----|--------|
| Ministry-level | Ministry of Strategy and Finance | 30 | 27 | 90.00 | Ministry of Government Legislation | 30 | 30 | 100.00 |
| | Ministry of Education, Science and Technology | 30 | 30 | 100.00 | Ministry of Patriots & Veterans Affairs | 30 | 30 | 100.00 |
| | Ministry of Foreign Affairs and Trade | 30 | 30 | 100.00 | National Tax Service | 30 | 29 | 96.67 |
| | Ministry of Unification | 30 | 26 | 86.67 | Korea Customs Service | 30 | 29 | 96.67 |
| | Ministry of Justice | 30 | 28 | 93.33 | Public Procurement Service | 30 | 30 | 100.00 |
| | Ministry of National Defense | 30 | 30 | 100.00 | Statistics Korea | 30 | 30 | 100.00 |
| | Ministry of Public Administration and Security | 30 | 30 | 100.00 | Supreme Prosecutors' Office | 30 | 30 | 100.00 |
| | Ministry of Culture, Sports & Tourism | 30 | 23 | 76.67 | Military Manpower Administration | 30 | 28 | 93.33 |
| | Ministry of Food, Agriculture, Forestry and Fisheries | 30 | 30 | 100.00 | Defense Acquisition Program Administration | 30 | 23 | 76.67 |
| | Ministry of Knowledge Economy | 30 | 26 | 86.67 | National Police Agency | 30 | 26 | 86.67 |
| | Ministry of Health & Welfare | 30 | 24 | 80.00 | National Emergency Management Agency | 30 | 23 | 76.67 |
| | Ministry of Environment | 30 | 30 | 100.00 | Cultural Heritage Administration | 30 | 30 | 100.00 |
| | Ministry of Employment and Labor | 30 | 30 | 100.00 | Rural Development Administration | 30 | 30 | 100.00 |
| | Reserved | | | | | | | |
| | Ministry of Gender Equality & Family | 30 | 26 | 86.67 | Korea Forest Service | 30 | 27 | 90.00 |
| | Republic of Korea | | | | | | | |
| | Ministry of Land, Transport and Maritime Affairs | 30 | 27 | 90.00 | Small & Medium Business Administration | 30 | 30 | 100.00 |

(continued)

Table 2: (Continued)

| Agencies | Surveys | Response rate (%) | Agencies | Surveys | Response rate (%) | | | |
|-----------------|---|-------------------|----------|---------|-------------------------------------|----|----|--------|
| Committee-level | Korea Communications Commission | 30 | 28 | 93.33 | Korea Intellectual Property Office | 30 | 30 | 100.00 |
| | Fair Trade Commission | 30 | 28 | 93.33 | Korea Food & Drug Administration | 30 | 26 | 86.67 |
| | Financial Services Commission | 30 | 29 | 96.67 | Korea Meteorological Administration | 30 | 29 | 96.67 |
| | Anti-Corruption & Civil Rights Commission | 30 | 27 | 90.00 | Korea Coast Guard | 30 | 30 | 100.00 |
| | National Human Rights Commission | 30 | 26 | 86.67 | 1,121 (93.50%) | | | |
| Office-level | Prime Minister's Office | 30 | 27 | 90.00 | | | | |

preliminary exploratory factor analyses (EFA) of the main independent and outcome variables. The main EFA results are reported in the Online Appendix (need to later include url).

Second, we measured two critical dimensions of organizational trust, i.e., TS and TC (Nyhan 2000). Third, we measured three key factors of organizational structures, i.e., complexity, centralization, and formalization (Aiken and Hage 1968; Robbins 1987). We anticipate that these three factors are theoretically and empirically distinctive, and that, to different degrees, they influence OC in the context of Korean bureaucracy. Finally, in order to measure the role of culture, we employed Quinn and Kimberly's (1984) categorization of distinctive values, including group, developmental, hierarchical, and rational cultures. Based on this framework, four distinct variables to represent types of organizational cultures were included in this study. Tables 1–5 are shown in the online Appendix.

Research modelling: Hierarchical linear modelling (HLM)

Because government bureaucracies have shown an inherent hierarchical structure, with people employed in certain programmes and units within public agencies, this research employed HLM. HLM explicitly explains the nested nature of data and simultaneously estimates the impacts of factors at different levels on individual-level outcomes while maintaining appropriate levels of analysis for predictors. The basic practical and statistical assumption of the HLM in this study is that Korean public employees are nested within their agencies and subcomponents, creating a hierarchical data structure with two levels of random variation. HLM explicitly explains the nested nature of data and simultaneously estimates the impacts of factors at different levels on individual-level outcomes while maintaining appropriate levels of analysis for predictors.⁵ The sample size of the level-1 (individual level) and level-2 (agency level) variables were 1,122 and 40, respectively. The survey respondents represented forty different Korean central agencies, and the level-2 variables were the average scores (i.e., imputation procedure means) for those variables for the respondents from each agency. Each of the forty agencies was well represented by a number of respondents, with no serious unevenness in responses from different agencies.⁶

RESULTS

Because Korean public employees are partially clustered or nested within their leaders and organizations, this study employed the analysis of covariance (ANCOVA) and the intercepts- and slopes-as-outcomes models, which provide unique intercept and slope estimates for each central agency. For example, in the ANCOVA model, each slope of the covariate is assumed to have the same effect on each level of the factor (i.e.,

homogeneity of regression), while the intercepts- and slopes-as-outcomes model is used for the purposes of modelling the associations between level-2 predictors and outcomes, as well as to track the degree to which those predictors explain variance in the level-2 outcomes.

Level-1 (individual-level) model: One-way ANCOVA model with random effects

In the individual-level model, a one-way ANCOVA model was employed in order to incorporate several covariates and to analyse how these level-1 predictors would affect outcome variables. Eight covariates were included as fixed effects, including (1) sex (γ_{10}), (2) age (γ_{20}), (3) job tenure in current position (γ_{30}), (4) managerial level (γ_{40}), and (5) job category (γ_{50}). As random effects, level-1 and level-2 variances were included.⁷ The final level-1 ANCOVA model is as follows:

Level-1 model:

$$\begin{aligned}
 Y_{ij}(\text{OC}, \text{OCB}) = & \beta_{0j} + \beta_{1j}(\text{sex}) + \beta_{2j}(\text{age}) + \beta_{3j}(\text{job tenure}) \\
 & + \beta_{4j}(\text{managerial level}) + \beta_{5j}(\text{job categories}) \\
 & + \beta_{6j}(\text{trust in supervisors}) + \beta_{7j}(\text{trust in colleagues}) + \varepsilon_{ij}
 \end{aligned}$$

The results of the six ANCOVA models show that all reliability estimates (β_0) are greater than the threshold value of 0.05. For example, the conditional intraclass correlation coefficient (ICC) indicates that, in the AC model, there is approximately 18.3 per cent variation in the AC of Korean public employees across agencies. Similarly, in the models of NC and CC, the proportions of variance across central agencies are approximately 20.5 per cent and 16.5 per cent, respectively.⁸

Hypotheses testing: Fixed and random effects

The HLM results on OC and OCB are reported in Tables 3 and 4. To test Hypotheses 1 and 2, we regressed OC and OCB on two types of interpersonal trust, together with five control variables.

First, the results of this study reveal that TS is the most significant predictor of AC among employees, to the extent that supervisory trust among Korean public employees is more positively associated with AC ($\gamma = .231, p < 0.05$) than NC or CC ($\gamma = .147, p < 0.05; \gamma = -.067, p < 0.05$, respectively). Similarly, TC among employees has a more statistically significant relationship with AC and NC than CC ($\gamma = .158, p < 0.05; \gamma = .213, p < 0.05; \gamma = -.052, p < 0.05$, respectively). Second, with regard to the relationship between interpersonal trust and OCB, the results show that TS enhances all the dimensions of OCB, with particularly positive and significant impacts on behaviours of conscientiousness and civic virtue among Korean public employees

Table 3: Hierarchical linear model (HLM) results: organizational commitment (affective, normative, and continuance)

| OC model | 1. Employee-level model: one-way ANCOVA model | | | 2. Agency-level model: intercepts- and slopes-as-outcomes model | | | | |
|---|--|----------------|----------------|--|----------------|----------------|----------------|----------------|
| | Reliability | Intercept (β0) | Affective | Normative | Continuance | Affective | Normative | Continuance |
| Intercept (γ00) | | | .211 | .384 | .122 | .188 | .321 | .108 |
| Level-1 slope (individual) model | | | 2.96** | 3.14** | 2.12** | 2.26** | 2.87** | 1.91** |
| 1. Demographic controls, individual-level | | | | | | | | |
| Sex (γ10) | | | -.013 (-.262) | | | | | |
| Age (γ20) | | | -.002 (-.433) | | | | | |
| Job tenure (γ30) | | | .003 (.739) | | | | | |
| Managerial level (γ40) | | | -.011 (-.630) | | | | | |
| Job category (γ50) | | | .041** (2.446) | | | | | |
| 2. Interpersonal trust | | | | | | | | |
| Trust in Supervisor (γ60) | | | .231** (7.343) | .147** (4.279) | -.067 (-1.720) | | | |
| Trust in Colleagues (γ70) | | | .158** (5.225) | .213** (6.419) | -.052 (-1.392) | | | |
| Level-2 Intercept (organizational) model | | | | | | | | |
| 1. Organizational structure | | | | | | | | |
| Formalization (γ01) | | | | | | .080** (2.883) | .088** (2.916) | -.025 (-.731) |
| Centralization (γ02) | | | | | | .110** (3.838) | .102** (3.224) | .027 (.760) |
| Complexity (γ03) | | | | | | -.001 (-.048) | .028 (.969) | .133** (4.153) |

(continued)

Table 3: (Continued)

| <i>OC model</i> | <i>1. Employee-level model: one-way ANCOVA model</i> | <i>2. Agency-level model: intercepts- and slopes-as-outcomes model</i> |
|---|--|--|
| 2. Organizational culture | | |
| Group culture (γ_{04}) | | .185** (6.481) |
| Hierarchical culture (γ_{05}) | | -.067** (-2.582) |
| Developmental culture (γ_{06}) | | .083** (2.803) |
| Rational culture (γ_{07}) | | .036 (1.373) |
| Random effects | | |
| Level-1 effects (r_{ij}) variance | .097 | .099** (3.155) |
| Level-2 effects (μ_{0j}) variance | .003** | -.018** (-.621) |
| Inter-class correlation (ICC) | | .132** (4.127) |
| Conditional ICC | 18.3% | .029 (.882) |
| Proportion of the variance in r_{ij} explained by the model (%) | 25.13% | -.057 (-1.570) |
| Proportion of the variance in μ_{0j} explained by the model (%) | 0% | .035 (1.218) |
| Deviance | 404.25 | .054* (1.688) |
| Number of parameters | 2 | |

Notes: Individual-level $N = 1,122$ public employees; Organizational-level $N = 40$ Korean central agencies.

•Critical values are 1.96 for $P < .05$ and 1.65 for $P < .10$ (t -statistics are in parentheses).

** $P < .05$: significant at .05 level.

* $P < .10$: significant at .10 level.

Table 4: Hierarchical linear model (HLM) results: OCB (conscientiousness, courtesy, and civic virtue)

| <i>OCB model</i> | | <i>1. Employee-level model: one-way ANCOVA model</i> | | | <i>2. Agency-level model: intercepts- and slopes- as-outcomes model</i> | | |
|--|-------------------------|--|-----------------------|-----------------------|---|-----------------------|-----------------------|
| Reliability | Intercept (β_0) | Conscientiousness | Courtesy | Civic virtue | Conscientiousness | Courtesy | Civic virtue |
| Intercept (γ_{00}) | | .211 2.96** | .384 3.14** | .122 2.12** | .188 2.26** | .321 2.87** | .108 1.91** |
| Level-1 slope (individual) model | | | | | | | |
| 1. Demographic controls, individual level | | | | | | | |
| Sex (γ_{10}) | | .038 | | | | | |
| Age (γ_{20}) | | .003 | | | | | |
| Job tenure (γ_{30}) | | -.002 | | | | | |
| Managerial level (γ_{40}) | | .014 | | | | | |
| Job category (γ_{50}) | | -.029 | | | | | |
| 2. Interpersonal trust | | | | | | | |
| Trust in supervisor (γ_{60}) | | .136** (4.698) | .107** (3.702) | .127** (4.192) | | | |
| Trust in colleagues (γ_{70}) | | .128** (4.712) | .096** (3.501) | .092** (3.219) | | | |
| Level-2 intercept (organizational) model | | | | | | | |
| 1. Organizational structure | | | | | | | |
| Formalization (γ_{01}) | | | | | .130** (4.790) | .142** (5.233) | .107** (3.772) |
| Centralization (γ_{02}) | | | | | .039 (1.442) | .087** (3.246) | .027 (.975) |
| Complexity (γ_{03}) | | | | | .045 (1.874) | .029 (1.183) | .038 (1.497) |

(continued)

Table 4: (Continued)

| <i>OCB model</i> | | 1. Employee-level model: <i>one-way ANCOVA model</i> | 2. Agency-level model: <i>intercepts- and slopes- as-outcomes model</i> |
|---|--------|---|--|
| 2. Organizational culture | | | |
| Group culture (γ_{04}) | | | .219** (8.103) .152** (3.155) .132** |
| Hierarchical culture (γ_{05}) | | | -.041** (-1.961) -.042 (-2.016) -.015 (-.702) |
| Developmental culture (γ_{06}) | | | .051** (1.968) .083** (3.186) .114** (4.179) |
| Rational culture (γ_{07}) | | | .061** (2.313) .033 (1.261) .050 (1.837) |
| Random effects | | | |
| Level-1 effects (r_{ij}) variance | .097 | | .095 |
| Level-2 effects (μ_{0j}) variance | .003** | | .003** |
| Inter-class correlation (ICC) | | | |
| Conditional ICC | 18.3% | | 16.8% |
| Proportion of the variance in r_{ij} explained by the model (%) | 25.13% | | 32.53% |
| Proportion of the variance in μ_{0j} explained by the model (%) | 0% | | 33.3% |
| Deviance | 404.25 | | 397.28 |
| Number of parameters | 2 | | 2 |

Notes: Individual-level $N = 1,122$ public employees; Organizational-level $N = 40$ Korean central agencies.
•Critical values are 1.96 for $P < .05$ and 1.65 for $P < .10$ (t-statistics are in parentheses).
** $P < .05$; significant at .05 level.
* $P < .10$; significant at .10 level.

($\gamma = .155, p < 0.05$; $\gamma = .126, p < 0.05$). Another dimension of trust, TC, is also very positively associated with OCB in a way that most significantly increases conscientiousness behaviours of Korean public employees ($\gamma = .149, p < 0.05$). The results confirm that, in Korean public agencies, both types of interpersonal trust are critical to increase the commitment and loyalty of public employees to their organizations and to develop the civic and moral behaviours of public employees in significant and positive ways. While this research does not measure actual performance or productivity outcomes, the findings imply that a high level of interpersonal trust will positively impact individual and organizational performance via OC and OCB mediators.

Additionally, in order to test the coefficient differences between TS and TC on OC and OCB, this study used an independent sample *t*-test method by dividing the sample into two groups of TS (Group 1) and TC (Group 2). Results of the test show that the impacts of TS and TC on OC and OCB are statistically different, and that the difference is significant overall. Each of the six ANCOVA models shows that all reliability estimates (β_0) are greater than 0.05. We also measured proportions of level-1 variance as explained by seven level-1 predictors and examined the fixed and random effects [*this analysis confirmed hypotheses 1 and 2*].

Level-2 (agency-level) model: Intercepts- and slopes-as-outcomes model

An intercepts- and slopes-as-outcomes model (agency-level), which assumes that intercepts and slopes have random effects, was used for further hypotheses testing.⁹ Seven fixed effects were included as predictors of organizational structure and culture (at level 2), including (1) formalization (γ_{01}), (2) centralization (γ_{02}), (3) complexity (γ_{03}), (4) group culture (γ_{04}), (5) hierarchical culture (γ_{05}), (6) developmental culture (γ_{06}), and (7) rational culture (γ_{07}). As random effects, level-1 and level-2 variances were included.¹⁰ The final intercepts- and slopes-as-outcomes model is as follows:

Level-1 (individual) model:

$$Y_{ij}(\text{OC, OCB}) = \beta_{0j} + \beta_{1j}(\text{sex}) + \beta_{2j}(\text{age}) + \beta_{3j}(\text{job tenure}) \\ + \beta_{4j}(\text{managerial level}) + \beta_{5j}(\text{job categories}) \\ + \beta_{6j}(\text{trust in supervisors}) + \beta_{7j}(\text{trust in colleagues}) + \epsilon_{ij}$$

Level-2 (agency) model:

$$\text{Intercept: } \beta_0 = \gamma_{00} + 01(\text{formalization}) + \gamma_{02}(\text{centralization}) \\ + \gamma_{03}(\text{complexity}) + \gamma_{04}(\text{group culture}) \\ + \gamma_{05}(\text{hierarchical culture}) + \gamma_{06}(\text{development culture}) \\ + \gamma_{07}(\text{rational culture}) + u_{0j}$$

$$\begin{aligned} \text{Slope 1 : } \beta_{6j}(\text{TS}) = & \gamma_{60} + \gamma_{61}(\text{formalization}) + \gamma_{62}(\text{centralization}) \\ & + \gamma_{63}(\text{complexity}) + \gamma_{64}(\text{group culture}) \\ & + \gamma_{65}(\text{hierarchical culture}) + \gamma_{66}(\text{development culture}) \\ & + \gamma_{67}(\text{rational culture}) + u_{0j} \end{aligned}$$

$$\begin{aligned} \text{Slope 2 : } \beta_{7j}(\text{TC}) = & \gamma_{70} + \gamma_{71}(\text{formalization}) + \gamma_{72}(\text{centralization}) \\ & + \gamma_{73}(\text{complexity}) + \gamma_{74}(\text{group culture}) \\ & + \gamma_{75}(\text{hierarchical culture}) + \gamma_{76}(\text{development culture}) \\ & + \gamma_{77}(\text{rational culture}) + u_{0j} \end{aligned}$$

$$\text{Other Slopes: } \beta_{1j} = \gamma_{10}; \beta_{2j} = \gamma_{20}; \beta_{3j} = \gamma_{30}; \beta_{4j} = \gamma_{40}; \beta_{5j} = \gamma_{50}$$

In the three intercepts- and slopes-as-outcomes models, all reliability estimates are greater than 0.05. For example, the conditional ICC coefficient indicates that, in the OCB conscientiousness model, there is approximately 16.8 per cent variation across agencies. Similarly, in the OCB models of courtesy and civic virtue, the proportions of variance across central agencies are approximately 21.4 per cent and 22.4 per cent, respectively.¹¹

Hypotheses testing: Fixed and random effects

This study finds that the level-1 fixed effects of the intercepts- and slopes-as-outcomes models are not different from the level-1 fixed effects of the ANCOVA model (see Tables 8 and 9). First, our findings from the tests about structural impacts confirm that, in general, formalized and centralized organizational structures in Korean bureaucracy are positively associated with AC, NC, and courtesy in OCB of Korean public employees (e.g., centralization coefficients are $B = .110^{**}$, $B = .102^{**}$, and $B = .087^{**}$, respectively). On the contrary, complexity in Korean public agencies does not positively influence the mean levels of AC, NC, and OCB (i.e., the grand mean of the outcome variables) among public employees. Interestingly, this study also finds that the impact of complexity on CC ($B = .133^{**}$) is more significant and positive than the impact of complexity on AC or NC. This finding implies that the more complex is an organization, the less psychological attachment or organizational loyalty exists among public employees in Korea. Consequential to this finding, it is also expected that employees would make career changes and leave their current organizations if certain extrinsic conditions were fulfilled [*this analysis partially confirmed hypotheses 3, 4, and 5*].

Second, the results indicate that some dimensions (e.g., group and developmental cultures) of organizational cultures significantly and positively affect six different outcomes among Korean public employees. For example, group culture and

developmental culture variables are positively and significantly related to AC and conscientiousness in OCB ($B = .185^{**}$, $B = .083^{**}$, and $B = .242^{**}$, respectively), as well as all three OCB sub-constructs. These findings suggest that Korean employees working within group or developmental cultures are more likely to make commitments to their organizations, and that they are more likely to provide extra help to co-workers and to volunteer for special work activities. Third, the results of hierarchical culture impacts on outcome variables suggest that Korean public employees working in hierarchical cultures are less likely to show high levels of OC and OCB, as well as to be generally negative (in cases of AC, conscientiousness, and courtesy of OCB, for example, $B = -.067^{**}$, $B = -.053^{**}$, and $B = -.056^{**}$, respectively). On the contrary, CC is positively and significantly associated with hierarchical culture. This finding implies that hierarchical organizations are less likely to achieve high levels of long-term organizational effectiveness and productivity [*this analysis partially confirmed hypotheses 6, 7, 8, 9, and 10*]. Table 5 presents our ten hypotheses and their results.

DISCUSSION AND CONCLUSION

With regard to the public management profession in Asian countries, there are claims about its distinctiveness compared to the dominant global public management models originating from major Western nations. Recognizing major diversities in the past and present contextual factors (embedded in the formations of administrative systems) among countries within Asia, this study analyses whether global public management models, theories, and practices can be generalized across countries. By testing and confirming a number of research hypotheses developed within a Korean bureaucratic context, this research at least partially addresses some major issues of both the 'uniqueness' and 'universality' of Asian public management.

OC and OCB in the public service sector are important organizational characteristics, as it is fair to posit a proximal relationship between the perceived outcomes of OC and OCB and actual performance at both individual and organizational levels. Although considerable research has investigated the antecedents of OC and OCB, much of the existing work has focused on OC and OCB in business sectors, rather than in the major government agencies of Western countries. The research that has examined the job involvement of public employees, while valuable, does not thoroughly assess how interpersonal trust, organizational structure, and the dimensions of workplace cultures influence employees in central government agencies to become more committed and to show more civic-oriented behaviour in their work. The aim of this study is to fill the gap in existing public management research by examining how one individual-level factor (i.e., interpersonal trust) and two organizational-level factors (i.e., organizational structure and workplace culture) impact the OC and OCB of public employees in government work settings in Korea. The three main factors, together with the set of control variables included in this research, explain a substantial amount of variance in

OC and OCB outcomes in a sample of 1,122 Korean public employees and 40 Korean central government agencies.

First, the HLM results suggest that interpersonal trust plays a critical role in enhancing OC and OCB among Korean public employees. Both types of interpersonal trust (i.e., TS and TC) increase OC and OCB outcomes among employees of Korean bureaucracies. These findings from the Asian work context are consistent with the results found in previous studies about public employees in the United States (e.g., Park and Rainey 2012). This consistency implies that the positive impacts of interpersonal trust on the behaviours of public employees are universal and can be generalized regardless of national or organizational characteristics. From a performance management point of view, even though managers must take an active and positive role in employee performance to ensure that goals are met, managers also need to develop a process that encourages employees to accept responsibility for their own performance, to enable them to achieve and sustain superior performance, and to treat them as partners in working towards organizational goals and effectiveness. To achieve better performance in Korean public agencies through the use of managerial tactics such as mentoring and coaching approaches, HR managers in Korean central agencies need to develop and maintain trust-based mechanisms and processes. These mechanisms and processes can be referred to as organizational trust socialization, through which an individual employee acquires the social knowledge and skills necessary to assume an organizational role and develop high levels of OC and OCB.

Second, this study indicates that organizational structure plays a vital role in enhancing the OC and OCB of Korean employees. From a comparative perspective, the major findings of this study imply that certain aspects of Asian bureaucratic structures and institutional arrangements are key factors in understanding and managing public employees in this region. Specifically, as anticipated, formalization and centralization variables are significantly and positively associated with most of the sub-dimensions of OC and OCB. These results suggest that formalized and centralized organizational structures in Korean bureaucracy bring positive consequences to both employees and organizations and, accordingly, contribute to building and developing individual and organizational capacities. One of the reasons for the positive impact of formalization and centralization in Korean central agencies may be due to rank-in-person HR systems, which are sharply different from the rank-in-job systems of the United States and other European countries (Kim 2010; Lee and Moon 2007). Centralized and Confucian-based HR systems in Korea tend to cause employees to perceive formalized and/or centralized structures as more acceptable, efficient, and even equitable. This perception ultimately increases the level of positive organizational behaviours among employees. These are important new findings as no previous study about public management in East Asian countries has investigated the role of organizational structures in increasing OC and OCB among employees. We should be cautious, however, in interpreting the results as directly impacting positive organizational outcomes, because this study does not explicitly

Table 5: Summary of the hypotheses and results

| | | HLM model: level-1 | HLM model: level-2 |
|----------------------|--|-----------------------|--------------------------------|
| Hypothesis 1 | <i>In Korean public agencies, as the degree of trust in supervisors increases, the degrees of OC and OCB among employees will increase.</i> | Confirmed | |
| Hypothesis 2 | <i>In Korean public agencies, as the degree of trust in colleagues increases, the degrees of OC and OCB among employees will increase.</i> | Confirmed | |
| Hypothesis 3 | <i>In Korean public agencies, as the degree of formalization increases, the degrees of OC and OCB will increase.</i> | | Confirmed |
| Hypothesis 4 | <i>In Korean public agencies, as the degree of centralization increases, the degrees of OC and OCB will increase.</i> | | Confirmed |
| Hypothesis 5 | <i>In Korean public agencies, as the degree of complexity increases, the degrees of OC and OCB will increase.</i> | | Partially Confirmed |
| Hypothesis 6 | <i>In Korean public agencies, as the degree of group culture increases, the degrees of OC and OCB will increase.</i> | | Confirmed |
| Hypothesis 7 | <i>In Korean public agencies, as the degree of developmental culture increases, the degrees of OC and OCB will increase.</i> | | Confirmed |
| Hypothesis 8 | <i>In Korean public agencies, as the degree of rational culture increases, the degrees of OC and OCB will increase.</i> | | Partially Confirmed |
| Hypothesis 9 | <i>In Korean public agencies, as the degree of hierarchical culture increases, the degrees of OC and OCB will increase.</i> | | Confirmed |
| Hypothesis 10 | <i>In Korean public agencies, group and developmental cultures are more strongly associated with OC and OCB than rational and hierarchical cultures.</i> | | Confirmed |

measure performance or productivity among employees in Korean bureaucracies. Accordingly, future studies need to investigate whether these structural characteristics actually lead to positive performance outcomes.

Third, the results indicate that, as the degree to which Korean public employees recognize their organizational cultures as group or developmental cultures increases, the levels of OC and OCB among employees increase. That is, this study confirms that certain types of organizational cultures in the public service sector are associated with Confucian societies, and that these cultures are able to nurture the positive job attitudes and behaviours of Asian public employees. A group or team-based culture in Korean bureaucracy is the most important characteristic of Asian organizational cultures in predicting the OC and OCB of Korean public employees, followed by a developmental culture, rational culture, and hierarchical culture. These results suggest the workable angles used by Korean public managers for increasing the OC and OCB of public employees. For example, in order to improve employee OC and OCB, managers need to develop, promote, and accommodate characteristics of group and developmental cultures, such as open communication, participation, managerial flexibility, innovative strategies, and continual adaptation to the external environment. Efforts to decentralize and deregulate Korean traditional HR systems are necessary on an ongoing basis. The important contributions of this study should be acknowledged in the light of certain limitations. This study relied on a cross-sectional design. Consequently, conclusions regarding causal connections between individual-level and organization-level factors and the OC and OCB of Korean public employees should be made with great caution. Additionally, data for this study was collected from public employees in forty Korean central agencies. Although each of these central agencies handles diverse public responsibilities, the results reported in this study may have somewhat limited generalizability. Accordingly, additional empirical tests with samples of public employees from a broader range of public organizations in East Asian countries would provide more validity for the framework of our research.¹²

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NOTES

- 1 AC refers to the affective or emotional attachment an employee feels towards the organization of which the employee is part, characterized by identification and involvement with the organization, as well as enjoyment in being a member of the organization (Allen and Meyer 1990; O'Reilly and Chatman 1986). NC, which is the extent to which a person feels obligated to stay with an organization, emphasizes a belief about the formal and informal responsibility of an employee to the organization and a perceived duty by the employee to work

for the organization and its functions (Wiener 1982). Continuance or calculative commitment reflects 'the extent to which an employee needs to stay with an organization based on the individual's recognition of the costs (or lost opportunities, such as pay or promotion) associated with discontinuing the activity or leaving the organization' (Allen and Meyer 1990, p. 3).

- 2 For example, Brewer and Walker (2013) found that personnel system constraints in public organizations (e.g., personnel removal constraints and personnel reward constraints) have varying effects on public service performance, which suggests that the degree of structural efficiency in the public sector plays a crucial role in organizational performance.
- 3 Group culture emphasizes flexibility and internal organization. Organizations that emphasize group culture consequently promote the development of human resources focusing on openness, participation, cohesiveness, and commitment to membership. Development culture also emphasizes flexibility but with greater focus on the external environment. The orientation of a development culture is towards growth, stimulation of creativity, resource acquisition, innovation, and continual adaptation to the external environment. Likewise, the rational culture is focused on the external environment but is control oriented. It emphasizes productivity, performance, and goal achievement. One of the primary motivating factors of a rational culture is competition. The hierarchical culture is both control oriented and internally oriented. It emphasizes rules and regulations, along with standardization to achieve control and stability (Moynihan and Pandey 2007).
- 4 A stratified random sampling technique has a high statistical precision compared to a simple random sampling, which does not ensure that subgroups are represented equally or proportionally within the sample because the variability within the subgroups is lower compared to the variations in an entire population.
- 5 One of the rationales for using the HLM method in this study is that ordinary least squares (OLS) modelling does not take into account the interdependence of individual-level observations nested within higher-level (i.e., agency-level) public agencies. Consequently, estimates of standard errors may be biased, and test statistics may not be valid. To avoid potential problems caused by hierarchically nested data structures, both the ANCOVA and the intercepts- and slopes-as-outcomes models are used in this research.
- 6 To address missing data in this study and in order to preserve sample size, we employed the expectation-maximization (EM) algorithm (level 1) and the Markov Chain Monte Carlo (MCMC) imputation method (level 2). The EM algorithm (a) replaces missing values with estimated values, (b) estimates parameters, (c) re-estimates the missing values assuming the new parameter estimates are correct, and (d) re-estimates parameters, and so forth, iterating until convergence. The EM method allows us to obtain an effective sample size and to minimize possible bias in parameter estimates in an HLM analysis. This approach also fully captures the asymptotic properties of the underlying population.
- 7 In this model, both the un-centering (for dummy variables) and grand-mean centering methods are used because there is no random effect in the slope (that is, β_{1j} is fixed across agencies). In other words, the level-1 covariates (X variables) are included to control for their effects on the outcomes rather than to model between group variance on the slopes of these variables. The intercept here is interpreted as the expected value of four outcome variables for each public employee, with an average score on each of the level-1 predictors. In this regard, grand-mean centering adjusts the variation in the intercept between agencies to control for differences in the level-1 predictors across agencies.
- 8 The results also show that, first, the proportions of level-1 variance explained by the seven level-1 predictors in the three models are 25.13 per cent (AC), 23.12 per cent (NC), and 24.87 per cent (CC). Second, the proportions of level-2 variance explained by the eight level-2 predictors in the three models are zero per cent (AC), 25 per cent (NC), and 33.3 per cent (CC).
- 9 In the intercepts- and slopes-as-outcomes model, we include level-2 predictors. After establishing that significant variation exists between group intercepts and slopes, we use those parameter estimates as level-2 outcomes. The level-2 models are used for the purposes of modelling associations between level-2 predictors and outcomes and to track the degree to which those predictors explain variance in the level-2 outcomes. In

this model, a grand-mean centering option is used, and variables are added one at a time for model building, while examining coefficients for significance (of random effects) and reliability.

- 10 Additionally, to examine the cross-level interaction effects between demographic factors (such as managerial level and job tenure) and organizational characteristics, eight interaction terms are included. In the cross-level interaction model, an interaction is defined when the association between level-1 predictors and the outcome variables depend on the level of level-2 predictors. Cross-level interaction occurs between the level-1 random effect and the level-2 predictors in the slopes-as-outcomes model.
- 11 First, proportions of level-1 variance explained by the eight level-1 predictors and level-2 predictors in the three models of OC are 32.57 per cent (affective), 33.62 per cent (normative), and 28.26 per cent (continuance). Second, the proportions of level-2 variance explained by the seven level-2 predictors (including interaction effects) in the three models of OCB are 33.33 per cent (conscientiousness), 100 per cent (courtesy), and 100 per cent (civic virtue). Overall, the proportions of level-1 and level-2 variances explained by the intercepts- and slopes-as-outcomes model are greater than the proportions of variance explained by the ANCOVA model.
- 12 Similar to all prior studies that have focused on OC and OCB using self-reported data, this study shares the potential problem of a common method bias. A variety of non-statistical procedures were introduced in the design of this study in order to reduce potential common method bias. For instance, the anonymity of responses was assured repeatedly in all correspondence and evidenced in every aspect of data collection. A stratified sample method was used, and surveys were completed at different times and in multiple office locations. Varied response formats were presented. These steps successfully attenuated, if not eliminated, common method bias in the results. Future research should rely on longitudinal designs and multiple data sources to more accurately assess the antecedents and consequences of OC and OCB among employees working in Korean government agencies.

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