**Why Can’t We? Providing Ability and Motivation Practices for Public Sector Employees to Innovate**

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Management scholars have realized the importance of innovation for survival in the global competition (Hage, 1999). Organizational leaders, both in public and business, view innovation as a source of organizational change, growth, and effectiveness (Damanpour and Schneider, 2009, 495). Organizations seek to manage or strategically adapt to their environments’ (Aldrich & Pfeffer, 1976; Pfeffer, 1982). If there is no innovation, then organizations cannot survive in the organizational environment, or cannot flourish. Innovation in the public sector will increase efficiency, create public value, and improve governance and public sector performance (Hartley 2005).

Different scholars have been studying innovation and particularly the background and results of the adoption of innovation in organizations, including public organizations (see Boyne et al. 2003; Damanpour & Schneider 2009; Osborne & Gaebler 1992; Osberne & Plastric 1997; Tidd, Besant, & Pavitt 1997; Walker 2004; Fernandez and Moldagaziev 2013). Additionally, many explain determinants of innovation as organizations’ primary importance (Damanpour 1991; Ficham, 2001; Greenhalgh et al, 2004; Hage, 1996; Kimberly & Evanisko, 1981; Mohr, 1969). For example, Damanpour’s 1991 study focused on the effects of 13 organizational determinants, a group mainly composed of structural variables including process, resource, and cultural variables using with meta-analysis. What’s more, Greenhalgh and others’ 2004 study summarized the findings of a systematic literature review of the adoption of service innovations.

However, what factors are associated with innovation particularly in public sector are still not clear. This study, therefore, analyzes how innovation can be increased in organizational settings and how employees can be innovative. What can public managers do to improve employees’ innovation? Which kinds of organizational settings and managerial decisions positively or negatively associated with innovation? This paper adopts Sahni, Wessel, and Christensen’s framework (2013) which argues that most of the following conditions should be present for innovation: Ability to experiment; ability to sunset outdated infrastructure; existence of feedback loops; existence of incentives for product or service improvement; existence of budget constraints for end users. This paper tests, (a) how do these five potential enablers affect employees’ innovation, (b) which type of enablers are more effective in terms of innovation, (c) and regarding the scope and density, which enablers are associated with innovation?

**Innovation**

There is no clear definition of innovation as innovation field is very extensive and ambiguous. Change, innovation, invention, creative behavior, and adaptation are somewhat vague by many scholars, have been defined and interchangeably used by others (Pierce and Delbecq, 1997). According to Daft, organizational change is “the adoption of a new idea or behavior by an organization”. Organizational innovation, on the other hand, is “the adoption of an idea or behavior that is new to the organization’s industry, market, or general environment” (Daft, 2007, 405). According to Robbins, innovation is a “more specialized kind of change. Innovation is a new idea applied to initiating or improving a product, process, or service. So, all innovations involve change, but not all changes necessarily involve new ideas or lead to significant improvements (Robbins, 2001, 557).” Therefore, innovation refers more specific new development instead of larger and complex change (Fernandez & Rainey, 2006). Walker defines innovation as a process through which new ideas, objects, and practices are created, developed or reinvented, and which are new for the unit of adoption (Walker 2008). Bartos (2002) defines innovation as “A change in policy or management practice that leads to a lasting improvement in level of service or quantity or quality of output by an organisation.” (10)

Organizational innovation is influenced by the individual, organizational, and environmental factors. According to Daft, if an organization introduces a new product, the organization will be considered the innovator, and if another organization copies this product, the organization will be viewed as adopting changes. Nevertheless, for purposes of managing change, the terms “innovation” and “change” can be used interchangeably since the change process within organizations is likely to be identical (Daft 2007). Damanpour and Schneider (2009) meta-analysis shows that, innovation is a process which results in a new object to an organization; and the adoption of innovation is a process resulting of a product, or practice that is new to the adopting organization (see also Damanpour and Wischnevsky 2006; Kimberly and Evanisko 1981; Walker 2008).

Innovation is “the successful introduction into an applied situation of means or ends that are new to that situation (Mohr 1969, 111).” An innovation can be a new product or service, a new technology, a new structure or administrative system, or a new plan or agenda affecting to organizational associates. Hence, innovation can described as “adoption of an internally generated or purchased device, system, policy, program, process, product, or service that is new to the adopting organization (Damanpour 1991; Daft 1982; Damanpour & Evan 1984).”

Innovation, either as a response to changes in its internal or external environment or as an anticipatory action taken to influence an environment, is a means of changing an organization Damanpour 1991). Studies of innovativeness are frequently related to which organizations can develop enduring model of innovation (Fernandez & Rainey 2006). Inventiveness is affected mostly by individual creativity and by the degree of hierarchical informality in organizational structure whereas innovation has been associated to size, wealth, environment, motivation, capability, professionalism, decentralization, opinion leadership, and many others. Thus, it is we should differentiate innovation from invention (Mohr 1969). In the Information Technology diffusion literature, for instance, researchers have usually conceptualized innovation as relating to the organizational initiation, adoption, and implementation of one or more up-and-coming technologies. Organizations have been viewed as more innovative as long as they demonstrate adopting these technologies earlier, more frequently, and more intensively (Fichman 2001).

Innovation can be defined as ““novel solutions to problems, opportunities or challenges"” Wettenhall 1988, 352 as cited from Neville I. Smith and W. Murray Ainsworth, Ideas Unlimited: The Mindmix Approach to Innovative Management, Melbourne, Nelson, 1985, p.6.). Schumpeter differentiated innovation from invention as “invention is the bringing into being of something new, whereas innovation is bringing something into use that has not been used before (Wettenhall 1988, p. ).” Therefore, innovations “include both new programs and new ways of accomplishing existing program goals (Borrins 2000, 47).” In other words, innovation is not only a new idea but also a new practice (Hartley 2005). This paper considers innovation consistent with Borrins definition. Similarly, the government in Australia considers innovation both establish and adopt new ideas and practices for improving public sector efficiency, process, and outcomes (Fernandez & Pitts 2011).

**Why Innovation Today?**

Since the 1980s, the New Public Management Reforms in the world and Reinventing Government movements in the United States encourage public sector employees to be innovate as well as establish innovative practices for public sector ([Breul and Kamensky 2008](http://onlinelibrary.wiley.com.ezproxy.lib.indiana.edu/doi/10.1111/j.1467-8500.2011.00726.x/full#b18); Fernandez & Pitts 2011; [Kamensky 1996](http://onlinelibrary.wiley.com.ezproxy.lib.indiana.edu/doi/10.1111/j.1467-8500.2011.00726.x/full#b49); [Kettl 2005](http://onlinelibrary.wiley.com.ezproxy.lib.indiana.edu/doi/10.1111/j.1467-8500.2011.00726.x/full#b54)). Obama administration in the United States also emphasizes innovation throughout the federal government agencies (Fernandez & Pitts 2011). Ash Center for Democratic Governance formed at Harvard University have established award programs for public sector innovation (Borins 2014). Public sector innovation in Australia has considered very seriously as since the 1980s such as many awards have been given for innovative public organizations, particularly to the local ones (Wettenhall 1988). More importantly, innovation in public sector becomes necessity in Australian government (Bartos 2002).

For instance, The Prime Minister of Australia established the Australian Government Management Advisory Committee to plan and encourage innovation and entrepreneurship in public sector in 2009. Likewise, the Australian National Audit Office, aims to encourage innovation by public employees—by identifying best practices and seeking innovative procedures and solutions to improve the quality of government services (Fernandez & Pitts 2011). The Australian Management Advisory Committee assists public employees in developing innovations. Finally, the public agency Centrelink emphasizes citizen services and particularly innovative approaches to delivering services. For instance, applications for medicare and child support, among many other programs, are translated into and administered in over 50 languages.

Albury (2011) asks a question “why now, as opposed to ten years ago, are governments across the world talking about public service innovation (p. 227)?” He argues that now, public organizations have long-term challenges such as ageing population, retirement, pension affordability, welfare provision; obesity; and increasing drug and alcohol use. In addition, citizens’ expectations from public sector increases as they have more knowledge. Finally, fiscal constraints also requires innovation in public sector. Glor (2001, p. ), on the other hand, indicates that the main driver of innovation is financial: “Frequently innovation was driven or affected by central budget cuts, accompanied by an emphasis by central policy staff on the need to innovate and by the willingness of central staff to approve innovations.”

Although risk involves in any innovation, it is also very risky if an organization does not innovate. In a dynamic, complex, and highly globalized world, organizations cannot survive or flourish if they would be behind of technology, method, and strategies. Additionally, people’s confidence to government may diminish if public organizations are not innovative (Bartos 2002). Thus, innovation is not only important but also crucial for public sector. Actually, “Contrary to the stereotypes, public agencies have been remarkably innovative, and much of this innovation has come from those involved with direct government (Leman 2002, 71).” Architecture buildings, national parks, the US Coast and Geodetic Survey and the US Geological Survey, the US Census, computerization in public agencies such as military are good examples showing that public organizations can be very innovative (Leman 2002).

 Then, the question becomes how public sector innovation will occur? Bartos (2002, p. 14) argues that when the following factors apply, public sector innovation will be successfully implemented:

* “A coherent idea with credible theoretical underpinning;
* Political impetus for adoption of that idea;
* Bureaucratic capacity and willingness to implement the change;
* High profile and committed advocates for the innovation at either or both of the political and bureaucratic levels;
* A reason for change that cannot be ignored for reasons of either political imperatives of national interest.”

Albury argues that “culture and leadership”; “support and investment”; “rewards and incentive”; “industry structure, regulation and degree of openness”; and “citizen and user engagement” are five main characteristics of high-performing public organizations” (229). Glor argues that innovation patterns are influenced by three forces: individual motivation, organizational culture, and magnitude of challenge of individuals. Motivation is mostly related to inputs, culture is mostly related to environment, and magnitude of challenge is related to people who take risks in the organizations (Glor 2001). Likewise, “Thinking about innovation, allowing space for innovation and adaptation, openness and deregulation are all absolutely key to whether innovation happens and whether it spreads (Albury 2011, p. 233).” This paper uses a framework developed by Sahni et al., with adopting individual level instead of state level and use “large n” instead of case study.

**Conceptual Models**

Six models measures the association between potential enablers and innovation (Figure 1). Sahni et al.’s use a framework developed by Christensen, Anthony, and Roth’s (2004) framework of innovation: According to Christensen et al.’s framework, both “ability” to create or exploit innovation and “motivation” to create or exploit an innovation should exist. Sahni et al. considers practice 1 (experiment) and practice 2 (dealing low performers) as ability while practice 3 (feedback), practice 4 (incentives), and practice 5 (budget constraints) as motivation. Therefore, model 2 tests two independent variables (practice 1 and practice 2 as the first independent variable that measure ability and practice 3, practice 4, and practice 5 as the second independent variables), instead of five independent variables (practices). Finally, model 3 tests combination of all five practices. Since the paper’s main motivation is to test all five practices separately, model 4 to model 6 add type of agency and type of job.

**Model 1:** Innovation = f(practice 1 [experiment], practice 2 [dealing low performers], practice 3 [feedback], practice 4 [incentives], practice 5 [budget constraints], agency size, gender, location, job level classification, length of service, education, working full-time vs. part-time).

**Model 2:** Innovation = f(practice A [ability], practice B [motivation], agency size, gender, location, job level classification, length of service, education, working full-time vs. part-time)

**Model 3:** Innovation = f(Enablers, agency size, gender, location, job level classification, length of service, education, working full-time vs. part-time)

**Model 4:** Same as model 1 with adding agency types

**Model 5:** Same as model 1 with adding type of job

**Model 6:** Same as model 1 with adding both agency types and type of jobs.

Ability to innovate with experiment

**Ability**

H1: +

Ability to innovate with dealing low performers

H2: +

**Motivation**

H3: +

Motivation to innovate with feedback loops

Innovation

H4: +

Motivation to innovate with existence of incentives for service improvement

H5: +

Motivation to innovate with existence of budget constraints

Figure 1: Theoretical Framework and Hypotheses

Self-determination theory suggests that employees prefer to feel that they have control over their actions, such as they want to have a choice of how they do their work. Thus, when employees can make experiments, then they feel more motivated to work and be innovative. Likewise, when employees are given choices of how they do their work, then they prefer what they know better and how they can improve their skills. Hence, they can innovate.

H1: Making experiments will have a positive effect on innovation.

Although both agencies and supervisors encourage innovation and even given rewards to employees who are more innovative, there would be employees who perform poorly and not innovative. If employees perform poorly, but not able to be punished by agency itself or supervisors, these underperformed employees may negatively affect other employees who perform well. Likewise, if all employees are treated same regardless of their performance and there will be no incentives for employees whose performance are outstanding, then high performers do not feel that they are treated justly. If underperformer employees are punished, then other employees feel that they should do their job well and thus innovate. This idea brings the second hypothesis:

H2: Dealing with low performers will have a positive effect on innovation.

When employees receive feedback on their performance, then they become capable of their job. In this regard, employees who receive feedback tend to be more innovative. This brings the third hypothesis:

H3: Feedback loops will have a positive effect of innovation.

When there are incentives for product and service improvements, such as when agencies motivates employees to help achieving organizations’ objectives, inspires employees to do their job well, and supervisors and senior leaders encourage innovation and creativity, employees tend to be more innovative.

Additionally, as Bartos explains, innovation in public sector is a difficult and challenging process because an innovation (e.g. a new approach to solve a problem) fails, there will be criticisms by public and interest groups, but if innovation is successful, there will be usually no praise for innovators. Moreover, successful innovation is also criticized as why this innovation practices have waited and not implemented earlier (Bartos 2002). Therefore, when employees have motivation and incentives for service improvement, then they can innovate. This brings the fourth hypothesis:

H4: Existence of incentives for service improvement will have a positive effect of innovation.

Since the 1980s in Australia, agency managers are given extensive autonomy to allocate resources of their budgets. “The results was to encourage a higher degree of innovation and experimentation within the bureaucracy as a whole, with considerable improvements in public sector productivity and effectiveness (Bartos 2002, 10).” Likewise, necessity is considered the mother of invention, so when public employees ask the same thing with reduced budget, then they tend to be more innovative. This idea brings the following hypothesis:

H5: Budget constraints will have a positive effect of innovation.

 Other hypotheses are following:

H6: Ability (combination of practice 1 and practice 2) will have a positive effect on innovation.

H7: Motivation (combination of practice 3, practice 4, and practice 5) will have a positive effect on innovation.

H8: All potential enablers will have a positive effect on innovation.

**Data and Methods**

Data come from Australian Public Service Commission (APSC)’s 2012 State of the Service Employee Census. A total of 87,214 valid responses were received, representing a response rate of 55%. Before 2012, the APSC used random samples from Australian Public Service employees. Using census instead of survey eliminates potential threats to random sampling, unbiasedness, and efficiency.

The census provides data on employee attitudes to working conditions in the public sector, including leadership, job satisfaction, and innovation. Since the paper aims to correctly measure changes for potential enablers such as budget changes, employees who work for at least five years in public sector are included in the analyses. Likewise, since the paper focuses on employees who are sure about changes of potential enablers, not-sure responses of independent variables were not used for analysis. Finally, because there were no significant differences of observations with and without missing data, missing observations from the dependent, independent, and main control variables are deleted. Among 87,214 valid responses, observations for 21,703 responses have been used for testing hypotheses.

Dependent Variable

The following survey indicator measures the outcome variable, *innovation*: “In the last 12 months, has your work group implemented any innovations?” There are three options for answering this question: “yes”, “no”, and “not sure”. Since the paper focuses people who are sure about innovation, “no” (about 35 percent of responses) and “not sure” (about 15 percent of responses) responses were combined. Approximately 52% of responses answered “yes” and 48% of responses answered “no”. The follow-up question asks respondents who responses “yes” about “Thinking of the most significant innovation that was implemented by your work group in the last 12 months; which parts of your work did it affect? [Please select all that apply] The categories include “Your policy thinking”, “Your services”, “The way you provide services”, “The way you interact with stakeholders”, “Your administrative or organisational processes”, “The way you look at problems or challenge assumptions”, and “other.”

Independent Variables

As explained earlier, six models have been used to measure the association between potential enablers and innovation. Model 1 tests five different practices separately, model 2 measures two different scales (ability as the combination of practice 1 and practice 2, and motivation as the combination of practice 3, practice 4, and practice 5). Model 3 measures all of the five practices together.

Survey indicators constructs summated rating scales for practice 2 (dealing low performers), practice 3 (feedback), and practice 4 (experiment). Practice 1 (experiment) practice 5 (budget constraints) are not constructed as both of them are captured with only one survey items (appendix 1). Table 1 shows descriptive statistics for the dependent, independent and control variables, appendix 2 shows operational definitions, and appendix 3 shows correlation matrix.

Measurement reliability is calculated with using Cronbach’s alpha tests, which shows from moderate internal consistency for practice 2 (0.63) and high internal consistency for practice 3 (0.82) and practice 4 (0.8). Regarding construct validity, appendix 1 shows that related survey items are consistent with face validity and able to measure all of the five practices correctly. Likewise, regarding the content validity, potential enablers can be captured by Sahni et al.’s framework of “Unleashing Breakthrough Innovation in Government.”

 Sahni et al.’s use a framework developed by Christensen, Anthony, and Roth’s (2004) framework of innovation: According to Christensen et al.’s framework, both “ability” to create or exploit innovation and “motivation” to create or exploit an innovation should exist. Sahni et al. considers practice 1 (experiment) and practice 2 (dealing low performers) as ability while practice 3 (feedback), practice 4 (incentives), and practice 5 (budget constraints) as motivation. Therefore, model 2 tests two independent variables (practice 1 and practice 2 as the first independent variable that measure ability and practice 3, practice 4, and practice 5 as the second independent variables), instead of five independent variables (practices). Finally, model 3 tests combination of all five practices. Since the paper’s main motivation is to test all five practices separately, model 4 to model 6 add type of agency and type of job.

Table 1 is about here

Control Variables

The model controls size of agency, gender, location in the headquarter or a field office, level of job classification (employee or manager), education level, and whether working part-time or full-time as these factors may be correlated with innovation.

**Model Selection and Results**

Using Linear Regression Models such as Ordinary Least Square models. eads biasedness (e.g. incorrect answer), inefficiency (e.g. not using the data as possible), and inconsistency (not estimating parameters well) owing to nonlinearity and heterogeneity of a binary variable. Thus, logit models are used to estimate parameters. The following three table show unstandardized, standardized, and odds ratio.

Table 2 is about here

Table 3 is about here

Table 4 is about here

All results from six of the models are very consistent. Results offer support for hypotheses 1, 3, 4, 6, 7, and 8. On the other hand, hypothesis 2 (practice 2: dealing low performers) and hypothesis 5 (practice 5: budget constraints) are neither significant, nor meaningful. The substantive effects of practice 1 and particularly practice 4 (incentives) are very strong. For instance, the odds of practice 4 is around 1.6 (B=1.7, p<0.001 with a two tail test). Working in the capital city and being a female is negatively associated with innovation, but job level, education, and working full-time is positively associated with innovation. Particularly job level is very significant and meaningful, indicating that employees working in the supervisory level tend to be more innovative.

**Discussion and Conclusion**

Do organizations, including public organizations be innovative? Or, should they innovative? How can public employees are motivated to innovate? Should government use motivation and internal factors to encourage innovation for public sector employees to innovate? Or, should public organizations enforce innovation and use enforcement tools to be sure that whether public sector employees are innovative? Does carrot and stick approach (economics approach, see Behn 1995) work? This paper have analyzed under what conditions employees tend to be more innovative and likewise which factors may hinder their innovation. The paper, however, has not discussed the effects of organizational structure or environment on individual innovation, but what public managers and public sector employees.

Results show that practice 1 (ability to experiment), practice 3 (existence of feedback loops), and practice 4 (existence of incentives for product or service improvement) are positively correlated to public sector employees’ innovation. On the other hand, practice 2 (dealing with low performers) and practice 5 (existence of budget constraints) do not have any effect on public sector employees’ innovation. Practice 3 has the highest effect on employees’ innovation, suggesting that providing employees incentives for product or service improvement are the most effective tool that policy makers and senior bureaucrats can do.

These findings suggest that external enforcements such as punishing low performers do not effect innovation. On the other hand, intrinsic rewards such as creating a workplace which encourages innovation and employees own choices to decide how they would like to their work affect innovation. Thus, self-determination theory (SDT), which states individuals’ behavior should be self-motivated and self-determined, is consistent with the paper’s findings. In this regard, when employees feel that they can control over their work and they are given incentives, they tend to be more innovative. As a result, public organizations should focus intrinsic aspects of job and increase employees’ motivation to innovate. According to Behn (1995), particularly in public sector, internal factors such as meaningful work are a main motivating factor for public sector employees to work in the public organizations. Likewise, this paper shows that internal factors such as motivating public sector employees to motivate really motivates public sector employees to innovate.

The results are also consistent with Denhardt and Denhardt’s finding (1999), which public managers who establish innovation should encourage employees to experiment, provide them more autonomy and control over their work. “[A]lthough managers can bring about some changes ‘from the top’; in the long run many more innovations probably occur if those throughout the organization know that change and innovation are valued, that they have been empowered to act, and that calculated risks will be supported by top management (Denhardt and Denhardt, 1999; Denhardt et al, 2009—double check the reference, page # is missing).”

Likewise, Borins (1998) reviewed a sample of semifinalist’s applications for the Ford Foundation-Kennedy School of Government’s state and local government innovation awards. A large portion of the innovations that occurred were initiated by public servants at the middle management level or on the front line. Borins argued that as public organizations devolve authority and responsibility throughout the organizations, we are likely to experience even more innovation (Denhardt et al, 2009, 369). Glor states that “Long-term survival of an innovation depends on its becoming routinized and when necessary institutionalized, and is bound up with the political climate. Although public servants cannot initiate all innovations, they do initiate some and could initiate many more (Glor 2001, 26).” [New York city’s department of education, a very innovative public organization] “encouraged experimentation along with informed and bounded risk-taking. They also tolerated failure, not in the sense of observing something that wasn't working well and leaving it alone (a failure to try), but tolerating failure in the sense that it was only through the process of learning from failure, learning from mistakes, learning from getting their prototypes wrong, that the system begins to accumulate the evidence of creating a more powerful innovation. Encouraging staff to innovate and supporting their attempts is a crucial element of leadership and organisational culture (Albury 2011, 229-230).”

“if we’re thinking about really improving, increasing innovation and its diffusion in public services, what we need to do paradoxically is not just invest in more R&D but strengthen and empower user networks and organisations. And two, if as government agencies we want to foster innovation and stimulate diffusion we should not simply focus on what appear to be the direct levers of innovation but examine the underlying conditions that might impede or enhance radical innovation, be they leadership and organisational cultures, funding regimes, reward and incentive mechanisms, regulatory regimes, engagement or the accountability regimes across which serious innovation will undoubtedly impact.” (Albury 2011, 234-235).”

In addition to encouraging public sector employees to innovate, leadership also matters: “innovativeness is seen as dependent on good leadership, sound decision making, and effective human resource management (Greenhalgh et al. 2004, 593).” Additionally, other researchers may analyze the effects of collaborative management on innovation: “some spectacular innovations emerge from collaborative action between contiguous authorities, or sometimes groups of authorities. A final observation is that not all innovations are long-lasting in their effects. They help in the solving of immediate problems, but the agenda changes over time: yesterday’s progress may be the cause of tomorrow’s problem. So we must expect to find further changes, even reversals.” (Wettenhall 1988, p. 364)

Regarding the limits of the paper, “This paper uses data from Australian Public Sector, so some of the results may not be generalizable to other countries particularly non Anglo-Saxon countries. Therefore, other researchers may look at the effects of similar potential enablers on public sector innovation. Additionally, all survey variables are perception from public sector employees, so the results may not exactly reflect the reality. However, as explained by Fernandez and Pitts (2011), “perception is reality in that it is the perception that will guide the respondent's behavior, not necessarily reality (p. 211).” In addition to using this data to make predictions which and how potential enablers effect innovation, qualitative studies such as semi-structured interviews and in-depth-case-analysis would cleverly explain how innovation happen with these potential enablers.

Innovation research is important simply because public organizations have become more accountable to principals (i.e. citizens) and agents (i.e. managers) due to the forces of globalization and information technology, so they need to be efficient (i.e. reducing costs), effective (i.e. improving quality of services), and to satisfy citizens. Additionally, there is a high pressure to save money and reduce budgets since the 2008, so creating a workplace encouraging innovation is crucial. The success of public sector innovation in Australia shows that actually, most of the financial and management reforms (e.g. managerialism, output and outcome oriented reforms, and devolution) have implemented since the 1980s, so current innovation would not be possible without early reform movements. Thus, Bartos (2002) considers innovation as a cumulative process.

**Additional Analysis: Measuring the Scope of Innovation**

Table 5 shows the results which are very similar to logit models.

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|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variables** | **Mean** | **StdDev** | **Minimum** | **Maximum** |
| Implementing innovation | 0.52 | 0.5 | 0 | 1 |
| Practice 1 (Ability to experiment) | 3.48 | 0.94 | 1 | 5 |
| Practice 2 (Dealing with low performers) | 2.96 | 0.85 | 1 | 5 |
| Practice 3 (Existence of feedback loops) | 3.51 | 0.93 | 1 | 5 |
| Practice 4 (Existence of incentives | 3.24 | 0.77 | 1 | 5 |
| Practice 5 (Existence of budget constraints) | 2.84 | 1.07 | 1 | 5 |
| Size of Agency | 2.85 | 0.43 | 1 | 3 |
| Gender is female | 0.52 | 0.5 | 0 | 1 |
| Working in the capital city | 0.37 | 0.48 | 0 | 1 |
| Level of job classification | 1.41 | 0.49 | 1 | 2 |
| Education Level | 2.24 | 0.84 | 1 | 3 |
| Working full-time | 0.87 | 0.34 | 0 | 1 |

Table 1: Descriptive Statistics

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Standardized Coefficients | Model 1  | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| Practice 1 (Ability to experiment) | 0.192\*\*\* |  |  | 0.187\*\*\* | 0.210\*\*\* | 0.208\*\*\* |
| Practice 2 (Dealing with low performers) | -0.025 |  |  | -0.034 | -0.039 | -0.045 |
| Practice 3 (Existence of feedback loops) | 0.111\*\* |  |  | 0.122\*\* | 0.121\*\* | 0.127\*\*\* |
| Practice 4 (Existence of incentives | 0.729\*\*\* |  |  | 0.733\*\*\* | 0.722\*\*\* | 0.726\*\*\* |
| Practice 5 (Existence of budget constraints) | -0.026 |  |  | -0.025 | -0.012 | -0.012 |
| Size of Agency | -0.034 | -0.050+ | -0.048+ | 0.087+ | -0.042 | 0.080+  |
| Gender is female | -0.168\*\*\* | -0.144\*\*\* | -0.134\*\*\* | -0.146\*\*\* | -0.202\*\*\* | -0.191\*\*\* |
| Working in the capital city | -0.173\*\*\* | -0.174\*\*\* | -0.174\*\*\* | -0.076\* | -0.137\*\*\* | -0.060+  |
| Level of job classification | 0.366\*\*\* | 0.399\*\*\* | 0.398\*\*\* | 0.402\*\*\* | 0.373\*\*\* | 0.392\*\*\* |
| Education Level | 0.114\*\*\* | 0.116\*\*\* | 0.112\*\*\* | 0.129\*\*\* | 0.160\*\*\* | 0.168\*\*\* |
| Working full-time | 0.129\*\*\* | 0.138\*\*\* | 0.137\*\*\* | 0.127\*\*\* | 0.129\*\*\* | 0.130\*\*\* |
| Aability (practice 1 + practice 2) |  | 0.135\*\*\* |  |  |  |   |
| Bmotivation (practice 3 + practice 4 + practice 5) |  | 0.709\*\*\* |  |  |  |   |
| ENABLERS (all practices) |  |  | 0.797\*\*\* |  |  |   |
| special\_agen |  |  |  | 0.093\* |  | 0.076\*  |
| regulat\_agen |  |  |  | 0.045 |  | 0.060+  |
| policy\_agen |  |  |  | -0.286\*\*\* |  | -0.237\*\*\* |
| smallop\_agen |  |  |  | 0.067+ |  | 0.084\*  |
| finance\_job |  |  |  |  | -0.003 | 0.006 |
| administ\_job |  |  |  |  | -0.018 | -0.008 |
| marketing\_~b |  |  |  |  | 0.111\*\*\* | 0.116\*\*\* |
| regulation~b |  |  |  |  | 0.01 | 0.013 |
| engineer\_job |  |  |  |  | -0.099\*\* | -0.103\*\*  |
| ict\_job |  |  |  |  | 0.133\*\*\* | 0.118\*\*  |
| iknowledge~b |  |  |  |  | 0.109\*\*\* | 0.104\*\*\* |
| legal\_job |  |  |  |  | -0.100\*\* | -0.094\*\*  |
| audit\_job |  |  |  |  | -0.046 | -0.045 |
| leadership~b |  |  |  |  | 0.230\*\*\* | 0.229\*\*\* |
| people\_job |  |  |  |  | 0.222\*\*\* | 0.222\*\*\* |
| science\_job |  |  |  |  | -0.002 | 0.006 |
| serdeliver~b |  |  |  |  | 0.219\*\*\* | 0.224\*\*\* |
| strategic\_~b |  |  |  |  | -0.120\*\* | -0.06 |
|  |  |  |  |  |  |  |
| ll\_0 | -15022.7 | -15022.7 | -15022.7 | -15022.7 | -15022.7 | -15022.7 |
| ll | -14390.6 | -14451.7 | -14458.2 | -14338.1 | -14260.1 | -14224.9 |
| chi2 | 1264.3 | 1142 | 1129 | 1369.3 | 1525.2 | 1595.7 |
| p | 2.22E-264 | 3.33E-241 | 1.55E-239 | 6.64E-283 | 6.69E-307 | 2.08e-318  |
| df\_m | 11 | 8 | 7 | 15 | 25 | 29 |
| aic | 28805.1 | 28921.5 | 28932.4 | 28708.1 | 28572.2 | 28509.7 |
| bic | 28900.9 | 28993.3 | 28996.2 | 28835.9 | 28779.8 | 28749.3 |
| r2\_p | 0.0421 | 0.038 | 0.0376 | 0.0456 | 0.0508 | 0.0531 |
| N | 21703 | 21703 | 21703 | 21703 | 21703 | 21703 |
|  |  |  |  |  |  |  |
| + p<0.1, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001 |  |  |  |  |  |  |
| Table 2: Unstandardized Coefficients |  |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Unstandardized Coefficients | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| Practice 1 (Ability to experiment) | 0.101\*\*\* |  |  | 0.099\*\*\* | 0.111\*\*\* | 0.110\*\*\* |
| Practice 2 (Dealing with low performers) | -0.015 |  |  | -0.02 | -0.023 | -0.026 |
| Practice 3 (Existence of feedback loops) | 0.060\*\* |  |  | 0.065\*\* | 0.065\*\* | 0.068\*\*\* |
| Practice 4 (Existence of incentives | 0.470\*\*\* |  |  | 0.473\*\*\* | 0.466\*\*\* | 0.469\*\*\* |
| Practice 5 (Existence of budget constraints) | -0.012 |  |  | -0.012 | -0.006 | -0.006 |
| Size of Agency | -0.04 | -0.058+ | -0.055+ | 0.100+ | -0.048 | 0.093+  |
| Gender is female | -0.168\*\*\* | -0.144\*\*\* | -0.134\*\*\* | -0.146\*\*\* | -0.202\*\*\* | -0.191\*\*\* |
| Working in the capital city | -0.179\*\*\* | -0.179\*\*\* | -0.180\*\*\* | -0.078\* | -0.141\*\*\* | -0.062+  |
| Level of job classification | 0.371\*\*\* | 0.404\*\*\* | 0.404\*\*\* | 0.408\*\*\* | 0.378\*\*\* | 0.397\*\*\* |
| Education Level | 0.067\*\*\* | 0.068\*\*\* | 0.066\*\*\* | 0.076\*\*\* | 0.095\*\*\* | 0.099\*\*\* |
| Working full-time | 0.191\*\*\* | 0.204\*\*\* | 0.203\*\*\* | 0.187\*\*\* | 0.191\*\*\* | 0.192\*\*\* |
| Aability |  | 0.032\*\*\* |  |  |  |   |
| Bmotivation |  | 0.075\*\*\* |  |  |  |   |
| ENABLERS |  |  | 0.063\*\*\* |  |  |   |
| special\_agen |  |  |  | 0.198\* |  | 0.162\*  |
| regulat\_agen |  |  |  | 0.144 |  | 0.191+  |
| policy\_agen |  |  |  | -0.374\*\*\* |  | -0.311\*\*\* |
| smallop\_agen |  |  |  | 0.169+ |  | 0.210\*  |
| finance\_job |  |  |  |  | -0.006 | 0.012 |
| administ\_job |  |  |  |  | -0.03 | -0.013 |
| marketing\_~b |  |  |  |  | 0.377\*\*\* | 0.396\*\*\* |
| regulation~b |  |  |  |  | 0.016 | 0.02 |
| engineer\_job |  |  |  |  | -0.258\*\* | -0.268\*\*  |
| ict\_job |  |  |  |  | 0.237\*\*\* | 0.209\*\*  |
| iknowledge~b |  |  |  |  | 0.384\*\*\* | 0.365\*\*\* |
| legal\_job |  |  |  |  | -0.327\*\* | -0.306\*\*  |
| audit\_job |  |  |  |  | -0.142 | -0.138 |
| leadership~b |  |  |  |  | 0.728\*\*\* | 0.723\*\*\* |
| people\_job |  |  |  |  | 0.472\*\*\* | 0.472\*\*\* |
| science\_job |  |  |  |  | -0.006 | 0.017 |
| serdeliver~b |  |  |  |  | 0.318\*\*\* | 0.325\*\*\* |
| strategic\_~b |  |  |  |  | -0.187\*\* | -0.093 |
| \_cons | -2.491\*\*\* | -2.507\*\*\* | -2.541\*\*\* | -2.971\*\*\* | -2.643\*\*\* | -3.108\*\*\* |
|  |  |  |  |  |  |  |
| ll\_0 | -15022.706 | -15022.706 | -15022.706 | -15022.706 | -15022.706 | -15022.706 |
| ll | -14390.551 | -14451.73 | -14458.183 | -14338.054 | -14260.11 | -14224.855 |
| chi2 | 1264.309 | 1141.952 | 1129.045 | 1369.304 | 1525.191 | 1595.702 |
| p | 0 | 0 | 0 | 0 | 0 | 0 |
| df\_m | 11 | 8 | 7 | 15 | 25 | 29 |
| aic | 28805.103 | 28921.459 | 28932.367 | 28708.108 | 28572.22 | 28509.709 |
| bic | 28900.925 | 28993.326 | 28996.249 | 28835.871 | 28779.836 | 28749.265 |
| r2\_p | 0.042 | 0.038 | 0.038 | 0.046 | 0.051 | 0.053 |
| N | 21703 | 21703 | 21703 | 21703 | 21703 | 21703 |
|  |  |  |  |  |  |  |
| + p<0.1, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001 |  |  |  |  |  |  |
| Table 3: Unstandardized coefficients |  |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Odds Ratio** | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| Practice 1 (Ability to experiment) | 1.107\*\*\* |  |  | 1.104\*\*\* | 1.117\*\*\* | 1.116\*\*\* |
| Practice 2 (Dealing with low performers) | 0.985 |  |  | 0.98 | 0.977 | 0.974 |
| Practice 3 (Existence of feedback loops) | 1.061\*\* |  |  | 1.067\*\* | 1.067\*\* | 1.070\*\*\* |
| Practice 4 (Existence of incentives | 1.601\*\*\* |  |  | 1.605\*\*\* | 1.594\*\*\* | 1.598\*\*\* |
| Practice 5 (Existence of budget constraints) | 0.988 |  |  | 0.988 | 0.994 | 0.994 |
| Size of Agency | 0.961 | 0.943+ | 0.946+ | 1.105+ | 0.953 | 1.097+  |
| Gender is female | 0.846\*\*\* | 0.866\*\*\* | 0.875\*\*\* | 0.864\*\*\* | 0.817\*\*\* | 0.826\*\*\* |
| Working in the capital city | 0.836\*\*\* | 0.836\*\*\* | 0.835\*\*\* | 0.925\* | 0.868\*\*\* | 0.940+  |
| Level of job classification | 1.450\*\*\* | 1.498\*\*\* | 1.498\*\*\* | 1.504\*\*\* | 1.460\*\*\* | 1.488\*\*\* |
| Education Level | 1.070\*\*\* | 1.071\*\*\* | 1.068\*\*\* | 1.079\*\*\* | 1.099\*\*\* | 1.104\*\*\* |
| Working full-time | 1.211\*\*\* | 1.227\*\*\* | 1.225\*\*\* | 1.206\*\*\* | 1.210\*\*\* | 1.212\*\*\* |
| Aability |  | 1.033\*\*\* |  |  |  |   |
| Bmotivation |  | 1.077\*\*\* |  |  |  |   |
| ENABLERS |  |  | 1.065\*\*\* |  |  |   |
| special\_agen |  |  |  | 1.220\* |  | 1.176\*  |
| regulat\_agen |  |  |  | 1.155 |  | 1.211+  |
| policy\_agen |  |  |  | 0.688\*\*\* |  | 0.733\*\*\* |
| smallop\_agen |  |  |  | 1.184+ |  | 1.234\*  |
| finance\_job |  |  |  |  | 0.994 | 1.012 |
| administ\_job |  |  |  |  | 0.971 | 0.987 |
| marketing\_~b |  |  |  |  | 1.458\*\*\* | 1.485\*\*\* |
| regulation~b |  |  |  |  | 1.016 | 1.02 |
| engineer\_job |  |  |  |  | 0.773\*\* | 0.765\*\*  |
| ict\_job |  |  |  |  | 1.268\*\*\* | 1.233\*\*  |
| iknowledge~b |  |  |  |  | 1.468\*\*\* | 1.440\*\*\* |
| legal\_job |  |  |  |  | 0.721\*\* | 0.736\*\*  |
| audit\_job |  |  |  |  | 0.867 | 0.871 |
| leadership~b |  |  |  |  | 2.071\*\*\* | 2.062\*\*\* |
| people\_job |  |  |  |  | 1.604\*\*\* | 1.603\*\*\* |
| science\_job |  |  |  |  | 0.994 | 1.017 |
| serdeliver~b |  |  |  |  | 1.375\*\*\* | 1.384\*\*\* |
| strategic\_~b |  |  |  |  | 0.830\*\* | 0.911 |
| ll\_0 | -15022.7 | -15022.7 | -15022.7 | -15022.7 | -15022.7 | -15022.7 |
| ll | -14390.6 | -14451.7 | -14458.2 | -14338.1 | -14260.1 | -14224.9 |
| chi2 | 1264.3 | 1142 | 1129 | 1369.3 | 1525.2 | 1595.7 |
| p | 2.22E-264 | 3.33E-241 | 1.55E-239 | 6.64E-283 | 6.69E-307 | 2.08e-318  |
| df\_m | 11 | 8 | 7 | 15 | 25 | 29 |
| aic | 28805.1 | 28921.5 | 28932.4 | 28708.1 | 28572.2 | 28509.7 |
| bic | 28900.9 | 28993.3 | 28996.2 | 28835.9 | 28779.8 | 28749.3 |
| r2\_p | 0.0421 | 0.038 | 0.0376 | 0.0456 | 0.0508 | 0.0531 |
| N | 21703 | 21703 | 21703 | 21703 | 21703 | 21703 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Number of Innovation** | **Model 1: Linear Regression** | **Model 2: Poisson** | **Model 3: Negative Binomial** |
| Practice 1 (Ability to experiment) | 0.059\*\*\* | 0.053\*\*\* | 0.054\*\*\* |
| Practice 2 (Dealing with low performers) | -0.014 | -0.012 | -0.012 |
| Practice 3 (Existence of feedback loops) | 0.032\* | 0.029\*\* | 0.032\*  |
| Practice 4 (Existence of incentives | 0.271\*\*\* | 0.229\*\*\* | 0.221\*\*\* |
| Practice 5 (Existence of budget constraints) | 0.014 | 0.010+ | 0.011 |
| Size of Agency | 0.069+ | 0.058\* | 0.053 |
| Gender is female | -0.088\*\*\* | -0.071\*\*\* | -0.075\*\*\* |
| Working in the capital city | 0.03 | 0.024 | 0.018 |
| Level of job classification | 0.225\*\*\* | 0.175\*\*\* | 0.173\*\*\* |
| Education Level | 0.049\*\*\* | 0.041\*\*\* | 0.041\*\*\* |
| Working full-time | 0.179\*\*\* | 0.159\*\*\* | 0.160\*\*\* |
| special\_agen | -0.061 | -0.048 | -0.043 |
| regulat\_agen | 0.082 | 0.066 | 0.06 |
| policy\_agen | -0.268\*\*\* | -0.223\*\*\* | -0.227\*\*\* |
| smallop\_agen | 0.08 | 0.062 | 0.043 |
| finance\_job | -0.002 | 0 | 0.001 |
| administ\_job | 0.015 | 0.01 | 0.013 |
| marketing\_~b | 0.269\*\*\* | 0.209\*\*\* | 0.213\*\*  |
| regulation~b | 0.019 | 0.013 | 0.014 |
| engineer\_job | -0.268\*\*\* | -0.236\*\*\* | -0.238\*\*\* |
| ict\_job | 0.090+ | 0.074\*\* | 0.087\*  |
| iknowledge~b | 0.232\*\* | 0.181\*\*\* | 0.191\*\*  |
| legal\_job | -0.228\*\* | -0.199\*\*\* | -0.186\*\*  |
| audit\_job | -0.061 | -0.05 | -0.054 |
| leadership~b | 0.455\*\*\* | 0.285\*\*\* | 0.290\*\*\* |
| people\_job | 0.406\*\*\* | 0.291\*\*\* | 0.300\*\*\* |
| science\_job | -0.034 | -0.027 | -0.021 |
| serdeliver~b | 0.161\*\*\* | 0.136\*\*\* | 0.138\*\*\* |
| strategic\_~b | -0.02 | -0.011 | -0.01 |
| \_cons | -0.730\*\*\* | -1.478\*\*\* | -1.450\*\*\* |
|  |  |  |  |
| lnalpha |  |  |   |
| \_cons |  |  | -0.036 |
|  |  |  |  |
| ll\_0 | -40338.017 | -36562.855 | -33170.13 |
| ll | -39792.048 | -35514.653 | -32712 |
| chi2 |  | 2096.403 | 916.261 |
| p | 0 | 0 | 0 |
| df\_m | 29 | 29 | 29 |
| aic | 79644.096 | 71089.307 | 65485.999 |
| bic | 79883.653 | 71328.863 | 65733.54 |
| r2\_p |  | 0.029 | 0.014 |
| N | 21703 | 21703 | 21703 |
|  |  |  |  |
| + p<0.1, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001 |  |  |  |

Table 5: Measuring scope/density of innovation

 # of Innovation | Freq. Percent Cum.

------------+-----------------------------------

 0 | 10,409 47.96 47.96

 1 | 4,280 19.72 67.68

 2 | 2,533 11.67 79.35

 3 | 2,233 10.29 89.64

 4 | 1,222 5.63 95.27

 5 | 602 2.77 98.05

 6 | 401 1.85 99.89

 7 | 23 0.11 100.00

------------+-----------------------------------

 Total | 21,703 100.00

Appendix 1: Alpha Variables for Summated Scales

alpha supervpoor dealperfor, item

Test scale = mean(unstandardized items)

Average interitem covariance: .4523046

Number of items in the scale: 2

Scale reliability coefficient: 0.6307

. alpha feedback supervfeed, item

Test scale = mean(unstandardized items)

Average interitem covariance: .7142514

Number of items in the scale: 2

Scale reliability coefficient: 0.8188

.

. alpha motivate inspire superinnov leadinnov, item

Test scale = mean(unstandardized items)

 average

 item-test item-rest interitem

Item | Obs Sign correlation correlation covariance alpha

-------------+-----------------------------------------------------------------

motivate | 21703 + 0.8668 0.7476 .4119854 0.6857

inspire | 21703 + 0.8716 0.7523 .4021364 0.6815

superinnov | 21703 + 0.6917 0.4403 .578169 0.8383

leadinnov | 21703 + 0.7466 0.5505 .5285263 0.7807

-------------+-----------------------------------------------------------------

Test scale | .4802043 0.8009

-------------------------------------------------------------------------------

Appendix 2: Operational Definitions

DEPENDENT VARIABLE: INNOVATION

**Innovbinar2** “In the last 12 months, has your work group implemented any innovations?” (1=Yes, 0=No)

INDEPENDENT VARIABLES

**A) ABILITY**

1) Ability to Experiment

**choicework** “I have a choice in deciding how I do my work.” (1=never through 5=always)

2) Ability to Sunset Outdated Infrastructure

**supervpoor** “My supervisor appropriately deals with employees that perform poorly.” (1 = strongly disagree through 5 = strongly agree)

**dealperfor** “My agency deals with underperformance effectively.” (1 = strongly disagree through 5 = strongly agree)

**B) MOTIVATION**

1) Existence of Feedback Loops

**feedback** “I receive adequate feedback on my performance to enable me to deliver required results.” (1=strongly disagree through 5=strongly agree)

**supervfeed** “My supervisor provides me with regular and constructive feedback.” (1=strongly disagree through 5=strongly agree)

2) Existence of Incentives for Product and Service Improvement

**motivate** “My agency motivates me to help it achieve its objectives.” (1 = strongly disagree through 5= strongly agree)

**inspire** “My agency inspires me to do the best in my job.” (1 = strongly disagree through 5 = strongly agree)

**superinnov** “Please indicate your level of satisfaction with your immediate supervisor’s actions in” “encourages innovation.” (1 = very dissatisfied through 5 = very satisfied)

**leadinnov** “To what extent do you agree that senior leaders (i.e. the SES) in your agency exhibit

Encourage innovation and creativity. (1 = strongly disagree through 5 = strongly agree)

3) Existence of Budget Constraints for End Users

**chanbudget** “Overall, over the last five years or more, how has the work at your current classification level changed in relation to your size of budget?” (1 = decreased greatly through 5 = increased greatly)

CONTROL VARIABLES

Agency size **agensize**

Number of people working in the agency. (1=Small (<251), 2=Medium (251-1000), 3=Large (1000+))

Female/Gender **gender**

Respondent’s gender. (1=female, 0=male)

Work Location **capital**

Respondent’s workplace (1=Australian Capital Territory, 0=Field Office)

Job Level/Classification **joblevel**

Respondent’s substantive classification level (1=Australian Public Service 1-6, 2=Executive)

Education **educ**

Respondent’s highest completed qualification (1=Completed year 12 or below, 2=Completed vocational qualification, 3= Completed tertiary qualifications)

Employment Status **fullpart:** Respondent’s basis of employment status (1=Full-time basis, 0=part-time basis)

Type of Agencies: Four dummy variables are created

Type of agencies respondent’s working. (1=Specialist/Professional, 2=Regulatory, 3=Public policy and program design, 4=Small Operations, 5=Large Operations)

Job Type: 14 dummy variables are created

Respondent’s current type of work (1=Accounting and finance, 2=Administration, 3=Communications and marketing, 4=Compliance and regulation 5= Engineering and technical, 6=Information and communications technology, 7= Information and knowledge management, 8= Legal and parliamentary, 9= Monitoring and audit, 10=Organisational leadership, 11=People, 12=Science and health, 13=Service delivery, 14=Strategic policy, research, project and program, 15=Other)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Correlation Matrix** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| 1 | Implementing innovation | 1.00 |  |  |  |  |  |  |  |  |  |  |  |
| 2 | Practice 1 (Ability to experiment) | 0.13 | 1.00 |  |  |  |  |  |  |  |  |  |  |
| 3 | Practice 2 (Dealing with low performers) | 0.11 | 0.19 | 1.00 |  |  |  |  |  |  |  |  |  |
| 4 | Practice 3 (Existence of feedback loops) | 0.14 | 0.25 | 0.58 | 1.00 |  |  |  |  |  |  |  |  |
| 5 | Practice 4 (Existence of incentives | 0.20 | 0.35 | 0.56 | 0.61 | 1.00 |  |  |  |  |  |  |  |
| 6 | Practice 5 (Existence of budget constraints) | 0.03 | 0.08 | 0.08 | 0.09 | 0.14 | 1.00 |  |  |  |  |  |  |
| 7 | Size of Agency | -0.03 | -0.10 | -0.01 | -0.01 | -0.05 | -0.01 | 1.00 |  |  |  |  |  |
| 8 | Gender is female | -0.05 | -0.02 | -0.04 | 0.03 | 0.06 | -0.01 | -0.02 | 1.00 |  |  |  |  |
| 9 | Working in the capital city | 0.02 | 0.13 | 0.03 | 0.04 | 0.08 | 0.05 | -0.16 | 0.01 | 1.00 |  |  |  |
| 10 | Level of job classification | 0.11 | 0.17 | 0.00 | 0.02 | 0.08 | 0.03 | -0.12 | -0.13 | 0.42 | 1.00 |  |  |
| 11 | Education Level | 0.06 | 0.10 | -0.02 | -0.03 | -0.01 | 0.01 | -0.10 | -0.09 | 0.20 | 0.40 | 1.00 |  |
| 12 | Working full-time | 0.04 | 0.04 | -0.01 | -0.04 | -0.02 | 0.02 | 0.01 | -0.26 | 0.00 | 0.06 | -0.01 | 1.00 |

Appendix 3: Correlation Matrix