CHAPTER III
RESEARCH METHOD

3.1 Research Design

This research paper comparatively and aggregately analyzes the variables influencing the adoption of e-government transformation in the cities of Surabaya, Indonesia and Davao, Philippines using quantitative (statistical analysis of survey data) and qualitative (content analysis of interview responses) approaches. The main unit of analysis is the individual employee of the government organization in both cities. The summative orientations of the respondents on the variables influencing the behavioral intention to adopt e-government transformation is the research topic. Survey research method and interviews were utilized for the gathering of data from respondents who were selected using purposive sampling. Data was analyzed quantitatively through structural equation modeling, path analysis and confirmatory factor analysis statistical tools. Qualitative data was content-analyzed to corroborate quantitative data.

3.2 Sampling Technique

Purposive sampling was employed in this study. To ensure bias reduction, employees from the staff and middle-level bureaucracy, i.e., department or division heads, were requested to take part in the survey. The researcher decided to distribute 120 survey questionnaires for each city, for a total of 240 questionnaires. The researcher handed out 120 questionnaires to 23 agencies/offices, and another 120 questionnaires to 12 departments/offices, in Surabaya and Davao, respectively. Out of these, 78 and 82 usable questionnaires were returned by the respondents, respectively, generating a total of 160 usable responses for analysis, or a 66.7% response rate.

3.3 Respondents of the Study

The study had an aggregate sample size of 160 city government employees. The Surabaya sample size of 78 was composed of 13 department/division heads and 65 staff-level personnel. The Davao sample size of 82 consisted of 8 department/division heads and 74 staff-level personnel. Tables 3.1 and 3.2 below presents the distribution of the respondents according to department/division and position.

Table 3.1 Distribution of Surabaya respondents by department/division and position

Department/division	Head	Staff
1. Badan Kepegawian dan Diklat Surabaya	1	3
2. Badan Lingkungan Hidup		3
3. Badan Koordinasi Pelayanan dan Penanaman Modal	1	4
4. Dinas PU Bina Marga dan Pematusan	1	4
5. Dinas Cipta Karya dan Tata Ruang	1	3
6.Dinas Kependudukan dan Pencacatan Sipil	1	3
7. Dinas Komunikasi dan Informatika		4
8. Dinas Perdagangan dan Perindustrian	1	4
9. Dinas Kebudayaan dan Pariwisata	1	3
10. Dinas Pengeloaan Bangunan dan Tanah	1	4
11. Bagian Bina Program Setkota	1	4
12. Bagian Pemerintahan dan Otoda Setkota	1	3
13. Bagian Hukum Setkota		3
14. Bagian Organisasi dan Tata Laksana Setkota	1	2
15. Bagian Perekonomian dan Usaha Daerah Setkota	1	4
16. Bagian Kerjasama Setkota		4
17. Bagian Perlengkapan Setkota	1	3
18. Bagian Kesejahteraan Rakyat Setkota		4
19. Satuan Polisi Pamong Praja Setkota		3

Table 3.2 Distribution of Davao respondents by department/division and position

Department/division	Head	Staff
1. City Administrator's Office		4
2.City Information Technology Center	1	6
3. City General Services Office		7
4. Barangay Cultural Communities and Affairs	1	6
5. City Information Office	1	6
6. City Environment and Natural Resources	1	5
7.Office of the City Planning and Development Coordinator	1	9
8. City Cooperative Development Office	1	5
9. City Social Services and Development Office		4
10.City Civil Registrar's Office		10
11.Offcie of the City Budget Officer	1	7
12. City Economic Enterprise	1	5

3.4 Research Instruments

Quantitative data to evaluate the research model was gathered through a structured questionnaire (please see Appendix 3, p. 154). It consists of three parts: a) the first part to extract data for the variables age, length of work experience, and position in the organization; b) the second part explains the four e-government dimensions by identifying their operational meanings; and, c) the third part to draw responses on statements pertaining to the independent and dependent variables. A five-

point Likert-type level of agreement scale (Vagias, 2006) ranging from Strongly Disagree to Strongly Agree was used to measure responses on indicators of the constructs PE, EE, SI, FC, ANX, AT and BI. Qualitative data was obtained from the key informants of departments/divisions using an interview guide consisting of open-ended questions (please see Appendix 4, p. 157).

3.5 Data Gathering Procedure

Before the actual gathering of data, the survey questionnaire was subjected to a pre-testing. It was administered to selected twenty (20) persons working in Yogyakarta City government who use ICT in their operations and delivery of services. This pre-test was necessary to assess the validity and reliability of the constructs. To get the reliability of the questionnaire, the coefficient of Cronbach's alpha (1951) should be taken into account. The minimum Cronbach's alpha values should be greater than 0.70 to indicate reliability of the instrument (Nunnally, 1978). If items shall have low corrected-item total correlation of less than 0.40, the cut-off value suggested by Hair et al. (2006), those items will be dropped. Also, a pre-test was done find out if the instrument is effective in obtaining data, whether it is adequate or inadequate as to its question format, choice of words and organization. After the questionnaire was finalized, actual data gathering was conducted following these procedures:

a) Research entry protocol. A formal letter expressing the intention of doing the research was communicated electronically to the chief executive, or to an authorized representative, and the department/division heads of both cities before the actual field visit of the researcher. During the actual field visit, a similar communication, in hard copy, was given to the same city officials.

b) Questionnaires were distributed to the respondents. During this time, the researcher was present to facilitate the administration of the survey instrument. Retrieval was done immediately after each respondent has finished answering it to ensure that the minimum response rate of 65%, which is considered acceptable (Hikmet and Chen, 2003), was attained. In many cases, the researcher had to come back to the respondents after a day or two to retrieve the questionnaires.

c) Interviews with key informants were conducted. Interviews were digitally recorded to ensure accurate documentation.

d) Data was promptly organized and coded in preparation for analysis.

3.6 Data Analysis

Data gathered from the survey respondents were analyzed using licensed versions of IBM SPSS Statistics (version 19), Smart Partial Least Squares (PLS version 3) and IBM SPSS Analysis of a Moment Structures (AMOS version 24).

Assessment of the reliability and convergent validity of the constructs was done through the determination of the coefficient of Cronbach's alpha (1951). The minimum Cronbach's alpha values must be greater than 0.70 to indicate reliability and validity of constructs (Nunnally, 1978). Discriminant validity of variables was verified by calculating the covariance estimates between pairs of latent variables (Anderson and Gerbing, 1988). Churchill (1979) has suggested that convergent and discriminant validities should be examined for construct validity.

Based on the suggestions of Chin (1998), the assessment of the structural model in order to test the hypotheses requires estimates for path coefficients (β) or regression weights, determination of coefficient (R^2), and estimates for total effects between the exogenous and endogenous variables. Assessing the structural model, using structural equation modeling, should be based on the path coefficient's (β) direction algebraic sign, magnitude and significance (Chin, 1998, 2010; Götz et al., 2010; Henseler et al., 2009; Urbach and Ahlemann, 2010). In PLS, the individual path coefficients of the structural model can be interpreted as standardized beta coefficients of ordinary least squares regressions (Henseler et al., 2009, p. 304), while in AMOS, these are the standardized regression weights between variables in the model (Arbuckle, 2016). Path coefficients or regression weights should exceed .100 to account for a certain impact within the structural model (Urbach & Ahlemann, 2010). Furthermore, path coefficients or regression weights, either positive (in the expected direction) or negative, should be significant at least at the 0.05 level (Henseler et al., 2009; Urbach and Ahlemann, 2010).

Since the main purpose of the structural model is to assess the relationships between hypothetical constructs (Götz et al., 2010), the most essential criterion for the assessment of the structural model is the coefficient of determination or squared multiple correlations (R^2) of each of the constructs in the model. R^2 values should be

sufficiently high for the model to have a minimum level of explanatory power (Chin, 1998, 2010; Götz et al., 2010; Henseler et al., 2009; Urbach and Ahlemann, 2010). In PLS, R^2 values represent "the amount of variance in the construct in question that is explained by the model" (Chin, 2010, p. 674). Chin (1998) considers R^2 values of approximately 0.67, 0.33, and 0.19 as substantial, moderate and weak respectively.

Moderating effects of the variables age and length of work experience on the relationships between the exogenous and endogenous constructs was estimated through PLS structural equation modeling. This was employed to study the interaction effect of continuous moderating variables (Hair, et al., 2013; SmartPLS Version 2.0, n.d.). Given the large number of exogenous constructs, each moderating variable was run separately to ensure that adequate statistical power was obtained. To assess the significance of interaction and main effects, a bootstrap resampling procedure was performed. Estimates for effect size (f^2) was done by comparing the proportion of variance explained (as expressed by the determination coefficient R^2) of the main effect model with the full model ((Henseler and Fassott, 2010), and effect sizes of 0.02 may be interpreted as weak, effect sizes from 0.15 as moderate, and effect sizes above 0.35 as strong.

The structural model fit was tested by calculating model fit estimates by means of AMOS and reporting the following fit indices: incremental fit index [IFI (Bollen, 1989)]; comparative fit index [CFI (Bentler, 1990)]; goodness-of-fit-index [GFI (Arbuckle, 2016)]; and the root mean square residual [RMR (Arbuckle, 2016)]. The measures of fit for the above-mentioned models are enumerated in Table 3.3 below.

Table 3.3 Model fit indices and measures

Index	Recommended value
Incremental fit index (IFI)	≥0.900
Comparative fit index (CFI)	≥0.900
Goodness-of-fit index (GFI)	≥0.950
Root mean square residual (RMR)	≤0.04