Chapter 7
Descriptive Statistics and Reliability and Validity Testing

ABSTRACT

This chapter evaluates the reliability and validity of data concerning public satisfaction with government chatbots across two scenarios: government service use and government information consultation. Section 7.1 presents descriptive statistics that provide a foundational understanding of the collected data. Section 7.2 details the rigorous testing procedures employed, including the KMO and Bartlett's test, to ensure the reliability of the scales used to measure Public Expectations, System Perception, Emotional Perception, Social Support, Behavioral Quality, and Public Satisfaction. The chapter discusses the reliability coefficients for each dimension, showing that all meet established standards. This analysis not only verifies the robustness of the measurement tools but also highlights the critical role of reliable data in assessing public service and information systems.

7.1 DESCRIPTIVE STATISTICS

The descriptive statistics results are presented in Table 1 and Table 2.

Table 1. Descriptive statistics-government services

Item	Mean ± Standard Deviation	Variance	S.E	Mean95% CI(*LL*)	Mean95% CI(*UL*)	IQR	Kurtosis	Skewness	Coefficient of Variation(CV)
Q1_1	4.046±0.923	0.853	0.066	3.916	4.176	1.000	1.188	-1.050	22.822%

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Table 1. Continued

Item	Mean ± Standard Deviation	Variance	S.E	Mean95% CI(*LL*)	Mean95% CI(*UL*)	IQR	Kurtosis	Skewness	Coefficient of Variation(CV)
Q1_2	4.021±0.905	0.818	0.065	3.893	4.148	1.000	1.276	-1.017	22.498%
Q1_3	4.031±0.927	0.859	0.067	3.900	4.161	1.000	0.708	-0.930	22.995%
Q2_1	3.964±0.854	0.729	0.061	3.844	4.084	2.000	0.997	-0.788	21.544%
Q2_2	3.845±0.868	0.753	0.062	3.723	3.967	1.000	-0.133	-0.463	22.569%
Q2_3	4.036±1.005	1.009	0.072	3.895	4.177	1.000	0.316	-0.971	24.888%
Q2_4	3.943±0.847	0.717	0.061	3.824	4.062	2.000	0.198	-0.616	21.473%
Q2_5	3.727±1.019	1.039	0.073	3.583	3.870	1.000	-0.136	-0.616	27.350%
Q3_1	3.747±0.967	0.936	0.069	3.611	3.884	1.000	0.193	-0.619	25.815%
Q3_2	3.402±1.098	1.205	0.079	3.248	3.557	1.000	-0.552	-0.258	32.272%
Q3_3	3.356±1.130	1.277	0.081	3.197	3.515	1.000	-0.699	-0.213	33.676%
Q3_4	3.474±1.024	1.049	0.074	3.330	3.618	1.000	-0.328	-0.237	29.474%
Q4_1	3.830±0.880	0.774	0.063	3.706	3.954	1.000	-0.214	-0.444	22.972%
Q4_2	3.727±0.962	0.925	0.069	3.591	3.862	1.000	-0.180	-0.522	25.806%
Q4_3	4.139±0.825	0.680	0.059	4.023	4.255	1.000	1.024	-0.881	19.923%
Q5_1	3.701±0.889	0.791	0.064	3.576	3.826	1.000	-0.131	-0.356	24.030%
Q5_2	3.825±0.911	0.829	0.065	3.697	3.953	1.000	0.431	-0.602	23.809%
Q5_3	3.536±1.102	1.214	0.079	3.381	3.691	1.000	-0.475	-0.480	31.156%
Q6_1	3.758±0.892	0.796	0.064	3.632	3.883	1.000	0.705	-0.742	23.742%
Q6_2	3.861±0.891	0.794	0.064	3.735	3.986	1.250	0.388	-0.610	23.080%
Q6_3	3.866±0.847	0.718	0.061	3.747	3.985	1.000	1.009	-0.774	21.913%

The provided descriptive statistics in Table 1 and Table 2 offer insights into the data quality. These statistics provide information about the central tendency, variability, distribution shape, and other key characteristics of the dataset. For instance, the measures of central tendency, such as mean values, help understand the typical responses within the dataset. Standard deviations provide insights into how much individual data points deviate from the mean, indicating data variability. The analysis of kurtosis and skewness statistics helps assess the normality of data distribution. Kurtosis measures the "tailedness" of the distribution, while skewness indicates the asymmetry of the distribution. Deviations from normality in these statistics can impact the validity of certain statistical tests.

Table 2. Descriptive statistics-government information consultation

Item	Mean ± Standard Deviation	Variance	S.E	Mean95% CI(*LL*)	Mean95% CI(*UL*)	IQR	Kurtosis	Skewness	Coefficient of Variation(CV)
Q1_1	3.928±0.902	0.813	0.065	3.801	4.055	2.000	1.003	-0.884	22.962%

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