*CHAPTER 7*

# CUSTOMER SATISFACTION EVALUATION OF CEP SERVICES QUALITY IN THE TIME OF DISRUPTIONS

## Introduction

*This chapter explains the service satisfaction perspectives and behavioral intention of CEP service users, especially in a disruptive context. There are four segment of user namely individual postal users, individual private CEP users, organizational postal users, and organizational private CEP users. The investigation begins with a description of the demographic characteristics of respondents, followed by a factor analysis aimed at identifying and categorizing the key determinants affecting customer satisfaction. Structural Equation Modelling (SEM) is employed to identify the most significant aspects affecting CEP operations during disruptions, thereby highlighting the primary performance drivers. The chapter analyzes consumer behavioral intentions, investigating how disruptions affect future service usage and recommendations. A comprehensive, sequential description of SEM is presented, and the model is evaluated utilizing the Partial Least Squares (PLS) approach for rigorous validation. The chapter discusses service quality, customer satisfaction and behavioral intentions of customers amid disruptions, providing insights on sustaining service quality and enhancing operations under disruptive circumstances. This chapter is divided into four parts as detailed below:*

*7.1 Customer satisfaction evaluation of CEP service quality in the time of disruptions from the perspective of individual users of the postal service*

*7.2 Customer satisfaction evaluation of CEP service quality in times of disruptions from the perspective of individual users of private courier services*

*7.3 Customer satisfaction evaluation of CEP service quality in times of disruptions from the perspective of organizational users of private courier services*

*7.4 Customer satisfaction evaluation of CEP service quality in times of disruptions from the perspective of organizational users of postal services*

## *7.1 CUSTOMER SATISFACTION EVALUATION OF CEP SERVICE QUALITY IN THE TIME OF DISRUPTIONS FROM THE PERSPECTIVE OF INDIVIDUAL USERS OF POSTAL SERVICE*

### 7.1.1 Identification of key factors affecting the satisfaction level of individual users

#### *7.1.1.1 Respondents' demographic profile*

7.1.1 Table: Demographic profile of individual CEP users

| *Characteristics* | *Category* | *Frequency* | *Percent* |
|---|---|---|---|
| *Gender of the respondents* | Male | 254 | 62.3 |
| | Female | 154 | 37.7 |
| *Education level* | High school | 13 | 3.2 |
| | Higher Secondary | 65 | 15.9 |
| | Graduation | 178 | 43.6 |
| | Post Graduation | 113 | 27.7 |
| | Others | 39 | 9.6 |
| *Profession* | Self-employed | 75 | 18.4 |
| | Public Sector | 59 | 14.5 |
| | Private Sector | 152 | 37.3 |
| | Government Employee | 54 | 13.2 |
| | House maker | 60 | 14.7 |
| | Others | 8 | 2 |
| *Age* | 18-24 years | 85 | 20.8 |
| | 25-34 years | 198 | 48.5 |
| | 35-44 years | 54 | 13.2 |
| | 45-54 years | 46 | 11.3 |
| | 55-65 years | 25 | 6.1 |
| *Monthly income* | Up to Rs. 20000 | 104 | 25.5 |
| | Rs. 21,000 to Rs. 40,000 | 162 | 39.7 |
| | Rs. 41,000 to Rs. 60,000 | 58 | 14.2 |
| | Rs. 61,000 to Rs. 1,00,000 | 62 | 15.2 |
| | Above Rs. 1,00,000 | 22 | 5.4 |
| *Purpose of delivery* | To send documents | 116 | 28.4 |
| | To send non-document | 49 | 12 |
| | Both | 243 | 59.6 |
| *Delivery feature* | Flexibility | 10 | 2.5 |
| | Safety | 155 | 38 |
| | Price | 42 | 10.3 |
| | Speed | 132 | 32.4 |
| | Appropriate Service | 69 | 16.9 |
| *Preference during urgency* | India Post | 128 | 31.4 |
| | Private courier | 190 | 46.6 |
| | Both | 90 | 22.1 |
| *Frequency of service* | Rarely | 48 | 11.8 |
| | Daily | 25 | 6.1 |
| | Weekly | 82 | 20.1 |
| | Monthly | 150 | 36.8 |
| | More than two times a year | 103 | 25.2 |

The demographic profile (Table 7.1.1) indicates that about 62.3% of the respondents were male and 37.7% were female. The majority of the participants, i.e.,43.6%, were graduates, followed by post-graduation (27.7%) and higher secondary (15.9%). 37.3% of the respondents were from the private sector, followed by self-employed 18.4%, and the

remaining comprised government employees, public sector, and homemakers. The majority of the respondents (48.5%) were aged between 25-34 years, followed by 18-24 years (20.8%), and 35-44 years (13.2%). According to the respondents' annual income assessments, approximately 65.2% earn no more than Rs. 40,000, 14.2% earn between Rs. 41,000 and Rs. 60,000, 15.2% earn between Rs. 61,000 and Rs. 1,000,000, and 5.4% earn more than Rs. 1,000,000. 59.6% of the respondents use the courier and express services to send both documents and packages, 28.4% to send documents and 12% to send only packages. The majority of the respondents preferred safety (38%) and speed (32.4%) as essential delivery features, followed by appropriate service (16.9%) and flexibility (2.5%). When asked for preference during urgency majority of the respondents (46.6%) said they use a private courier. The study also found data on frequency of use, i.e., monthly (36.8%), More than two times in a year (25.2%), weekly (20.1%), rarely (11.8%), and daily (6.1%).

#### *7.1.1.2 Descriptive statistics of factors*

Table 7.1.2 Descriptive statistics (Individual postal users)

| | *Mean* | *Std. Deviation* | *Skewness* | *Kurtosis* |
|---|---|---|---|---|
| *Dynamic Adaptability 1* | 4.03 | 1.466 | -.069 | -.596 |
| *Dynamic Adaptability 2* | 3.74 | 1.417 | .024 | -.434 |
| *Dynamic Adaptability 3* | 3.94 | 1.355 | .076 | -.373 |
| *Dynamic Adaptability 4* | 3.84 | 1.341 | .118 | -.373 |
| *Dynamic Adaptability 5* | 3.98 | 1.313 | -.062 | -.356 |
| *Dynamic Adaptability 6* | 3.38 | 1.440 | .217 | -.404 |
| *Technological Adaptability 1* | 3.56 | 1.425 | .344 | -.210 |
| *Technological Adaptability 2* | 3.56 | 1.347 | .346 | -.238 |
| *Technological Adaptability 3* | 3.38 | 1.462 | .521 | -.106 |
| *Logistics Efficiency 1* | 4.06 | 1.408 | -.119 | -.358 |
| *Logistics Efficiency 2* | 3.65 | 1.287 | .219 | -.692 |
| *Logistics Efficiency 3* | 3.70 | 1.426 | .389 | -.274 |
| *Logistics Efficiency 4* | 3.67 | 1.246 | .545 | .142 |
| *Logistics Efficiency 5* | 3.86 | 1.306 | .070 | -.217 |
| *Logistics Efficiency 6* | 3.92 | 1.367 | -.010 | -.297 |
| *Service Interface 1* | 4.52 | 1.402 | -.317 | -.342 |
| *Service Interface 2* | 4.23 | 1.416 | .046 | -.434 |
| *Service Interface 3* | 4.06 | 1.332 | -.023 | -.302 |
| *Service Interface 4* | 3.83 | 1.431 | .077 | -.341 |
| *Service Interface 5* | 3.84 | 1.403 | -.128 | -.618 |
| *Service Interface 6* | 3.93 | 1.410 | -.035 | -.298 |
| *Operating Efficiency 1* | 3.71 | 1.523 | .183 | -.662 |
| *Operating Efficiency 2* | 3.33 | 1.404 | .446 | -.398 |
| *Operating Efficiency 3* | 3.85 | 1.395 | .350 | -.046 |
| *Operating Efficiency 4* | 3.92 | 1.392 | .052 | -.296 |
| *Operating Efficiency 5* | 3.76 | 1.382 | .145 | -.188 |

| | Mean | Std. Deviation | Skewness | Kurtosis |
|---|---|---|---|---|
| Operating Efficiency 6 | 3.72 | 1.568 | .228 | -.491 |
| Customer Involvement 1 | 3.53 | 1.326 | .244 | -.260 |
| Customer Involvement 2 | 3.28 | 1.382 | .542 | .082 |
| Customer Involvement 3 | 3.13 | 1.306 | .358 | -.223 |
| Discrepancy Mitigation 1 | 3.34 | 1.296 | .150 | -.140 |
| Discrepancy Mitigation 2 | 3.24 | 1.240 | .432 | -.305 |
| Discrepancy Mitigation 3 | 3.32 | 1.431 | .262 | -.391 |
| Innovativeness 1 | 3.87 | 1.416 | .200 | -.614 |
| Innovativeness 2 | 3.74 | 1.406 | .218 | -.337 |
| Innovativeness 3 | 3.56 | 1.440 | .224 | -.494 |
| Competitiveness 1 | 4.44 | 1.415 | -.191 | -.160 |
| Competitiveness 2 | 3.62 | 1.334 | .251 | -.146 |
| Competitiveness 3 | 3.18 | 1.308 | .275 | -.555 |
| Competitiveness 4 | 4.03 | 1.503 | -.168 | -.737 |
| Customer Loyalty 1 | 4.07 | 1.502 | -.135 | -.607 |
| Customer Loyalty 2 | 3.79 | 1.385 | .114 | -.496 |
| Customer Loyalty 3 | 4.07 | 1.513 | -.048 | -.528 |
| Customer Disloyalty 1 | 3.91 | 1.657 | .112 | -.868 |
| Customer Disloyalty 2 | 3.60 | 1.400 | .246 | -.556 |
| Customer Disloyalty 3 | 3.93 | 1.419 | .048 | -.429 |
| Customer Disloyalty 4 | 3.62 | 1.509 | .259 | -.591 |
| Customer Satisfaction 1 | 4.04 | 1.260 | -.079 | -.290 |
| Customer Satisfaction 2 | 4.37 | 1.318 | -.207 | -.212 |
| Customer Satisfaction 3 | 4.15 | 1.357 | -.257 | -.340 |
| Customer Satisfaction 4 | 3.92 | 1.273 | .306 | -.061 |
| Customer Satisfaction 5 | 4.44 | 1.367 | -.202 | -.282 |
| Willingness to pay | 4.28 | 1.511 | -.061 | -.400 |

The descriptive statistics (Table 7.1.2) of the variables show a range of means from 3.13 to 4.52, indicating respondents normally assigned moderate to high ratings for multiple aspects of service quality, adaptability, and performance. The highest mean is observed for SI1 and reflecting strong satisfaction with this aspect, while CI3 has the lowest mean, indicating relatively lower involvement from customers. The standard deviation values span from 1.240 to 1.657, signifying significant variety in replies, with CDLTY1 exhibiting the largest variability. The data demonstrates a nearly normal distribution with comparable responses and a moderate dispersion. The skewness values for all variables, spanning from -0.317 to 0.545, suggest that the data distribution is relatively symmetric, exhibiting negligible divergence from normalcy. All variables have neither substantial positive nor negative skewness, indicating that answers are predominantly centered around the mean. The kurtosis values, ranging from -0.868 to 0.082, suggest that the dataset is mesokurtic, indicating a close adherence to a normal distribution. The kurtosis values near

zero indicate that the distribution's tails are neither overly heavy nor excessively light. This interpretation indicates that the dataset has a normal, balanced distribution devoid of extreme outliers or skewed trends, so it offers a dependable foundation for subsequent statistical research.

### *7.1.1.3 Exploratory factor analysis*

The exploratory factor analysis was conducted using the Statistical Package for the Social Sciences (SPSS). KMO measure of sampling adequacy indicates suitable data for factor analysis, and a significant Bartlett's Test of Sphericity ($p < 0.001$) confirms sufficient correlations between variables (Table 7.1.3). The first component explains 37.79% of the variance. After rotation, variance is more equally distributed, allowing for easier interpretation (Table 7.1.4). The Rotated Component Matrix shows that the dataset has numerous dimensions (factors), helping researchers comprehend each structure (Table 7.1.5). The test produced nine components of service quality, accounting for a total variance of 72.65%. These factors were named as *dynamic adaptability, competitiveness, customer involvement, discrepancy mitigation, service interface, technological adaptability, innovativeness, operational efficiency,* and *service interface*. The factor loadings are all satisfactory and above 0.5.

Table 7.1.3 KMO and Bartlett's Test-I (Individual postal users)

| | | |
|---|---|---|
| | *Kaiser-Meyer-Olkin Measure of Sampling Adequacy.* | *.945* |
| *Bartlett's Test of Sphericity* | Approx. Chi-Square | 10936.801 |
| | df | 780 |
| | Sig. | 0.000 |

Table 7.1.4 Total Variance Explained-I (Individual postal users)

| ***Component*** | ***Initial Eigenvalues*** | | | ***Extraction Sums of Squared Loadings*** | | | ***Rotation Sums of Squared Loadings*** | | |
|---|---|---|---|---|---|---|---|---|---|
| | *Total* | *% of Variance* | *Cumulative %* | *Total* | *% of Variance* | *Cumulative %* | *Total* | *% of Variance* | *Cumulative %* |
| *1* | 15.116 | 37.791 | 37.791 | 15.116 | 37.791 | 37.791 | 4.488 | 11.221 | 11.221 |
| *2* | 2.623 | 6.558 | 44.349 | 2.623 | 6.558 | 44.349 | 4.423 | 11.058 | 22.279 |
| *3* | 2.212 | 5.531 | 49.880 | 2.212 | 5.531 | 49.880 | 4.363 | 10.909 | 33.188 |
| *4* | 1.904 | 4.760 | 54.639 | 1.904 | 4.760 | 54.639 | 4.178 | 10.444 | 43.632 |
| *5* | 1.865 | 4.661 | 59.301 | 1.865 | 4.661 | 59.301 | 2.599 | 6.498 | 50.130 |
| *6* | 1.699 | 4.249 | 63.549 | 1.699 | 4.249 | 63.549 | 2.411 | 6.027 | 56.156 |
| *7* | 1.359 | 3.398 | 66.947 | 1.359 | 3.398 | 66.947 | 2.350 | 5.874 | 62.031 |
| *8* | 1.205 | 3.012 | 69.959 | 1.205 | 3.012 | 69.959 | 2.136 | 5.339 | 67.370 |
| *9* | 1.075 | 2.688 | 72.647 | 1.075 | 2.688 | 72.647 | 2.111 | 5.277 | 72.647 |
| *10* | .713 | 1.784 | 74.430 | | | | | | |
| *11* | .625 | 1.561 | 75.992 | | | | | | |

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 12 | .585 | 1.463 | 77.455 | | | | | | |
| 13 | .555 | 1.386 | 78.842 | | | | | | |
| 14 | .529 | 1.322 | 80.163 | | | | | | |
| 15 | .502 | 1.256 | 81.419 | | | | | | |
| 16 | .455 | 1.137 | 82.556 | | | | | | |
| 17 | .443 | 1.106 | 83.663 | | | | | | |
| 18 | .422 | 1.055 | 84.718 | | | | | | |
| 19 | .403 | 1.006 | 85.724 | | | | | | |
| 20 | .399 | .998 | 86.723 | | | | | | |
| 21 | .382 | .955 | 87.678 | | | | | | |
| 22 | .367 | .919 | 88.597 | | | | | | |
| 23 | .359 | .898 | 89.495 | | | | | | |
| 24 | .334 | .836 | 90.331 | | | | | | |
| 25 | .324 | .811 | 91.142 | | | | | | |
| 26 | .316 | .789 | 91.931 | | | | | | |
| 27 | .294 | .735 | 92.665 | | | | | | |
| 28 | .283 | .708 | 93.374 | | | | | | |
| 29 | .270 | .675 | 94.049 | | | | | | |
| 30 | .267 | .668 | 94.717 | | | | | | |
| 31 | .262 | .654 | 95.371 | | | | | | |
| 32 | .247 | .617 | 95.988 | | | | | | |
| 33 | .235 | .588 | 96.576 | | | | | | |
| 34 | .228 | .570 | 97.146 | | | | | | |
| 35 | .219 | .546 | 97.692 | | | | | | |
| 36 | .207 | .518 | 98.210 | | | | | | |
| 37 | .194 | .485 | 98.695 | | | | | | |
| 38 | .183 | .457 | 99.151 | | | | | | |
| 39 | .173 | .433 | 99.584 | | | | | | |
| 40 | .166 | .416 | 100.000 | | | | | | |

*Extraction Method: Principal Component Analysis*

Table 7.1.5 Rotated component matrix-I (Individual postal users)

| | Component | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Operational Efficiency 1 | .789 | | | | | | | | |
| Operational Efficiency 2 | .769 | | | | | | | | |
| Operational Efficiency 3 | .755 | | | | | | | | |
| Operational Efficiency 4 | .752 | | | | | | | | |
| Operational Efficiency 5 | .699 | | | | | | | | |
| Operational Efficiency 6 | .695 | | | | | | | | |
| Logistics Efficiency 1 | | .791 | | | | | | | |
| Logistics Efficiency 2 | | .790 | | | | | | | |
| Logistics Efficiency 3 | | .760 | | | | | | | |

| | Component | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Logistics Efficiency 4 | | .734 | | | | | | | |
| Logistics Efficiency 5 | | .709 | | | | | | | |
| Logistics Efficiency 6 | | .670 | | | | | | | |
| Dynamic Adaptability 1 | | | .737 | | | | | | |
| Dynamic Adaptability 2 | | | .730 | | | | | | |
| Dynamic Adaptability 3 | | | .729 | | | | | | |
| Dynamic Adaptability 4 | | | .726 | | | | | | |
| Dynamic Adaptability 5 | | | .718 | | | | | | |
| Dynamic Adaptability 6 | | | .716 | | | | | | |
| Service Interface 1 | | | | .810 | | | | | |
| Service Interface 2 | | | | .792 | | | | | |
| Service Interface 3 | | | | .779 | | | | | |
| Service Interface 4 | | | | .728 | | | | | |
| Service Interface 5 | | | | .699 | | | | | |
| Service Interface 6 | | | | .685 | | | | | |
| Competitiveness 1 | | | | | .797 | | | | |
| Competitiveness 2 | | | | | .763 | | | | |
| Competitiveness 3 | | | | | .722 | | | | |
| Competitiveness 4 | | | | | .686 | | | | |
| Innovativeness 1 | | | | | | .877 | | | |
| Innovativeness 2 | | | | | | .855 | | | |
| Innovativeness 3 | | | | | | .854 | | | |
| Discrepancy Mitigation 1 | | | | | | | .792 | | |
| Discrepancy Mitigation 2 | | | | | | | .770 | | |
| Discrepancy Mitigation 3 | | | | | | | .770 | | |
| Technological Adaptability 1 | | | | | | | | .767 | |
| Technological Adaptability 2 | | | | | | | | .729 | |
| Technological Adaptability 3 | | | | | | | | .669 | |
| Customer Involvement 1 | | | | | | | | | .738 |
| Customer Involvement 2 | | | | | | | | | .689 |
| Customer Involvement 3 | | | | | | | | | .652 |

*Extraction Method: Principal Component Analysis.*
*Rotation Method: Varimax with Kaiser Normalization*
*Rotation Method: Varimax with Kaiser Normalization*.

Three more constructs were extracted, namely customer satisfaction, customer loyalty, and customer disloyalty, with a total variance of 76.91%. The factor loadings are also above the required threshold limits of 0.5. KMO and Bartlett's Test also showed significant results. The results are discussed as follows

Table 7.1.6 KMO and Bartlett's Test-II (Individual postal users)

| | | |
|---|---|---|
| *Kaiser-Meyer-Olkin Measure of Sampling Adequacy.* | | *.902* |
| *Bartlett's Test of Sphericity* | Approx. Chi-Square | 3249.957 |

| | | |
|---|---|---|
| | df | 66 |
| | Sig. | 0.000 |

Table 7.1.7 Total Variance Explained-II (Individual postal users)

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 5.343 | 44.528 | 44.528 | 5.343 | 44.528 | 44.528 | 3.864 | 32.200 | 32.200 |
| 2 | 2.825 | 23.544 | 68.072 | 2.825 | 23.544 | 68.072 | 3.203 | 26.692 | 58.892 |
| 3 | 1.061 | 8.840 | 76.912 | 1.061 | 8.840 | 76.912 | 2.162 | 18.020 | 76.912 |
| 4 | .492 | 4.102 | 81.014 | | | | | | |
| 5 | .361 | 3.006 | 84.020 | | | | | | |
| 6 | .324 | 2.701 | 86.721 | | | | | | |
| 7 | .307 | 2.558 | 89.280 | | | | | | |
| 8 | .301 | 2.510 | 91.790 | | | | | | |
| 9 | .280 | 2.335 | 94.125 | | | | | | |
| 10 | .242 | 2.020 | 96.145 | | | | | | |
| 11 | .240 | 2.000 | 98.146 | | | | | | |
| 12 | .223 | 1.854 | 100.000 | | | | | | |

*Extraction Method: Principal Component Analysis.*

Table 7.1.8 Rotated Component matrix-II (Individual postal users)

| | Component | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| Customer Satisfaction 1 | .846 | | |
| Customer Satisfaction 2 | .844 | | |
| Customer Satisfaction 3 | .841 | | |
| Customer Satisfaction 4 | .841 | | |
| Customer Satisfaction 5 | .819 | | |
| Customer Disloyalty 1 | | .894 | |
| Customer Disloyalty 2 | | .889 | |
| Customer Disloyalty 3 | | .881 | |
| Customer Disloyalty 4 | | .876 | |
| Customer Loyalty 1 | | | .820 |
| Customer Loyalty 2 | | | .769 |
| Customer Loyalty 3 | | | .766 |

*Extraction Method: Principal Component Analysis*
*Rotation Method: Varimax with Kaiser Normalization.*

The three tables (7.1.6, 7.1.7, 7.1.8) demonstrate factor analysis structures and validity. Sampling Adequacy test is excellent as KMO score signifies that the variables share a considerable fraction of variation, making the dataset eligible for factor analysis. Bartlett's Test of Sphericity also yields a significant result. This reveals that the correlation matrix

is not an identity matrix, which factor analysis requires. Significant results ($p < 0.05$) indicate considerable correlations between variables, qualifying for factoring. Both tests confirm that the data is suitable for factor analysis. The total variance explained table demonstrates that the first three components explain 76.91% of the variance, with the first two accounting for 58.89% after extraction, indicating a robust structure. This structure shows that the data has separate dimensions like customer loyalty, satisfaction, and disloyalty with clear patterns.

### 7.1.2 Assessment of measurement model

#### *7.1.2.1 Reliability and validity*

Table 7.1.9 Outer loadings, validity, and reliability for constructs (Individual postal users)

| | *Outer loadings* | *Cronbach's alpha* | *Composite reliability (rho_a)* | *Composite reliability (rho_c)* | *Average variance extracted (AVE)* | *VIF* |
|---|---|---|---|---|---|---|
| *DAP1* | 0.871 | 0.924 | 0.927 | 0.941 | 0.725 | 2.872 |
| *DAP2* | 0.852 | | | | | 2.602 |
| *DAP3* | 0.852 | | | | | 2.612 |
| *DAP4* | 0.871 | | | | | 2.895 |
| *DAP5* | 0.847 | | | | | 2.516 |
| *DAP6* | 0.817 | | | | | 2.303 |
| *DM1* | 0.892 | 0.863 | 0.864 | 0.916 | 0.785 | 2.247 |
| *DM2* | 0.894 | | | | | 2.340 |
| *DM3* | 0.872 | | | | | 2.084 |
| *TA1* | 0.811 | 0.810 | 0.825 | 0.887 | 0.723 | 1.700 |
| *TA2* | 0.872 | | | | | 1.920 |
| *TA3* | 0.867 | | | | | 1.735 |
| *INV1* | 0.893 | 0.855 | 0.858 | 0.912 | 0.775 | 2.208 |
| *INV2* | 0.889 | | | | | 2.292 |
| *INV3* | 0.858 | | | | | 1.941 |
| *LGE1* | 0.884 | 0.911 | 0.915 | 0.931 | 0.693 | 3.071 |
| *LGE2* | 0.832 | | | | | 2.409 |
| *LGE3* | 0.818 | | | | | 2.220 |
| *LGE4* | 0.774 | | | | | 1.933 |
| *LGE5* | 0.864 | | | | | 3.536 |
| *LGE6* | 0.817 | | | | | 2.852 |
| *OPE1* | 0.874 | 0.922 | 0.924 | 0.939 | 0.720 | 3.019 |
| *OPE2* | 0.833 | | | | | 2.484 |
| *OPE3* | 0.864 | | | | | 2.770 |
| *OPE4* | 0.825 | | | | | 2.298 |
| *OPE5* | 0.859 | | | | | 2.772 |
| *OPE6* | 0.833 | | | | | 2.610 |
| *SI1* | 0.793 | 0.904 | 0.920 | 0.925 | 0.675 | 2.198 |
| *SI2* | 0.737 | | | | | 1.954 |
| *SI3* | 0.820 | | | | | 2.100 |
| *SI4* | 0.852 | | | | | 2.385 |
| *SI5* | 0.873 | | | | | 2.933 |

| | Outer loadings | Cronbach's alpha | Composite reliability (rho_a) | Composite reliability (rho_c) | Average variance extracted (AVE) | VIF |
|---|---|---|---|---|---|---|
| *SI6* | 0.846 | | | | | 2.562 |
| *COM1* | 0.813 | 0.808 | 0.850 | 0.870 | 0.629 | 1.846 |
| *COM2* | 0.863 | | | | | 1.824 |
| *COM3* | 0.811 | | | | | 1.601 |
| *COM4* | 0.672 | | | | | 1.494 |
| *CI1* | 0.865 | 0.810 | 0.825 | 0.887 | 0.723 | 1.690 |
| *CI2* | 0.866 | | | | | 1.917 |
| *CI3* | 0.820 | | | | | 1.754 |
| *CDLTY1* | 0.907 | 0.914 | 0.930 | 0.939 | 0.793 | 2.866 |
| *CDLTY2* | 0.895 | | | | | 2.807 |
| *CDLTY3* | 0.885 | | | | | 2.986 |
| *CDLTY4* | 0.875 | | | | | 2.920 |
| *CLTY1* | 0.894 | 0.812 | 0.826 | 0.889 | 0.727 | 2.125 |
| *CLTY2* | 0.871 | | | | | 1.965 |
| *CLTY3* | 0.789 | | | | | 1.550 |
| *CSAT1* | 0.870 | 0.924 | 0.925 | 0.942 | 0.766 | 2.741 |
| *CSAT2* | 0.861 | | | | | 2.628 |
| *CSAT3* | 0.886 | | | | | 3.011 |
| *CSAT4* | 0.867 | | | | | 2.622 |
| *CSAT5* | 0.891 | | | | | 3.128 |
| *WLP* | 1.000 | | | | | 1.000 |

The measuring model includes convergent validity, discriminant validity, and construct reliability (Table 7.1.9). This demonstrates that the composite reliability (CR) values of constructs were all over 0.7, with a range of 0.927 to 0.825, indicating high reliability. Cronbach's alpha value was also above 0.7. This discovery validated the notion that the measuring scales provide a sufficient level of internal consistency reliability for a new scale, as stated by Hair et al. (2019). The average variance extracted (AVE) of all constructs was higher than 0.5, indicating that the measurement scales have adequate convergent validity.

The Fornell-Larker criterion (Table 7.1.11) confirms the presence of discriminant validity, as all square roots of the AVE are greater than the corresponding correlations between the components. The cross-loading results, similar to the Fornell-Larker criterion, indicate that all the constructs demonstrated discriminant validity, as none of the cross-loading values were below 0.1 (Chin, 1998). The findings of cross-loading are presented in the Appendix section. Furthermore, all the indicators exhibit a significant degree of loading on the relevant constructions rather than other constructs. This observation suggests that each of

Table 7.1.10 Heterotrait-monotrait ratio (Individual postal users)

| | CDLTY | CI | CLTY | COM | CSAT | DAP | DM | ICT | INV | LGE | OPE | SI | WLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CDLTY | | | | | | | | | | | | | |
| CI | 0.144 | | | | | | | | | | | | |
| CLTY | 0.231 | 0.440 | | | | | | | | | | | |
| COM | 0.074 | 0.416 | 0.441 | | | | | | | | | | |
| CSAT | 0.221 | 0.722 | 0.710 | 0.576 | | | | | | | | | |
| DAP | 0.122 | 0.652 | 0.529 | 0.449 | 0.763 | | | | | | | | |
| DM | 0.093 | 0.592 | 0.499 | 0.404 | 0.667 | 0.588 | | | | | | | |
| ICT | 0.177 | 0.647 | 0.472 | 0.431 | 0.696 | 0.679 | 0.552 | | | | | | |
| INV | 0.081 | 0.294 | 0.228 | 0.211 | 0.372 | 0.231 | 0.216 | 0.309 | | | | | |
| LGE | 0.166 | 0.573 | 0.444 | 0.456 | 0.666 | 0.675 | 0.507 | 0.515 | 0.192 | | | | |
| OPE | 0.180 | 0.659 | 0.505 | 0.459 | 0.718 | 0.651 | 0.578 | 0.585 | 0.235 | 0.646 | | | |
| SI | 0.078 | 0.543 | 0.521 | 0.497 | 0.624 | 0.573 | 0.528 | 0.457 | 0.253 | 0.493 | 0.525 | | |
| WLP | 0.189 | 0.555 | 0.644 | 0.452 | 0.770 | 0.537 | 0.506 | 0.551 | 0.228 | 0.502 | 0.520 | 0.461 | |

Table 7.1.11 Fornell-Larcker criterion (Individual postal users)

| | CDLTY | CI | CLTY | COM | CSAT | DAP | DM | ICT | INV | LGE | OPE | SI | WLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CDLTY | **0.890** | | | | | | | | | | | | |
| CI | -0.126 | **0.850** | | | | | | | | | | | |
| CLTY | -0.208 | 0.367 | **0.853** | | | | | | | | | | |
| COM | -0.059 | 0.361 | 0.383 | **0.793** | | | | | | | | | |
| CSAT | -0.206 | 0.634 | 0.621 | 0.526 | **0.875** | | | | | | | | |
| DAP | -0.116 | 0.568 | 0.466 | 0.402 | 0.708 | **0.852** | | | | | | | |
| DM | -0.081 | 0.498 | 0.424 | 0.356 | 0.596 | 0.527 | **0.886** | | | | | | |
| ICT | -0.158 | 0.526 | 0.393 | 0.353 | 0.609 | 0.596 | 0.463 | **0.850** | | | | | |
| INV | -0.073 | 0.242 | 0.191 | 0.177 | 0.332 | 0.208 | 0.188 | 0.256 | **0.880** | | | | |
| LGE | -0.153 | 0.496 | 0.389 | 0.416 | 0.612 | 0.621 | 0.449 | 0.450 | 0.171 | **0.832** | | | |
| OPE | -0.165 | 0.570 | 0.445 | 0.421 | 0.666 | 0.603 | 0.517 | 0.507 | 0.211 | 0.591 | **0.848** | | |
| SI | -0.049 | 0.492 | 0.464 | 0.438 | 0.591 | 0.541 | 0.480 | 0.413 | 0.225 | 0.463 | 0.500 | **0.821** | |
| WLP | -0.185 | 0.504 | 0.582 | 0.422 | 0.741 | 0.519 | 0.471 | 0.501 | 0.211 | 0.480 | 0.501 | 0.459 | **1.000** |

the constructs inside the framework exhibits a high degree of distinctiveness from the others. The heterotrait-monotrait ratio of correlations (HTMT) is employed as a means of assessing the validity of the measurement constructs. The HTMT values suggest the absence of any values greater than 0.85 (Table 7.1.10). Consequently, it has been verified that all of the constructs demonstrated satisfactory levels of discriminant validity.

#### *7.1.2.2 Common method variance (CVM)*

The study used a rigorous way to reduce bias from self-reported data by applying a comprehensive technique specifically designed for this purpose. The measurement approach utilized collinearity statistics, focusing on evaluating the variance inflation factor (VIF) with a stringent threshold of VIF values equal to or below 5 (Hair et al., 2019). The study used Harman's (1967) single-factor test and conducted unrotated principal component factor analysis in SPSS. The research identified ten separate factors of service quality with eigenvalues of 1.00 or above, explaining a total of 76.65% of the variation, which contradicts the idea of a single underlying factor. The common approach variance was found to be less than 50%, with the first factor accounting for 37.79% of the variance, in line with Podsakoff et al.'s (2003) suggestions. The study also took into account the thresholds proposed by Afum et al. (2020) for reflective models, stating that a VIF value lower than 3.3 indicates the absence of common method bias. The study chose a conservative approach, in line with Kock's (2015) assertion that a VIF of 5 or less is required to tackle potential multicollinearity difficulties.

### 7.1.3 Structural Equation Model

#### *7.1.3.1 Evaluation of the structural model*

Table 7.1.12 Assessment of direct relationship (Individual postal users)

| *Hypotheses* | *Path coefficients* | *SE* | *T values* | *Bias Corrected at 95% confidence Intervals* | | *P Values* | *Decision* |
|---|---|---|---|---|---|---|---|
| | | | | *Lower Level* | *Upper Level* | | |
| *CI -> CSAT* | 0.129 | 0.038 | 3.396 | 0.057 | 0.205 | 0.001 | Supported |
| *COM -> CSAT* | 0.142 | 0.036 | 3.897 | 0.071 | 0.214 | 0.000 | Supported |
| *DAP -> CSAT* | 0.218 | 0.045 | 4.823 | 0.130 | 0.306 | 0.000 | Supported |
| *DM -> CSAT* | 0.127 | 0.041 | 3.064 | 0.047 | 0.211 | 0.002 | Supported |
| *ICT -> CSAT* | 0.117 | 0.039 | 3.002 | 0.036 | 0.190 | 0.003 | Supported |
| *INV -> CSAT* | 0.107 | 0.030 | 3.571 | 0.051 | 0.167 | 0.000 | Supported |
| *LGE -> CSAT* | 0.092 | 0.043 | 2.168 | 0.010 | 0.178 | 0.030 | Supported |
| *OPE -> CSAT* | 0.150 | 0.040 | 3.756 | 0.073 | 0.231 | 0.000 | Supported |
| *SI -> CSAT* | 0.096 | 0.039 | 2.441 | 0.016 | 0.171 | 0.015 | Supported |

| Hypotheses | Path coefficients | SE | T values | Bias Corrected at 95% confidence Intervals | | P Values | Decision |
|---|---|---|---|---|---|---|---|
| | | | | Lower Level | Upper Level | | |
| *CI -> CLTY* | -0.098 | 0.055 | 1.793 | -0.207 | 0.006 | 0.073 | Not Supported |
| *COM -> CLTY* | 0.053 | 0.043 | 1.221 | -0.030 | 0.137 | 0.222 | Not Supported |
| *DAP -> CLTY* | 0.022 | 0.060 | 0.370 | -0.098 | 0.140 | 0.712 | Not Supported |
| *DM -> CLTY* | 0.061 | 0.048 | 1.284 | -0.032 | 0.153 | 0.199 | Not Supported |
| *ICT -> CLTY* | 0.015 | 0.056 | 0.270 | -0.092 | 0.130 | 0.787 | Not Supported |
| *INV -> CDLTY* | -0.004 | 0.054 | 0.080 | -0.109 | 0.103 | 0.936 | Not Supported |
| *LGE -> CDLTY* | -0.073 | 0.068 | 1.065 | -0.206 | 0.062 | 0.287 | Not Supported |
| *OPE -> CLTY* | 0.038 | 0.066 | 0.571 | -0.088 | 0.170 | 0.568 | Not Supported |
| *SI -> CLTY* | 0.137 | 0.051 | 2.714 | 0.034 | 0.232 | 0.007 | Supported |
| *CI -> CDLTY* | 0.004 | 0.072 | 0.060 | -0.141 | 0.142 | 0.952 | Not Supported |
| *COM -> CDLTY* | 0.063 | 0.055 | 1.142 | -0.047 | 0.168 | 0.253 | Not Supported |
| *DAP -> CDLTY* | 0.089 | 0.080 | 1.115 | -0.078 | 0.238 | 0.265 | Not Supported |
| *DM -> CDLTY* | 0.062 | 0.067 | 0.923 | -0.067 | 0.193 | 0.356 | Not Supported |
| *ICT -> CDLTY* | -0.077 | 0.065 | 1.193 | -0.200 | 0.051 | 0.233 | Not Supported |
| *INV -> CLTY* | -0.018 | 0.043 | 0.414 | -0.104 | 0.061 | 0.679 | Not Supported |
| *LGE -> CLTY* | -0.027 | 0.051 | 0.533 | -0.132 | 0.067 | 0.594 | Not Supported |
| *OPE -> CDLTY* | -0.076 | 0.076 | 0.997 | -0.220 | 0.077 | 0.319 | Not Supported |
| *SI -> CDLTY* | 0.099 | 0.063 | 1.585 | -0.022 | 0.224 | 0.113 | Not Supported |
| *CSAT -> CLTY* | 0.510 | 0.068 | 7.532 | 0.371 | 0.634 | 0.000 | Supported |
| *CSAT -> CDLTY* | -0.257 | 0.094 | 2.746 | -0.432 | -0.066 | 0.006 | Supported |
| *CDLTY -> WLP* | -0.018 | 0.029 | 0.610 | -0.075 | 0.041 | 0.542 | Not Supported |
| *CLTY -> WLP* | 0.196 | 0.058 | 3.381 | 0.090 | 0.314 | 0.001 | Supported |
| *CSAT -> WLP* | 0.615 | 0.056 | 10.937 | 0.497 | 0.718 | 0.000 | Supported |

The path coefficients of PLS structural equation model are presented in Table 7.1.12.

a) ***Impact of quality of courier service on satisfaction of customers:*** As shown for the CSQ model-I (Figure 7.1.1) nine factors of service quality are identified in the context of postal services. Nine factors namely dynamic adaptability (β = 0.218), operational efficiency (β = 0.150), competitiveness (β = 0.142), disruption preparedness (β = 0.127), innovativeness (β = 0.107), technological adaptability (β = 0.117), customer involvement (β = 0.129), service interface (β = 0.096), and logistics efficiency ((β = 0.092), significantly influenced customer satisfaction. The $R^2$ value shows that the perception of the customers on courier service quality explains 71% of the variance in customer satisfaction. Hence, H4a is supported (Table 7.1.12).

b) ***Impact of quality of courier service on loyalty of customers:*** Only one factor service interface (β = 0.137), significantly influenced customer loyalty. H4b is supported partially (Table 7.1.12).

c) ***Impact of quality of courier service on disloyalty of customers****:* There is no such direct relationship was found between courier service quality and customer disloyalty (Table 7.1.12). Therefore, we cannot accept H4c.

d) ***Impact of satisfaction with customers on loyalty to customers, customer disloyalty and willingness to pay:*** Customer satisfaction (β = 0.510) positively influences customer loyalty and negatively influences customer disloyalty (β = -0.257). Customer satisfaction positively influences willingness to pay (β = 0.615). Hence H4d, H4e, H4h is supported (Table 7.1.12).

e) ***Effects of customer loyalty and customer disloyalty on willingness to pay:*** Customer loyalty also contributes to willingness to pay (β = 0.196) but there is no such interaction between customer disloyalty and willingness to pay. 40% variance in customer loyalty 57% variance is found in willingness to pay for better services. However, there is more than six percent change in the customer disloyalty aspect. Overall, the model developed for this study has good explanatory power. Hence H4i is supported, but H4j is not supported (Table 7.1.12).

Table 7.1.13 Mediation Analysis (Individual postal users)

| *Hypotheses* | *Path coefficients* | *SE* | *T Values* | *Bias Corrected at 95% confidence Intervals* | | *P values* | *Decision* |
|---|---|---|---|---|---|---|---|
| | | | | *Lower level* | *Upper level* | | |
| *CI -> CSAT -> CLTY* | 0.066 | 0.021 | 3.130 | 0.028 | 0.111 | 0.002 | Full Mediation |
| *COM -> CSAT -> CLTY* | 0.072 | 0.022 | 3.299 | 0.033 | 0.118 | 0.001 | Full Mediation |
| *DAP -> CSAT -> CLTY* | 0.111 | 0.028 | 4.026 | 0.062 | 0.169 | 0.000 | Full Mediation |
| *ICT -> CSAT -> CLTY* | 0.060 | 0.021 | 2.816 | 0.019 | 0.104 | 0.005 | Full Mediation |
| *LGE -> CSAT -> CLTY* | 0.047 | 0.022 | 2.117 | 0.006 | 0.094 | 0.034 | Full Mediation |
| *SI -> CSAT -> CLTY* | 0.049 | 0.021 | 2.309 | 0.009 | 0.094 | 0.021 | Partial Mediation |
| *DM -> CSAT -> CLTY* | 0.065 | 0.023 | 2.825 | 0.021 | 0.110 | 0.005 | Full Mediation |
| *INV -> CSAT -> CLTY* | 0.054 | 0.016 | 3.357 | 0.024 | 0.088 | 0.001 | Full Mediation |
| *OPE -> CSAT -> CLTY* | 0.077 | 0.023 | 3.285 | 0.033 | 0.126 | 0.001 | Full Mediation |
| | | | | | | | |
| *CI -> CSAT -> CDLTY* | -0.033 | 0.016 | 2.118 | -0.069 | -0.008 | 0.034 | Full Mediation |
| *COM -> CSAT -> CDLTY* | -0.036 | 0.017 | 2.199 | -0.074 | -0.008 | 0.028 | Full Mediation |
| *DAP -> CSAT -> CDLTY* | -0.056 | 0.024 | 2.332 | -0.107 | -0.014 | 0.020 | Full Mediation |
| *ICT -> CSAT -> CDLTY* | -0.030 | 0.015 | 1.946 | -0.065 | -0.005 | 0.052 | Partial Mediation |
| *LGE -> CSAT -> CDLTY* | -0.024 | 0.015 | 1.636 | -0.059 | -0.001 | 0.102 | No Mediation |
| *SI -> CSAT -> CDLTY* | -0.025 | 0.014 | 1.756 | -0.057 | -0.002 | 0.079 | No Mediation |

| Hypotheses | Path coefficients | SE | T Values | Bias Corrected at 95% confidence Intervals | | P values | Decision |
|---|---|---|---|---|---|---|---|
| | | | | Lower level | Upper level | | |
| DM -> CSAT -> CDLTY | -0.033 | 0.016 | 1.992 | -0.069 | -0.006 | 0.046 | Full Mediation |
| INV -> CSAT -> CDLTY | -0.027 | 0.012 | 2.281 | -0.053 | -0.006 | 0.023 | Full Mediation |
| OPE -> CSAT -> CDLTY | -0.039 | 0.018 | 2.116 | -0.079 | -0.008 | 0.034 | Full Mediation |

***f) Customer satisfaction mediates the relationship between service quality and customer loyalty and customer disloyalty****:* The study revealed a significant correlation between the quality of courier services and customer loyalty, as well as between courier service quality and consumer disloyalty. Bootstrapping improves the accuracy of predicted associations and offers a thorough insight into potential mediating factors, leading to a more detailed interpretation of the study's findings.

The results of mediation analysis provide us the evidence that there is indirect relationship exists between courier service quality and customer loyalty (Table 7.1.13). All the eight factors namely dynamic adaptability (β = 0.111), operational efficiency (β = 0.077), competitiveness (β = 0.072), disruption mitigation (β = 0.065), innovativeness (β = 0.054), technological adaptability (β = 0.060), customer involvement (β = 0.066) and logistics efficiency ((β = 0.047), have significantly influenced customer loyalty via customer satisfaction. The $R^2$ value shows that the perception of the customers on courier service quality explains 40% of the variance in customer loyalty. Hence H4f is supported.

The results of mediation analysis provide us the evidence that there is indirect relationship exists between courier service quality and customer disloyalty except service interface and logistics efficiency (Table 7.1.13). Seven factors namely operational efficiency (β = -0.039), dynamic adaptability (β = -0.056), competitiveness (β = -0.142), disruption preparedness (β = -0.127), innovativeness (β = -0.036), technological adaptability (β = -0.030), customer involvement (β = -0.033) significantly influenced customer disloyalty via customer satisfaction. Enhanced service quality leads to happier customers and reduces the switching behaviors of customer from dissatisfied factors. Hence H4g is supported.

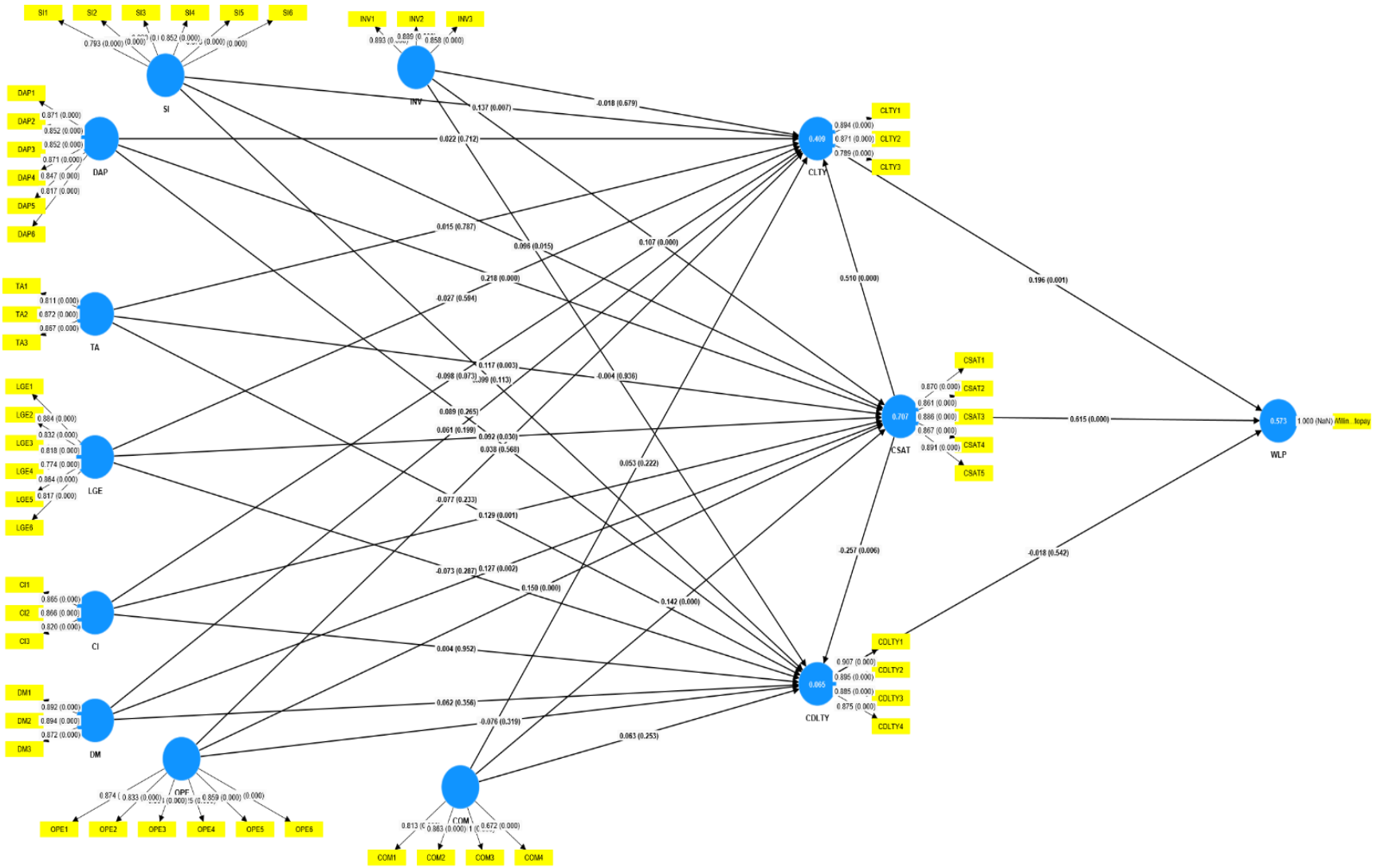


Figure 7.1.1 CSQ model-I generated in SMARTPLS (Individual postal users)

### *7.1.3.2 Model Fit*

Table 7.1.14 $R^2$, $Q^2$ and $f^2$ results (Individual postal users)

| *Endogenous latent constructs* | $R^2$ | $Q^2$ | $f^2$ | *Exogenous Latent constructs* | $f^2$ |
|---|---|---|---|---|---|
| *Customer Satisfaction* | 0.707 | 0.688 | 0.539 | CI | 0.030 |
| *Customer Loyalty* | 0.409 | 0.298 | 0.129 | COM | 0.050 |
| *Customer Disloyalty* | 0.065 | 0.001 | 0.001 | DAP | 0.067 |
| *Willingness to pay* | 0.573 | 0.405 | | DM | 0.033 |
| | | | | ICT | 0.026 |
| | | | | INV | 0.035 |
| | | | | LGE | 0.015 |
| | | | | OPE | 0.037 |
| | | | | SI | 0.018 |

$R^2$, which measures how an exogenous factor affects an endogenous component, has benchmarks of 0.19, 0.33, and 0.67 for mild, medium, and strong impacts, respectively (Sheykhfard et al., 2024). The study model has shown robust prediction ($Q^2$) ability for all the exogeneous constructs customer satisfaction, customer loyalty, customer disloyalty, Willingness to pay (Table 7.1.14). This study intends to evaluate the variation of endogenous components and evaluate the effect size. The $f^2$ statistic quantifies the influence of a certain external latent variable on an internal latent variable by assessing the variations in the $R^2$ value (Chin, 1998). Hence, the computation of effect size (Cohen, 1988) resulted in $f^2$ values of 0.02, 0.15, and 0.35, denoting weak; moderate, and substantial effects, respectively (Sheykhfard et al., 2024). It is crucial to recognize that a modest $f^2$ value does not necessarily indicate a negligible influence. “Even a small interaction effects can be meaningful under extreme moderating conditions, if the resulting beta changes are meaningful, then it is important to take these conditions into account” (Chin et al., 2003, p.211). Dynamic adaptability has the highest effect size followed by competitiveness, operational efficiency, innovativeness in second, third and fourth place.

Table 7.1.15 Model fit indices (Individual postal users)

| *Parameters* | *Saturated model* | *Estimated model* | *Thresholds* | *References* |
|---|---|---|---|---|
| *SRMR* | 0.049 | 0.049 | <=0.08 | Hair et al., 2020 |
| *NFI* | 0.833 | 0.832 | >=0.70 | Yusif et al., 2020; German et al., 2022 |
| *d_ULS* | 3.414 | 3.483 | p>0.05 | Dash & Paul, 2021 |
| *d_G* | 1.144 | 1.152 | p>0.05 | Dash & Paul, 2021 |
| *GoF* | 0.565 | | Small=0.1<br>Medium= 0.25<br>Large= 0.36 | Sheykhfard et al., 2024; Wasko & Faraj, 2005; Wetzels et al., 2009 |
| *VIF* | Between 1 to 5 | | <=5.00 | Hair et al., 2020; Kock 2015 |

The fitness analysis involved testing the standardized root mean square residual (SRMR), exact model fit tests euclidean distance (d_ULS) and geodesic distance (d_G), and normed fit index (NFI) (Table 7.1.15). The SRMR analysis illustrates the disparity between the observed correlation matrix and the anticipated correlation matrix. In the present investigation, the saturated model and estimated model for SRMR were found to be 0.049, suggesting a satisfactory fit, as these values fall below the threshold of 0.08. The precise model fit assesses the disparity between an empirical covariance test and the exact model fit. The d_ULS value for the saturated model is 3.414, whereas the value for the estimated model is 3.483, which above the threshold of 0.05. In addition, the d_G value for the saturated model is 1.144, whereas the estimated model is 1.152, both of which exceed the significance level of 0.05. This suggests that the model successfully passed the precise model fit tests. According to Bentler and Bonett (1980), values that are closer to 1 in NFI are regarded as having a superior fit. Yet studies suggest that these values exceeding the threshold of 0.7 is sufficient. In this investigation, the NFI values for the saturated model and estimated model are 0.833 and 0.832, respectively. In general, the model satisfied the statistical fitness criterion, as evidenced by the data presented in Table 7.1.15.

***Goodness of fit:*** The primary method for assessing the model's explanatory capacity is through the examination of $R^2$, as Partial Least Squares (PLS) does not yield comprehensive goodness of fit measures (Wasko & Faraj, 2005). However, the Goodness of Fit (GoF) index as a diagnostic tool for assessing the adequacy of model fit was established by Tenenhaus et al., 2005. The GoF measure calculates the geometric mean of the average variance extracted and the average $R^2$ for endogenous constructs. Sheykhfard et al. (2024) have reported the following threshold values for assessing the outcomes of the GoF analysis: smaller = 0.1, moderate = 0.25, and significant = 0.36. The determined GoF value of 0.565 in this study indicates that the CSQ model-I is highly well-fitting, as stated in Eq. (15).

$$GoF = \sqrt{AVE * R^2} \quad \ldots (15)$$

## 7.2 CUSTOMER SATISFACTION EVALUATION OF CEP SERVICE QUALITY IN TIMES OF DISRUPTIONS FROM THE PERSPECTIVE OF INDIVIDUAL USERS OF PRIVATE COURIER SERVICES

### 7.2.1 Identification of key factors affecting satisfaction level

Demographic profile of the respondents is already discussed in previous section (7.1.1.1)

#### *7.2.1.1 Descriptive statistics of factors*

Table 7.2.1 Descriptive statistics (Individual private CEP users)

| | Mean | Std. Deviation | Skewness | Kurtosis |
|---|---|---|---|---|
| Dynamic Adaptability 1 | 4.40 | 1.571 | -.252 | -.608 |
| Dynamic Adaptability 2 | 4.11 | 1.540 | -.125 | -.756 |
| Dynamic Adaptability 3 | 4.25 | 1.503 | -.192 | -.434 |
| Dynamic Adaptability 4 | 4.22 | 1.515 | -.067 | -.723 |
| Dynamic Adaptability 5 | 4.42 | 1.569 | -.466 | -.384 |
| Dynamic Adaptability 6 | 3.93 | 1.492 | .091 | -.557 |
| Technological Adaptability 1 | 4.55 | 1.456 | -.249 | -.607 |
| Technological Adaptability 2 | 4.60 | 1.486 | -.214 | -.640 |
| Technological Adaptability 3 | 4.36 | 1.418 | .052 | -.580 |
| Operational Efficiency 1 | 4.50 | 1.547 | -.363 | -.541 |
| Operational Efficiency 2 | 4.22 | 1.373 | -.293 | -.550 |
| Operational Efficiency 3 | 4.55 | 1.601 | -.263 | -.767 |
| Operational Efficiency 4 | 4.36 | 1.377 | -.192 | -.376 |
| Operational Efficiency 5 | 4.43 | 1.621 | -.291 | -.703 |
| Logistics Efficiency 1 | 4.59 | 1.642 | -.345 | -.725 |
| Logistics Efficiency 2 | 4.31 | 1.465 | -.070 | -.574 |
| Logistics Efficiency 3 | 4.40 | 1.581 | -.185 | -.847 |
| Logistics Efficiency 4 | 4.31 | 1.470 | -.372 | -.627 |
| Delivery Performance 1 | 4.47 | 1.470 | -.150 | -.498 |
| Delivery Performance 2 | 4.76 | 1.513 | -.541 | -.471 |
| Delivery Performance 3 | 4.35 | 1.455 | .039 | -.742 |
| Delivery Performance 4 | 4.21 | 1.471 | -.020 | -.384 |
| Service Interface 1 | 4.33 | 1.463 | -.237 | -.578 |
| Service Interface 2 | 3.55 | 1.364 | .113 | -.237 |
| Service Interface 3 | 4.20 | 1.470 | -.197 | -.467 |
| Service Interface 4 | 4.05 | 1.575 | -.062 | -.561 |
| Service Interface 5 | 3.89 | 1.381 | .075 | -.263 |
| Customer Involvement 1 | 4.04 | 1.463 | -.149 | -.349 |
| Customer Involvement 2 | 3.69 | 1.442 | .221 | -.304 |
| Customer Involvement 3 | 3.37 | 1.361 | .026 | -.645 |
| Discrepancy Mitigation 1 | 3.70 | 1.738 | .128 | -1.096 |
| Discrepancy Mitigation 2 | 3.65 | 1.731 | .008 | -1.126 |
| Discrepancy Mitigation 3 | 3.24 | 1.652 | .389 | -.703 |

| | Mean | Std. Deviation | Skewness | Kurtosis |
|---|---|---|---|---|
| Innovativeness 1 | 3.82 | 1.452 | .106 | -.746 |
| Innovativeness 2 | 3.70 | 1.481 | .241 | -.444 |
| Innovativeness 3 | 3.59 | 1.536 | .361 | -.427 |
| Competitiveness 1 | 3.21 | 1.402 | .223 | -.443 |
| Competitiveness 2 | 4.00 | 1.226 | .047 | -.085 |
| Competitiveness 3 | 3.94 | 1.329 | -.119 | -.349 |
| Competitiveness 4 | 3.61 | 1.420 | -.028 | -.543 |
| Customer Loyalty 1 | 4.20 | 1.372 | -.250 | -.420 |
| Customer Loyalty 2 | 3.72 | 1.372 | .078 | -.473 |
| Customer Loyalty 3 | 4.13 | 1.506 | -.084 | -.500 |
| Customer Satisfaction 1 | 4.20 | 1.441 | -.049 | -.466 |
| Customer Satisfaction 2 | 4.03 | 1.396 | -.042 | -.376 |
| Customer Satisfaction 3 | 4.18 | 1.462 | -.128 | -.401 |
| Customer Satisfaction 4 | 4.14 | 1.436 | -.216 | -.482 |
| Customer Satisfaction 5 | 4.44 | 1.432 | -.312 | -.245 |
| Customer Disloyalty 1 | 3.96 | 1.642 | .061 | -.861 |
| Customer Disloyalty 2 | 3.63 | 1.394 | .228 | -.554 |
| Customer Disloyalty 3 | 3.98 | 1.396 | .061 | -.385 |
| Customer Disloyalty 4 | 3.66 | 1.505 | .263 | -.606 |
| Willingness to pay | 4.20 | 1.462 | -.158 | -.329 |

The descriptive statistics (Table 7.2.1) of the variables show a range of means from3.21 to 4.76, indicating respondents normally assigned moderate to high ratings for multiple aspects of service quality, adaptability, and performance. The highest mean is observed for DP1 and reflecting strong satisfaction with this aspect, while DM3 has the lowest mean, indicating relatively lower involvement from customers. The standard deviation values span from 1.736 to 1.361, signifying significant variety in replies. The data demonstrates a nearly normal distribution with comparable responses and a moderate dispersion. The skewness values for all variables, spanning from -0.541 to 0.389, suggest that the data distribution is relatively symmetric, exhibiting negligible divergence from normalcy. All variables have neither substantial positive nor negative skewness, indicating that answers are predominantly centered on the mean. The kurtosis values, ranging from --1.126 to -0.085, suggest that the dataset is mesokurtic, indicating a close adherence to a normal distribution. This interpretation indicates that the dataset has a normal, balanced distribution devoid of extreme outliers or skewed trends, so offering a dependable foundation for subsequent statistical research.

### *7.2.1.2 Exploratory factor analysis*

The study has found ten service quality constructs analyzed using principal component analysis with varimax rotation as the extraction method for factor analysis. Variables were included in factors based on factor loadings over 0.5, and factors with eigenvalues above 1.0 were kept in the factor analysis. The next phase involved evaluating the communality of each variable to determine which item loadings are significant for interpreting the factors. The results indicate that the communalities of variables exceeded 0.50. Prior to analyzing the factors, it is essential to assess the data's applicability using the KMO, Bartlett test and anti-image correlation matrix. KMO exceeds 0.7 (Hair et al., 2020). The Bartlett's test should yield a significant result ($p < 0.5$), suggesting that the variances of the samples are identical. Both of these tests yielded substantial findings. SPSS was used to extract the factors. Table 7.2.2 presents the results with their respective variances.

Table 7.2.2 KMO and Bartlett's Test-I (Individual private CEP users)

| | | |
|---|---|---|
| *Kaiser-Meyer-Olkin Measure of Sampling Adequacy.* | | *.930* |
| *Bartlett's Test of Sphericity* | Approx. Chi-Square | 10254.066 |
| | df | 780 |
| | Sig. | 0.000 |

Table 7.2.3 Total Variance Explained-I (Individual private CEP users)

| ***Component*** | ***Initial Eigenvalues*** | | | ***Extraction Sums of Squared Loadings*** | | | ***Rotation Sums of Squared Loadings*** | | |
|---|---|---|---|---|---|---|---|---|---|
| | *Total* | *% of Variance* | *Cumulative %* | *Total* | *% of Variance* | *Cumulative %* | *Total* | *% of Variance* | *Cumulative %* |
| *1* | 13.747 | 34.366 | 34.366 | 13.747 | 34.366 | 34.366 | 4.381 | 10.952 | 10.952 |
| *2* | 2.431 | 6.078 | 40.445 | 2.431 | 6.078 | 40.445 | 3.409 | 8.523 | 19.474 |
| *3* | 2.302 | 5.755 | 46.199 | 2.302 | 5.755 | 46.199 | 3.206 | 8.014 | 27.488 |
| *4* | 2.061 | 5.152 | 51.352 | 2.061 | 5.152 | 51.352 | 3.037 | 7.592 | 35.080 |
| *5* | 1.972 | 4.930 | 56.282 | 1.972 | 4.930 | 56.282 | 2.927 | 7.316 | 42.397 |
| *6* | 1.721 | 4.304 | 60.586 | 1.721 | 4.304 | 60.586 | 2.735 | 6.838 | 49.235 |
| *7* | 1.441 | 3.603 | 64.188 | 1.441 | 3.603 | 64.188 | 2.549 | 6.371 | 55.606 |
| *8* | 1.336 | 3.341 | 67.529 | 1.336 | 3.341 | 67.529 | 2.471 | 6.178 | 61.785 |
| *9* | 1.091 | 2.729 | 70.257 | 1.091 | 2.729 | 70.257 | 2.255 | 5.638 | 67.423 |
| *10* | 1.015 | 2.537 | 72.794 | 1.015 | 2.537 | 72.794 | 2.149 | 5.372 | 72.794 |
| *11* | .774 | 1.934 | 74.729 | | | | | | |
| *12* | .642 | 1.605 | 76.334 | | | | | | |
| *13* | .609 | 1.523 | 77.857 | | | | | | |
| *14* | .546 | 1.364 | 79.221 | | | | | | |

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 15 | .523 | 1.308 | 80.528 | | | | | | |
| 16 | .507 | 1.267 | 81.796 | | | | | | |
| 17 | .468 | 1.170 | 82.966 | | | | | | |
| 18 | .455 | 1.137 | 84.102 | | | | | | |
| 19 | .434 | 1.085 | 85.187 | | | | | | |
| 20 | .429 | 1.072 | 86.259 | | | | | | |
| 21 | .407 | 1.019 | 87.278 | | | | | | |
| 22 | .395 | .989 | 88.266 | | | | | | |
| 23 | .380 | .950 | 89.217 | | | | | | |
| 24 | .361 | .902 | 90.119 | | | | | | |
| 25 | .352 | .881 | 90.999 | | | | | | |
| 26 | .344 | .859 | 91.859 | | | | | | |
| 27 | .325 | .814 | 92.672 | | | | | | |
| 28 | .316 | .791 | 93.463 | | | | | | |
| 29 | .306 | .765 | 94.228 | | | | | | |
| 30 | .262 | .655 | 94.883 | | | | | | |
| 31 | .253 | .634 | 95.516 | | | | | | |
| 32 | .246 | .615 | 96.132 | | | | | | |
| 33 | .244 | .611 | 96.743 | | | | | | |
| 34 | .234 | .586 | 97.328 | | | | | | |
| 35 | .215 | .539 | 97.867 | | | | | | |
| 36 | .191 | .477 | 98.344 | | | | | | |
| 37 | .188 | .469 | 98.813 | | | | | | |
| 38 | .184 | .460 | 99.273 | | | | | | |
| 39 | .166 | .416 | 99.689 | | | | | | |
| 40 | .125 | .311 | 100.000 | | | | | | |

*Extraction Method: Principal Component Analysis.*

Table 7.2.4 Rotated Component Matrix-I (Individual private CEP users)

| | Component | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| DAP3 | .774 | | | | | | | | | |
| DAP5 | .763 | | | | | | | | | |
| DAP1 | .746 | | | | | | | | | |
| DAP2 | .734 | | | | | | | | | |
| DAP4 | .728 | | | | | | | | | |
| DAP6 | .674 | | | | | | | | | |
| SI1 | | .777 | | | | | | | | |
| SI5 | | .737 | | | | | | | | |
| SI2 | | .719 | | | | | | | | |

| | Component | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| SI4 | | .708 | | | | | | | | |
| SI3 | | .672 | | | | | | | | |
| OPE5 | | | .712 | | | | | | | |
| OPE4 | | | .705 | | | | | | | |
| OPE2 | | | .695 | | | | | | | |
| OPE1 | | | .670 | | | | | | | |
| OPE3 | | | .623 | | | | | | | |
| LGE4 | | | | .794 | | | | | | |
| LGE1 | | | | .766 | | | | | | |
| LGE3 | | | | .716 | | | | | | |
| LGE2 | | | | .676 | | | | | | |
| DP4 | | | | | .709 | | | | | |
| DP3 | | | | | .702 | | | | | |
| DP1 | | | | | .699 | | | | | |
| DP2 | | | | | .636 | | | | | |
| DM2 | | | | | | .930 | | | | |
| DM1 | | | | | | .897 | | | | |
| DM3 | | | | | | .865 | | | | |
| COM1 | | | | | | | .788 | | | |
| COM4 | | | | | | | .760 | | | |
| COM3 | | | | | | | .733 | | | |
| COM2 | | | | | | | .689 | | | |
| INV2 | | | | | | | | .874 | | |
| INV1 | | | | | | | | .868 | | |
| INV3 | | | | | | | | .864 | | |
| TA1 | | | | | | | | | .790 | |
| TA2 | | | | | | | | | .777 | |
| TA3 | | | | | | | | | .743 | |
| CI3 | | | | | | | | | | .807 |
| CI2 | | | | | | | | | | .761 |
| CI1 | | | | | | | | | | .706 |

*Extraction Method: Principal Component Analysis.*
*Rotation Method: Varimax with Kaiser Normalization*
a. *Rotation converged in 7 iterations*.

The first component explains 34.37% of variance. After rotation, variance is more equally distributed, allowing interpretation easier (Table 7.2.3). The Rotated Component Matrix shows that the dataset has numerous dimensions (factors), helping researchers comprehend each structure (Table 7.2.4). The test produced ten components of service quality, accounting for a total variance of 72.79%. These factors were named as *dynamic adaptability, delivery*

*performance, logistics efficiency, competitiveness, customer involvement, discrepancy mitigation, technological adaptability, innovativeness, operational efficiency,* and *service interface*. The factor loadings are all satisfactory and above 0.5.

Table 7.2.5 KMO and Bartlett's Test-II (Individual private CEP users)

| | | |
|---|---|---|
| *Kaiser-Meyer-Olkin Measure of Sampling Adequacy.* | | *.891* |
| *Bartlett's Test of Sphericity* | Approx. Chi-Square | 3216.107 |
| | df | 66 |
| | Sig. | 0.000 |

Table 7.2.6 Total variance explained-II (Individual private CEP users)

| ***Component*** | ***Initial Eigenvalues*** | | | ***Extraction Sums of Squared Loadings*** | | | ***Rotation Sums of Squared Loadings*** | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Total** | **% of Variance** | **Cumulative %** | **Total** | **% of Variance** | **Cumulative %** | **Total** | **% of Variance** | **Cumulative %** |
| *1* | 5.725 | 47.707 | 47.707 | 5.725 | 47.707 | 47.707 | 3.600 | 30.004 | 30.004 |
| *2* | 2.082 | 17.352 | 65.059 | 2.082 | 17.352 | 65.059 | 3.246 | 27.047 | 57.050 |
| *3* | 1.232 | 10.267 | 75.326 | 1.232 | 10.267 | 75.326 | 2.193 | 18.276 | 75.326 |
| *4* | .679 | 5.661 | 80.988 | | | | | | |
| *5* | .406 | 3.381 | 84.369 | | | | | | |
| *6* | .365 | 3.043 | 87.412 | | | | | | |
| *7* | .325 | 2.712 | 90.123 | | | | | | |
| *8* | .307 | 2.560 | 92.684 | | | | | | |
| *9* | .252 | 2.097 | 94.781 | | | | | | |
| *10* | .225 | 1.879 | 96.660 | | | | | | |
| *11* | .206 | 1.721 | 98.381 | | | | | | |
| *12* | .194 | 1.619 | 100.000 | | | | | | |

*Extraction Method: Principal Component Analysis*

Table 7.2.7 Rotated Component matrix-II (Individual private CEP users)

| | *Component* | | |
|---|---|---|---|
| | *1* | *2* | *3* |
| *CSAT1* | .849 | | |
| *CSAT2* | .830 | | |
| *CSAT4* | .814 | | |
| *CSAT5* | .795 | | |
| *CSAT3* | .758 | | |
| *CDLTY3* | | .886 | |
| *CDLTY4* | | .871 | |
| *CDLTY2* | | .847 | |
| *CDLTY1* | | .844 | |
| *CLTY2* | | | .871 |

| | Component | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| CLYT1 | | | .836 |
| CLTY3 | | | .691 |

*Extraction Method: Principal Component Analysis.*
*Rotation Method: Varimax with Kaiser Normalization.*
*a. Rotation converged in 5 iterations.*

Three more constructs were extracted namely customer satisfaction, customer loyalty and customer disloyalty to know the behavioural intentions of the customers. The three tables (7.2.5, 7.2.6, 7.2.7) demonstrate factor analysis structures and validity. Sampling Adequacy test is excellent as KMO score signifies that the variables share a considerable fraction of variation, making the dataset eligible for factor analysis. Bartlett's Test of Sphericity also yields a significance results. This reveals that the correlation matrix is not an identity matrix, which factor analysis requires. Significant results ($p < 0.05$) indicate considerable correlations between variables, qualifying for factoring. Both tests confirm that the data is suitable for factor analysis. The total variance explained table demonstrates that the first three components explain 75.33% of the variance, with the first two accounting for 47.7% after extraction, indicating a robust structure. This structure shows that the data has separate dimensions like customer loyalty, satisfaction, and disloyalty with clear patterns.

### 7.2.2 Assessment of measurement model

#### *7.2.2.1 Reliability and validity*

Table 7.2.8 Outer loadings, validity, and reliability for constructs (Individual private CEP users)

| *Constructs* | *Outer Loadings* | *Cronbach's alpha* | *Composite reliability (rho_a)* | *Composite reliability (rho_c)* | *Average variance extracted (AVE)* | *VIF* |
|---|---|---|---|---|---|---|
| DAP1 | 0.862 | 0.907 | 0.910 | 0.928 | 0.683 | 2.649 |
| DAP2 | 0.822 | | | | | 2.226 |
| DAP3 | 0.837 | | | | | 2.353 |
| DAP4 | 0.815 | | | | | 2.254 |
| DAP5 | 0.844 | | | | | 2.471 |
| DAP6 | 0.774 | | | | | 1.872 |
| DM1 | 0.922 | 0.916 | 0.922 | 0.947 | 0.856 | 3.532 |
| DM2 | 0.939 | | | | | 4.317 |
| DM3 | 0.914 | | | | | 2.723 |
| DP1 | 0.885 | 0.878 | 0.880 | 0.916 | 0.732 | 2.648 |
| DP2 | 0.874 | | | | | 2.424 |

| *Constructs* | *Outer Loadings* | *Cronbach's alpha* | *Composite reliability (rho_a)* | *Composite reliability (rho_c)* | *Average variance extracted (AVE)* | *VIF* |
|---|---|---|---|---|---|---|
| *DP3* | 0.817 | | | | | 1.907 |
| *DP4* | 0.845 | | | | | 2.086 |
| *INV1* | 0.901 | 0.867 | 0.874 | 0.919 | 0.790 | 2.380 |
| *INV2* | 0.901 | | | | | 2.373 |
| *INV3* | 0.864 | | | | | 2.095 |
| *LGE1* | 0.866 | 0.888 | 0.894 | 0.922 | 0.748 | 2.371 |
| *LGE2* | 0.875 | | | | | 2.410 |
| *LGE3* | 0.884 | | | | | 2.646 |
| *LGE4* | 0.835 | | | | | 2.156 |
| *OPE1* | 0.882 | 0.902 | 0.912 | 0.927 | 0.719 | 2.753 |
| *OPE2* | 0.800 | | | | | 2.030 |
| *OPE3* | 0.883 | | | | | 2.962 |
| *OPE4* | 0.792 | | | | | 1.956 |
| *OPE5* | 0.878 | | | | | 2.960 |
| *SI1* | 0.839 | 0.858 | 0.869 | 0.897 | 0.637 | 2.203 |
| *SI2* | 0.763 | | | | | 1.695 |
| *SI3* | 0.801 | | | | | 1.797 |
| *SI4* | 0.839 | | | | | 1.988 |
| *SI5* | 0.743 | | | | | 1.706 |
| *TA1* | 0.870 | 0.821 | 0.823 | 0.894 | 0.737 | 1.996 |
| *TA2* | 0.877 | | | | | 1.993 |
| *TA3* | 0.828 | | | | | 1.654 |
| *CI1* | 0.855 | 0.778 | 0.799 | 0.870 | 0.691 | 1.595 |
| *CI2* | 0.859 | | | | | 1.731 |
| *CI3* | 0.777 | | | | | 1.544 |
| *COM1* | 0.789 | 0.794 | 0.849 | 0.860 | 0.611 | 1.682 |
| *COM2* | 0.862 | | | | | 1.822 |
| *COM3* | 0.851 | | | | | 1.790 |
| *COM4* | 0.595 | | | | | 1.358 |
| *CLTY2* | 0.907 | 0.778 | 0.816 | 0.873 | 0.699 | 2.631 |
| *CLTY3* | 0.677 | | | | | 1.249 |
| *CLYT1* | 0.903 | | | | | 2.561 |
| *CSAT1* | 0.882 | 0.915 | 0.917 | 0.936 | 0.746 | 3.045 |
| *CSAT2* | 0.843 | | | | | 2.336 |
| *CSAT3* | 0.835 | | | | | 2.234 |
| *CSAT4* | 0.859 | | | | | 2.535 |
| *CSAT5* | 0.899 | | | | | 3.308 |
| *CDLTY1* | 0.896 | 0.913 | 0.917 | 0.938 | 0.792 | 2.752 |
| *CDLTY2* | 0.883 | | | | | 2.671 |
| *CDLTY3* | 0.892 | | | | | 3.107 |
| *CDLTY4* | 0.889 | | | | | 2.976 |
| *WLP* | 1.000 | | | | | 1.000 |

Table 7.2.9 Heterotrait-monotrait ratio (HTMT) – Matrix (Individual private CEP users)

| | CDLTY | CI | CLTY | COM | CSAT | DAP | DM | DP | INV | LGE | OPE | SI | TA | WLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CDLTY | | | | | | | | | | | | | | |
| CI | 0.232 | | | | | | | | | | | | | |
| CLTY | 0.267 | 0.460 | | | | | | | | | | | | |
| COM | 0.193 | 0.450 | 0.460 | | | | | | | | | | | |
| CSAT | 0.528 | 0.543 | 0.583 | 0.481 | | | | | | | | | | |
| DAP | 0.317 | 0.506 | 0.570 | 0.417 | 0.623 | | | | | | | | | |
| DM | 0.237 | 0.227 | 0.273 | 0.224 | 0.348 | 0.332 | | | | | | | | |
| DP | 0.309 | 0.528 | 0.531 | 0.455 | 0.665 | 0.653 | 0.404 | | | | | | | |
| INV | 0.192 | 0.158 | 0.239 | 0.192 | 0.326 | 0.272 | 0.108 | 0.340 | | | | | | |
| LGE | 0.352 | 0.461 | 0.551 | 0.369 | 0.595 | 0.593 | 0.261 | 0.675 | 0.294 | | | | | |
| OPE | 0.299 | 0.483 | 0.583 | 0.449 | 0.647 | 0.645 | 0.280 | 0.756 | 0.302 | 0.751 | | | | |
| SI | 0.350 | 0.549 | 0.486 | 0.437 | 0.586 | 0.541 | 0.231 | 0.582 | 0.228 | 0.524 | 0.630 | | | |
| TA | 0.303 | 0.426 | 0.401 | 0.347 | 0.557 | 0.621 | 0.282 | 0.560 | 0.166 | 0.364 | 0.530 | 0.490 | | |
| WLP | 0.402 | 0.479 | 0.464 | 0.395 | 0.826 | 0.467 | 0.274 | 0.502 | 0.234 | 0.432 | 0.477 | 0.488 | 0.457 | |

Table 7.2.10 Fornell-Larcker criterion (Individual private CEP users)

| | CDLTY | CI | CLTY | COM | CSAT | DAP | DM | DP | INV | LGE | OPE | SI | TA | WLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CDLTY | 0.890 | | | | | | | | | | | | | |
| CI | -0.200 | 0.831 | | | | | | | | | | | | |
| CLTY | -0.233 | 0.371 | 0.836 | | | | | | | | | | | |
| COM | -0.184 | 0.387 | 0.397 | 0.782 | | | | | | | | | | |
| CSAT | -0.486 | 0.464 | 0.499 | 0.442 | 0.864 | | | | | | | | | |
| DAP | -0.292 | 0.431 | 0.482 | 0.387 | 0.570 | 0.826 | | | | | | | | |
| DM | -0.219 | 0.202 | 0.241 | 0.221 | 0.323 | 0.305 | 0.925 | | | | | | | |
| DP | -0.278 | 0.446 | 0.446 | 0.414 | 0.597 | 0.584 | 0.365 | 0.856 | | | | | | |
| INV | -0.172 | 0.129 | 0.194 | 0.166 | 0.293 | 0.244 | 0.099 | 0.299 | 0.889 | | | | | |
| LGE | -0.321 | 0.395 | 0.456 | 0.344 | 0.541 | 0.534 | 0.240 | 0.602 | 0.259 | 0.865 | | | | |
| OPE | -0.275 | 0.413 | 0.489 | 0.409 | 0.592 | 0.584 | 0.258 | 0.679 | 0.271 | 0.677 | 0.848 | | | |
| SI | -0.317 | 0.460 | 0.402 | 0.392 | 0.527 | 0.478 | 0.212 | 0.510 | 0.207 | 0.465 | 0.557 | 0.798 | | |
| TA | -0.263 | 0.350 | 0.319 | 0.305 | 0.485 | 0.537 | 0.245 | 0.476 | 0.140 | 0.314 | 0.457 | 0.412 | 0.858 | |
| WLP | -0.386 | 0.428 | 0.414 | 0.380 | 0.789 | 0.447 | 0.265 | 0.469 | 0.220 | 0.411 | 0.457 | 0.457 | 0.414 | 1.000 |

The outer loadings exceed the recommended threshold of 0.7. Table 7.2.8 demonstrates that the composite reliability (CR) values of constructs were all over 0.7, with a range of 0.799 to 0.922, indicating high reliability. Cronbach alpha value is also above 0.7. This discovery validated the notion that the measuring scales provide a sufficient level of internal consistency reliability for a new scale, as stated by Hair et al. (2019). The average variance extracted (AVE) of all constructs were higher than 0.5, indicating that the measurement scales have adequate convergent validity.

The cross-loading results, similar to the Fornell-Larker criterion, indicate that all the constructs demonstrated discriminant validity, as none of the cross-loading values were below 0.1 (Chin,1998). Furthermore, all the indicators exhibit a significant degree of loading on the relevant constructions rather than other constructs. This observation suggests that each of the constructs inside the framework exhibits a high degree of distinctiveness from the others. The findings of cross-loading are presented in the Appendix. All the constructs in this investigation demonstrated satisfactory discriminant validity according to the Fornell-Larker criterion and the heterotrait-monotrait ratio of correlations (HTMT). The Fornell-Larker criterion (Table 7.2.10) confirms the presence of discriminant validity, as all square roots of the AVE are greater than the corresponding correlations between the components. The HTMT values suggest the absence of any values greater than 0.85 (Table 7.2.9). Consequently, it has been verified that all of the constructs demonstrated satisfactory levels of discriminant validity.

#### *7.2.2.2 Common method variance (CVM)*

The measurement approach utilized collinearity statistics, focusing on evaluating the variance inflation factor (VIF) with a stringent threshold of VIF values equal to or below 5 (Kock, 2015; Afum et al., 2020; Hair et al., 2019). The study used Harman's (1967) single-factor test and conducted unrotated principal component factor analysis in SPSS. The research identified ten separate factors of service quality with eigenvalues of 1.00 or above, explaining a total of 72.79% of the variation, which contradicts the idea of a single underlying factor. The common approach variance was found to be less than 50%, with the first factor accounting for 34.37% of the variance, in line with Podsakoff et al.'s (2003) suggestions.

### 7.2.3 Structural Equation Model

#### *7.2.3.1 Evaluation of the structural model*

Table 7.2.11 Assessment of direct relationship (Individual private CEP users)

| *Hypotheses* | *Path Coefficient* | *SE* | *T Values* | *Bias Corrected at 95% confidence Intervals* | | *P values* | *Decision* |
|---|---|---|---|---|---|---|---|
| | | | | **Lower Level** | **Upper Level** | | |
| *CI -> CSAT* | 0.101 | 0.043 | 2.362 | 0.018 | 0.185 | 0.018 | Supported |
| *COM -> CSAT* | 0.105 | 0.041 | 2.534 | 0.024 | 0.185 | 0.011 | Supported |
| *DAP -> CSAT* | 0.119 | 0.059 | 1.996 | 0.006 | 0.238 | 0.046 | Supported |
| *DM -> CSAT* | 0.078 | 0.036 | 2.145 | 0.007 | 0.149 | 0.032 | Supported |
| *DP -> CSAT* | 0.116 | 0.051 | 2.254 | 0.014 | 0.217 | 0.024 | Supported |
| *INV -> CSAT* | 0.087 | 0.042 | 2.099 | 0.007 | 0.168 | 0.036 | Supported |
| *LGE -> CSAT* | 0.121 | 0.057 | 2.143 | 0.010 | 0.234 | 0.032 | Supported |
| *OPE -> CSAT* | 0.108 | 0.055 | 1.982 | -0.002 | 0.214 | 0.048 | Supported |
| *SI -> CSAT* | 0.119 | 0.052 | 2.274 | 0.016 | 0.219 | 0.023 | Supported |
| *TA -> CSAT* | 0.130 | 0.054 | 2.433 | 0.024 | 0.233 | 0.015 | Supported |
| | | | | | | | |
| *CI -> CLTY* | 0.062 | 0.053 | 1.172 | -0.041 | 0.165 | 0.241 | Not Supported |
| *COM -> CLTY* | 0.134 | 0.048 | 2.795 | 0.039 | 0.226 | 0.005 | Supported |
| *DAP -> CLTY* | 0.167 | 0.058 | 2.884 | 0.054 | 0.279 | 0.004 | Supported |
| *DM -> CLTY* | 0.036 | 0.047 | 0.751 | -0.055 | 0.132 | 0.452 | Not Supported |
| *DP -> CLTY* | -0.002 | 0.071 | 0.022 | -0.143 | 0.134 | 0.982 | Not Supported |
| *INV -> CLTY* | 0.006 | 0.042 | 0.154 | -0.076 | 0.089 | 0.878 | Not Supported |
| *LGE -> CLTY* | 0.105 | 0.064 | 1.644 | -0.016 | 0.234 | 0.100 | Not Supported |
| *OPE -> CLTY* | 0.122 | 0.061 | 2.013 | 0.002 | 0.242 | 0.044 | Supported |
| *SI -> CLTY* | 0.040 | 0.055 | 0.727 | -0.069 | 0.149 | 0.467 | Not Supported |
| *TA -> CLTY* | -0.027 | 0.053 | 0.510 | -0.132 | 0.075 | 0.610 | Not Supported |
| | | | | | | | |
| *CI -> CDLTY* | 0.056 | 0.051 | 1.095 | -0.048 | 0.154 | 0.273 | Not Supported |
| *COM -> CDLTY* | 0.048 | 0.050 | 0.968 | -0.050 | 0.144 | 0.333 | Not Supported |
| *DAP -> CDLTY* | 0.005 | 0.065 | 0.072 | -0.125 | 0.130 | 0.943 | Not Supported |
| *DM -> CDLTY* | -0.079 | 0.048 | 1.654 | -0.175 | 0.013 | 0.098 | Not Supported |
| *DP -> CDLTY* | 0.078 | 0.069 | 1.135 | -0.060 | 0.208 | 0.256 | Not Supported |
| *INV -> CDLTY* | -0.034 | 0.046 | 0.734 | -0.122 | 0.055 | 0.463 | Not Supported |
| *LGE -> CDLTY* | -0.138 | 0.059 | 2.343 | -0.253 | -0.027 | 0.019 | Supported |
| *OPE -> CDLTY* | 0.102 | 0.071 | 1.425 | -0.038 | 0.242 | 0.154 | Not Supported |
| *SI -> CDLTY* | -0.116 | 0.055 | 2.107 | -0.223 | -0.009 | 0.035 | Supported |
| *TA -> CDLTY* | -0.052 | 0.052 | 0.997 | -0.154 | 0.050 | 0.319 | Not Supported |
| | | | | | | | |
| *CSAT -> CLTY* | 0.167 | 0.058 | 2.884 | 0.054 | 0.280 | 0.004 | Supported |
| *CSAT -> CDLTY* | -0.447 | 0.063 | 7.120 | -0.572 | -0.324 | 0.000 | Supported |
| *CDLTY -> WLP* | -0.004 | 0.029 | 0.130 | -0.059 | 0.054 | 0.896 | Not Supported |
| *CLTY -> WLP* | 0.027 | 0.036 | 0.767 | -0.042 | 0.099 | 0.443 | Not Supported |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *CSAT -> WLP* | 0.774 | 0.036 | 21.335 | 0.698 | 0.840 | 0.000 | Supported |

The path coefficients of PLS structural equation model to assess the direct relationships are presented in Table 7.2.11.

a) ***Impact of quality of courier service on satisfaction of customers:*** As shown in CSQ model-II (Figure 7.2.1) ten factors of service quality are identified in the context of private courier services (Table 7.2.12). Ten factors namely technological adaptability (β = 0.130), dynamic adaptability (β = 0.116), logistics efficiency ((β = 0.121), service interface (β = 0.119), operational efficiency (β = 0.108), competitiveness (β = 0.105), customer involvement (β = 0.101), discrepancy mitigation (β = 0.078), and innovativeness (β = 0.087) significantly influenced customer satisfaction. The $R^2$ value shows that the perception of the customers on courier service quality explains 54% of the variance in customer satisfaction. Hence, H4a is supported.

b) ***Impact of quality of courier service on loyalty of customers:*** dynamic adaptability (β = 0.167) *competitiveness* (β = 0.134), and operational efficiency (β = 0.122) significantly influenced customer loyalty. H4b is supported partially.

c) ***Impact of quality of courier service on disloyalty of customers:*** Logistics efficiency (β = -0.138) and service interface (β = -0.116) negatively influenced customer disloyalty. Therefore, H4c is supported partially.

d) ***Impact of satisfaction with customers on loyalty to customers, customer disloyalty and willingness to pay****:* Customer satisfaction (β = 0.167) positively influences customer loyalty and negatively influences customer disloyalty (β = -0.447). Customer satisfaction positively influences willingness to pay (β = 0.774). Hence H4d, H4e, H4h are supported.

e) ***Effects of customer loyalty and customer disloyalty on willingness to pay:*** There is no such significant interaction between customer loyalty and willingness to pay and customer disloyalty and willingness to pay. Hence, H4i and H4j are not supported.

Table 7.2.12 Mediation analysis (Individual private CEP users)

| *Paths* | *Path Coefficient* | *SE* | *Bias Corrected at 95% confidence Intervals* | | *T Values* | *P values* | *Decision* |
|---|---|---|---|---|---|---|---|
| | | | Lower Level | Upper Level | | | |
| *CI -> CSAT -> CLTY* | 0.017 | 0.010 | 0.001 | 0.041 | 1.646 | 0.100 | No Mediation |
| *COM -> CSAT -> CLTY* | 0.018 | 0.010 | 0.002 | 0.040 | 1.809 | 0.071 | No Mediation |
| *DAP -> CSAT -> CLTY* | 0.020 | 0.012 | 0.000 | 0.048 | 1.605 | 0.108 | No Mediation |
| *DP -> CSAT -> CLTY* | 0.019 | 0.012 | 0.001 | 0.047 | 1.649 | 0.099 | No Mediation |
| *LGE -> CSAT -> CLTY* | 0.020 | 0.012 | 0.001 | 0.047 | 1.713 | 0.087 | No Mediation |
| *SI -> CSAT -> CLTY* | 0.020 | 0.011 | 0.002 | 0.045 | 1.743 | 0.081 | No Mediation |
| *DM -> CSAT -> CLTY* | 0.013 | 0.008 | 0.001 | 0.031 | 1.680 | 0.093 | No Mediation |
| *INV -> CSAT -> CLTY* | 0.015 | 0.009 | 0.001 | 0.034 | 1.679 | 0.093 | No Mediation |
| *OPE -> CSAT -> CLTY* | 0.018 | 0.012 | -0.001 | 0.046 | 1.527 | 0.127 | No Mediation |
| *TA -> CSAT -> CLTY* | 0.022 | 0.011 | 0.003 | 0.046 | 1.916 | 0.055 | No Mediation |
| | | | | | | | |
| *CI -> CSAT -> CDLTY* | -0.045 | 0.021 | -0.088 | -0.007 | 2.195 | 0.028 | Full Mediation |
| *COM -> CSAT -> CDLTY* | -0.047 | 0.020 | -0.089 | -0.010 | 2.334 | 0.020 | Full Mediation |
| *DAP -> CSAT -> CDLTY* | -0.053 | 0.027 | -0.109 | -0.003 | 1.953 | 0.051 | Partial Mediation |
| *DP -> CSAT -> CDLTY* | -0.052 | 0.025 | -0.103 | -0.006 | 2.083 | 0.037 | Full Mediation |
| *LGE -> CSAT -> CDLTY* | -0.054 | 0.026 | -0.108 | -0.004 | 2.075 | 0.038 | Partial Mediation |
| *SI -> CSAT -> CDLTY* | -0.053 | 0.025 | -0.107 | -0.007 | 2.087 | 0.037 | Partial Mediation |
| *DM -> CSAT -> CDLTY* | -0.035 | 0.018 | -0.073 | -0.003 | 1.974 | 0.048 | Full Mediation |
| *INV -> CSAT -> CDLTY* | -0.039 | 0.020 | -0.080 | -0.003 | 2.000 | 0.046 | Full Mediation |
| *OPE -> CSAT -> CDLTY* | -0.048 | 0.026 | -0.100 | 0.001 | 1.878 | 0.060 | No mediation |
| *TA -> CSAT -> CDLTY* | -0.058 | 0.026 | -0.112 | -0.010 | 2.251 | 0.024 | Full Mediation |

*f)* ***Customer satisfaction mediates the relationship between service quality and customer loyalty and customer disloyalty (Table 7.2.12)****:* The study revealed a no significant relation between the quality of courier services and customer loyalty, hence H4f is not supported.

The results of mediation analysis provide us the evidence that there is indirect relationship exists between courier service quality and customer disloyalty except operating efficiency. Seven factors namely logistics efficiency (β = -0.054), dynamic adaptability (β = -0.053), delivery performance (β = -0.052) competitiveness (β = -0.047, discrepancy mitigation (β = -0.035), innovativeness (β = -0.039), technological adaptability (β = -0.058), customer involvement (β = -0.045) and service interface (β = -0.045) significantly influenced customer disloyalty via customer satisfaction.

Enhanced service quality leads to happier customers and reduces the switching behaviors of customer from dissatisfied factors. Hence H4g is supported.

There is 36.3% variance in customer loyalty, 62.4% variance is found in willingness to pay for better services. However, there is more than 26% change in the customer disloyalty aspect. Overall, the CSQ model-II developed for this study has good explanatory power.

Table 7.2.13 $R^2$, $Q^2$ and $f^2$ results (Individual private CEP users)

| *Endogenous Latent Constructs* | $R^2$ | $Q^2$ | $f^2$ | *Exogeneous Latent Constructs* | $f^2$ |
|---|---|---|---|---|---|
| *CDLTY* | 0.264 | 0.124 | 0.126 | CI | 0.015 |
| *CLTY* | 0.363 | 0.311 | 0.021 | COM | 0.017 |
| *CSAT* | 0.536 | 0.507 | 0.966 | DAP | 0.015 |
| *WLP* | 0.624 | 0.338 | | DM | 0.011 |
| | | | | DP | 0.012 |
| | | | | INV | 0.015 |
| | | | | LGE | 0.015 |
| | | | | OPE | 0.010 |
| | | | | SI | 0.018 |
| | | | | TA | 0.023 |

The study model has shown robust explanatory power ($R^2$) and prediction ($Q^2$) ability for all the exogenous constructs namely customer satisfaction, customer loyalty, customer disloyalty, and willingness to pay (Table 7.2.13). This study intends to evaluate the variation of endogenous components and evaluate the effect size. The $f^2$ statistic quantifies technological adaptability has the highest effect size followed by service interface.

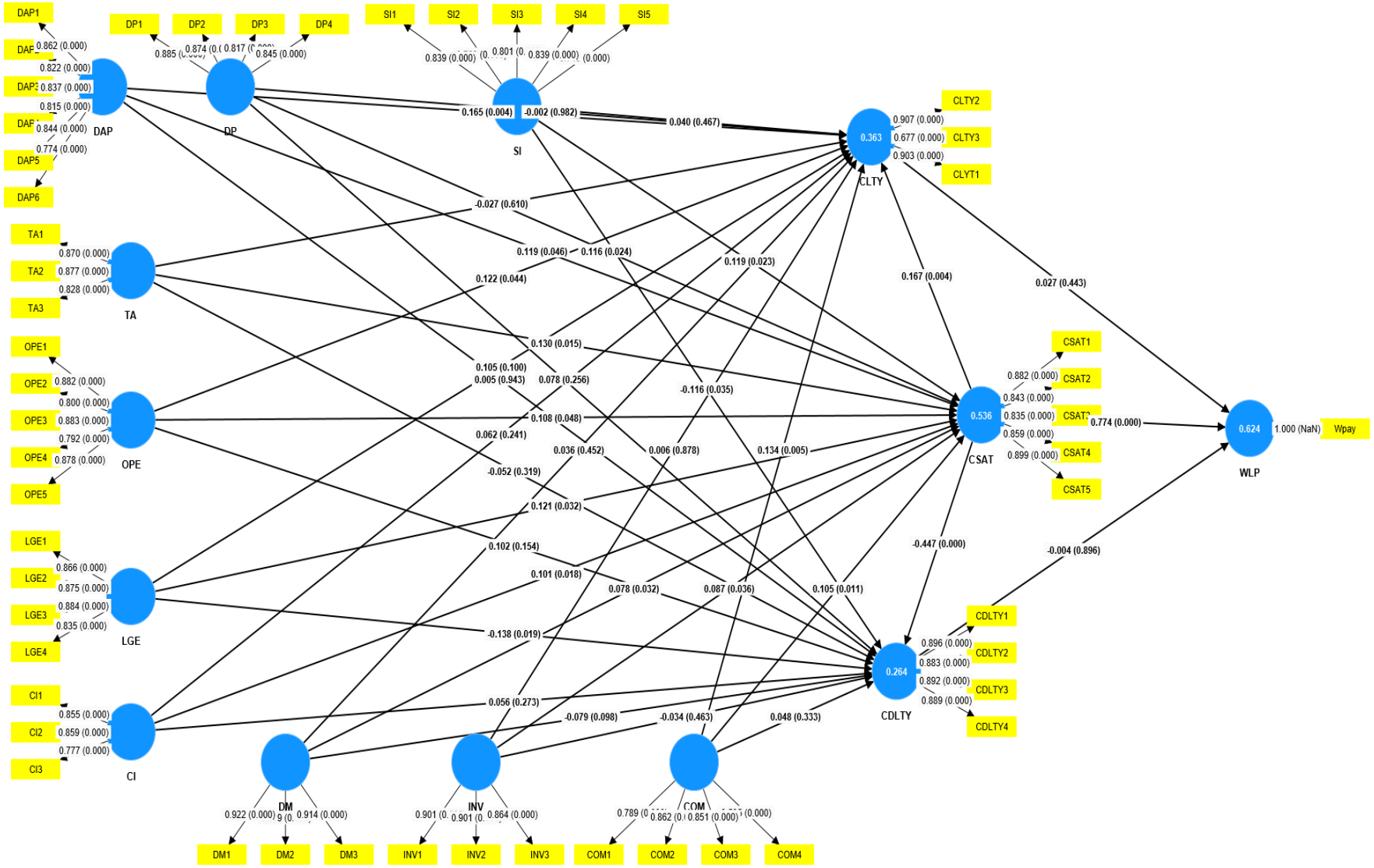


Figure 7.2.1 CSQ model-II generated in SMARTPLS (Individual private CEP users)

### *7.2.3.2 Model fit*

Table 7.2.14 Model fit indices (Individual private CEP users)

| | *Saturated model* | *Estimated model* | *Thresholds* | *References* |
|---|---|---|---|---|
| *SRMR* | 0.046 | 0.046 | <=0.08 | Hair et al., 2020 |
| *d_ULS* | 2.975 | 2.992 | >=0.70 | Yusif et al., 2020; German et al., 2022 |
| *d_G* | 1.106 | 1.111 | p>0.05 | Dash & Paul, 2021 |
| *NFI* | 0.824 | 0.824 | p>0.05 | Dash & Paul, 2021 |
| *GoF* | 0.570 | | Small=0.1<br>Medium= 0.25<br>Large= 0.36 | Sheykhfard et al., 2024; Wasko & Faraj, 2005; Wetzels et al., 2009 |
| *VIF* | Between 1 to 5 | | | Hair et al., 2020; Kock 2015 |

The SRMR analysis illustrates the disparity between the observed correlation matrix and the anticipated correlation matrix. In the present investigation, the saturated model and estimated model for SRMR were found to be 0.046, suggesting a satisfactory fit, as these values fall below the threshold of 0.08. The precise model fit assesses the disparity between an empirical covariance test and the exact model fit. The d_ULS value for the saturated model is 2.975, whereas the value for the estimated model is 2.992, which above the threshold of 0.05. In addition, the d_G value for the saturated model is 1.106, whereas the estimated model is 1.111, both of which exceed the significance level of 0.05. This suggests that the model successfully passed the precise model fit tests. According to Bentler and Bonett (1980), values that are closer to 1 in NFI are regarded as having a superior fit. In this investigation, the NFI values for the saturated model and estimated model is 0.824 respectively. These values exceed the threshold of 0.7. In general, the CSQ model-II satisfied the statistical fitness criterion, as evidenced by the data presented in Table 7.2.14.

**Goodness of fit:** The determined GoF value of 0.570 in this study indicates that the CSQ model-II is highly well-fitting, as stated in Equation 15.

## *7.3 CUSTOMER SATISFACTION EVALUATION OF CEP SERVICE QUALITY IN TIMES OF DISRUPTIONS FROM THE PERSPECTIVE OF ORGANIZATIONAL USERS OF PRIVATE COURIER SERVICES*

### 7.3.1 Identification of key factors affecting satisfaction level organizational users

#### *7.3.1.1 Respondents' demographic profile*

Table 7.3.1 Demographic Profile of organizational users

| *Characteristics* | *Category* | *Frequency* | *Percent* |
|---|---|---|---|
| *Delivery feature preference* | Flexibility | 64 | 18.4 |
| | Safety | 86 | 24.7 |
| | Cost | 85 | 24.4 |
| | Speed | 57 | 16.4 |
| | Appropriate customer services | 56 | 16.1 |
| *Frequency of use* | Rarely | 29 | 8.3 |
| | Daily | 133 | 38.2 |
| | Weekly | 85 | 24.4 |
| | Fortnightly | 53 | 15.2 |
| | Monthly | 48 | 13.8 |
| *Age of the organization* | 0-3 years | 75 | 21.6 |
| | 4-10 years | 146 | 42 |
| | 11-15 years | 93 | 26.7 |
| | More than 15 years | 34 | 9.8 |
| *Number of employees* | Less than 50 | 75 | 21.6 |
| | 50-100 | 146 | 42 |
| | 100-250 | 93 | 26.7 |
| | Above 250 | 34 | 9.8 |
| *Preference to send urgent shipments* | India Post | 147 | 42.2 |
| | Private couriers | 201 | 57.8 |
| *Gender of the respondent* | Male | 236 | 67.8 |
| | Female | 112 | 32.2 |
| *Type of business* | Manufacturing | 27 | 7.8 |
| | Pharmaceuticals | 53 | 15.2 |
| | Educational institutes/ printing/ publishers | 58 | 16.7 |
| | Banking/ IT/Accounting/other firms | 66 | 19 |
| | E commerce/ Retails | 71 | 20.4 |
| | Others | 73 | 21 |

The demographic profile (Table 7.3.1) provides insight into the respondent characteristics of organizational CEP service users. Delivery feature preferences are fairly distributed, with

safety (24.7%) and cost (24.4%) being the most valued, followed by flexibility (18.4%), speed (16.4%), and appropriate customer services (16.1%). Most organizations have been in existence for 4-10 years (42%), while 21.6% are relatively new (0-3 years). A majority of organizations employ 50-100 workers (42%), and most prefer private couriers (57.8%) over India Post (42.2%) for urgent shipments. In terms of gender, males (67.8%) significantly outnumber females (32.2%). The businesses represented span a range of sectors, with e-commerce/retail (20.4%) and banking/IT/accounting (19%) being prominent, followed by educational institutes, printing, and publishing (16.7%). Usage frequency shows that 38.2% use postal services daily, and 24.4% use them weekly, suggesting a high dependence on postal services among the respondents.

### *7.3.1.2 Descriptive statistics of factors*

Table 7.3.2 Descriptive statistics (Organizational private CEP users)

| | *Mean* | *Std. Error of Mean* | *Std. Deviation* | *Skewness* | *Kurtosis* |
|---|---|---|---|---|---|
| *DAP1* | 4.04 | .078 | 1.449 | -.025 | -.395 |
| *DAP2* | 3.82 | .071 | 1.333 | .075 | -.524 |
| *DAP3* | 3.95 | .076 | 1.412 | .210 | -.265 |
| *DAP4* | 3.59 | .074 | 1.373 | .339 | -.064 |
| *DAP5* | 3.91 | .076 | 1.413 | .016 | -.190 |
| *DAP6* | 3.97 | .077 | 1.433 | .046 | -.561 |
| *TA1* | 4.02 | .081 | 1.518 | -.059 | -.635 |
| *TA2* | 3.73 | .074 | 1.390 | .176 | -.608 |
| *TA3* | 3.54 | .079 | 1.473 | .397 | -.298 |
| *OPE1* | 3.92 | .079 | 1.480 | -.113 | -.673 |
| *OPE2* | 3.79 | .076 | 1.420 | .011 | -.440 |
| *OPE3* | 3.68 | .077 | 1.436 | .196 | -.482 |
| *OPE4* | 3.85 | .075 | 1.399 | -.016 | -.538 |
| *OPE5* | 3.67 | .075 | 1.405 | .114 | -.494 |
| *OPE6* | 3.63 | .075 | 1.393 | .214 | -.437 |
| *OPE7* | 3.76 | .083 | 1.542 | .134 | -.680 |
| *RRL1* | 3.68 | .077 | 1.436 | .015 | -.557 |
| *RRL2* | 3.94 | .076 | 1.425 | .124 | -.568 |
| *RRL3* | 4.06 | .072 | 1.349 | .116 | -.397 |
| *RRL4* | 4.17 | .076 | 1.427 | .033 | -.521 |
| *RRL5* | 4.18 | .079 | 1.480 | .008 | -.505 |
| *FLEX1* | 3.78 | .076 | 1.421 | .043 | -.606 |
| *FLEX2* | 3.99 | .074 | 1.375 | .158 | -.536 |
| *FLEX3* | 4.19 | .076 | 1.422 | -.138 | -.454 |
| *FLEX4* | 3.97 | .073 | 1.359 | .168 | -.522 |

| | Mean | Std. Error of Mean | Std. Deviation | Skewness | Kurtosis |
|---|---|---|---|---|---|
| LGE1 | 3.99 | .077 | 1.430 | -.063 | -.716 |
| LGE2 | 3.81 | .076 | 1.413 | .051 | -.558 |
| LGE3 | 3.91 | .077 | 1.428 | -.053 | -.579 |
| LGE4 | 3.53 | .076 | 1.419 | .197 | -.551 |
| LGE5 | 3.77 | .078 | 1.453 | .083 | -.596 |
| LGE6 | 3.86 | .078 | 1.451 | .076 | -.499 |
| CI1 | 3.90 | .081 | 1.513 | -.044 | -.686 |
| CI2 | 3.94 | .076 | 1.427 | -.032 | -.609 |
| CI3 | 3.81 | .074 | 1.379 | .073 | -.403 |
| DM1 | 3.84 | .081 | 1.513 | .069 | -.559 |
| DM2 | 4.04 | .076 | 1.415 | .020 | -.609 |
| DM3 | 3.88 | .076 | 1.426 | .141 | -.451 |
| INV1 | 4.02 | .078 | 1.452 | -.178 | -.575 |
| INV2 | 4.20 | .077 | 1.434 | -.081 | -.629 |
| INV3 | 4.19 | .075 | 1.403 | -.089 | -.713 |
| COM1 | 3.37 | .079 | 1.479 | .257 | -.429 |
| COM2 | 3.93 | .070 | 1.303 | -.010 | -.261 |
| COM3 | 3.86 | .074 | 1.386 | -.063 | -.430 |
| COM4 | 3.55 | .076 | 1.423 | .112 | -.435 |
| CSAT1 | 4.37 | .083 | 1.546 | -.396 | -.494 |
| CSAT2 | 4.37 | .083 | 1.540 | -.200 | -.471 |
| CSAT3 | 4.32 | .084 | 1.562 | -.140 | -.764 |
| CSAT4 | 4.14 | .087 | 1.631 | -.273 | -.730 |
| CDLTY1 | 3.64 | .100 | 1.861 | .261 | -1.166 |
| CDLTY2 | 3.57 | .090 | 1.673 | .252 | -.984 |
| CDLTY4 | 3.63 | .096 | 1.795 | .271 | -1.025 |
| CDLTY5 | 3.59 | .093 | 1.731 | .278 | -1.065 |
| CLTY1 | 4.24 | .079 | 1.478 | -.158 | -.591 |
| CLTY2 | 3.86 | .080 | 1.488 | -.041 | -.592 |
| CLTY3 | 3.71 | .083 | 1.545 | .216 | -.615 |
| WLP | 3.68 | .082 | 1.525 | .143 | -.595 |
| DSP | 3.58 | .080 | 1.492 | .215 | -.530 |

The Table 7.3.2 presents descriptive statistics for several variables, representing questionnaire items or constructs measured on a scale (7-point). The mean values range from 3.37 to 4.37, indicating a tendency towards consensus. Variables CSAT1 and CSAT2 exhibit the highest mean (4.37), reflecting elevated customer satisfaction, whilst COM1 has the lowest mean (3.37). The standard deviation values span from 1.303 to 1.861, signifying significant variety in replies, with CDLTY1 exhibiting the largest variability. The data demonstrates a nearly normal distribution with comparable responses and a moderate dispersion. The skewness

values for all variables, spanning from -0.396 to 0.397, suggest that the data distribution is relatively symmetric, exhibiting negligible divergence from normalcy. All variables have neither substantial positive nor negative skewness, indicating that answers are predominantly centered around the mean. The kurtosis values, ranging from -1.166 to -0.064, suggest that the dataset is mesokurtic, indicating a close adherence to a normal distribution. The kurtosis values near 0 indicate that the distribution's tails are neither overly heavy nor excessively light. This interpretation indicates that the dataset has a normal, balanced distribution devoid of extreme outliers or skewed trends, so offering a dependable foundation for subsequent statistical research.

#### *7.3.1.3 Exploratory factor analysis*

KMO measure of sampling adequacy indicates suitable data for factor analysis, and a significant Bartlett's Test of Sphericity ($p < 0.001$) confirms sufficient correlations between variables (Table 7.3.3). Total Variance Explained shows 10 components explain 72.71% of variance. The first component explains 30.27%. After rotation, variance is more equally distributed, allowing interpretation easier (Table 7.3.4). The Rotated Component Matrix shows that the dataset has numerous dimensions (factors), helping researchers comprehend each structure (Table 7.3.5). These ten factors were named as *dynamic adaptability, technological adaptability, operational efficiency, resilient reach logistics, flexibility, logistics efficiency, competitiveness, customer involvement, discrepancy mitigation, and innovativeness*. The factor loadings are all satisfactory and above 0.5.

Table 7.3.3 KMO and Bartlett's Test-I (Organizational private CEP users)

| | | |
|---|---|---|
| *Kaiser-Meyer-Olkin Measure of Sampling Adequacy.* | | *0.925* |
| *Bartlett's Test of Sphericity* | Approx. Chi-Square | 9746.563 |
| | df | 946 |
| | Sig. | 0 |

Table 7.3.4 Total variance-I (Organizational private CEP users)

| *Component* | *Initial Eigenvalues* | | | *Extraction Sums of Squared Loadings* | | | *Rotation Sums of Squared Loadings* | | |
|---|---|---|---|---|---|---|---|---|---|
| | *Total* | *% of Variance* | *Cumulative %* | *Total* | *% of Variance* | *Cumulative %* | *Total* | *% of Variance* | *Cumulative %* |
| *1* | 13.321 | 30.274 | 30.274 | 13.321 | 30.274 | 30.274 | 5.290 | 12.022 | 12.022 |
| *2* | 3.851 | 8.753 | 39.027 | 3.851 | 8.753 | 39.027 | 4.415 | 10.033 | 22.055 |
| *3* | 3.061 | 6.958 | 45.985 | 3.061 | 6.958 | 45.985 | 4.260 | 9.681 | 31.736 |
| *4* | 2.414 | 5.485 | 51.470 | 2.414 | 5.485 | 51.470 | 3.670 | 8.341 | 40.078 |

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 5 | 2.153 | 4.892 | 56.363 | 2.153 | 4.892 | 56.363 | 2.724 | 6.191 | 46.268 |
| 6 | 1.833 | 4.166 | 60.529 | 1.833 | 4.166 | 60.529 | 2.724 | 6.190 | 52.458 |
| 7 | 1.572 | 3.573 | 64.102 | 1.572 | 3.573 | 64.102 | 2.313 | 5.257 | 57.716 |
| 8 | 1.451 | 3.298 | 67.400 | 1.451 | 3.298 | 67.400 | 2.291 | 5.207 | 62.923 |
| 9 | 1.322 | 3.005 | 70.405 | 1.322 | 3.005 | 70.405 | 2.273 | 5.166 | 68.089 |
| 10 | 1.014 | 2.306 | 72.710 | 1.014 | 2.306 | 72.710 | 2.033 | 4.621 | 72.710 |
| 11 | .697 | 1.583 | 74.293 | | | | | | |
| 12 | .618 | 1.404 | 75.697 | | | | | | |
| 13 | .561 | 1.275 | 76.972 | | | | | | |
| 14 | .529 | 1.203 | 78.175 | | | | | | |
| 15 | .512 | 1.163 | 79.338 | | | | | | |
| 16 | .487 | 1.107 | 80.445 | | | | | | |
| 17 | .476 | 1.083 | 81.527 | | | | | | |
| 18 | .471 | 1.071 | 82.598 | | | | | | |
| 19 | .445 | 1.012 | 83.610 | | | | | | |
| 20 | .428 | .972 | 84.582 | | | | | | |
| 21 | .413 | .939 | 85.521 | | | | | | |
| 22 | .403 | .917 | 86.438 | | | | | | |
| 23 | .391 | .888 | 87.326 | | | | | | |
| 24 | .369 | .839 | 88.165 | | | | | | |
| 25 | .363 | .825 | 88.990 | | | | | | |
| 26 | .362 | .823 | 89.813 | | | | | | |
| 27 | .342 | .778 | 90.591 | | | | | | |
| 28 | .330 | .751 | 91.342 | | | | | | |
| 29 | .317 | .721 | 92.063 | | | | | | |
| 30 | .304 | .692 | 92.754 | | | | | | |
| 31 | .292 | .663 | 93.418 | | | | | | |
| 32 | .286 | .650 | 94.068 | | | | | | |
| 33 | .272 | .619 | 94.687 | | | | | | |
| 34 | .261 | .594 | 95.280 | | | | | | |
| 35 | .252 | .573 | 95.853 | | | | | | |
| 36 | .246 | .560 | 96.414 | | | | | | |
| 37 | .230 | .523 | 96.936 | | | | | | |
| 38 | .221 | .502 | 97.438 | | | | | | |
| 39 | .214 | .485 | 97.924 | | | | | | |
| 40 | .204 | .464 | 98.388 | | | | | | |
| 41 | .197 | .449 | 98.836 | | | | | | |
| 42 | .184 | .419 | 99.255 | | | | | | |
| 43 | .178 | .404 | 99.660 | | | | | | |
| 44 | .150 | .340 | 100.000 | | | | | | |

*Extraction Method: Principal Component Analysis.*

Table 7.3.5 Rotated component matrix-I (Organizational private CEP users)

| | Component | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| OPE1 | .792 | | | | | | | | | |
| OPE7 | .785 | | | | | | | | | |
| OPE5 | .783 | | | | | | | | | |
| OPE3 | .779 | | | | | | | | | |
| OPE6 | .776 | | | | | | | | | |
| OPE4 | .756 | | | | | | | | | |
| OPE2 | .746 | | | | | | | | | |
| LGE5 | | .825 | | | | | | | | |
| LGE6 | | .781 | | | | | | | | |
| LGE1 | | .740 | | | | | | | | |
| LGE2 | | .726 | | | | | | | | |
| LGE3 | | .718 | | | | | | | | |
| LGE4 | | .717 | | | | | | | | |
| DAP5 | | | .815 | | | | | | | |
| DAP1 | | | .811 | | | | | | | |
| DAP4 | | | .797 | | | | | | | |
| DAP6 | | | .771 | | | | | | | |
| DAP3 | | | .756 | | | | | | | |
| DAP2 | | | .703 | | | | | | | |
| RRL2 | | | | .823 | | | | | | |
| RRL4 | | | | .821 | | | | | | |
| RRL5 | | | | .820 | | | | | | |
| RRL3 | | | | .796 | | | | | | |
| RRL1 | | | | .732 | | | | | | |
| FLEX3 | | | | | .778 | | | | | |
| FLEX2 | | | | | .754 | | | | | |
| FLEX4 | | | | | .710 | | | | | |
| FLEX1 | | | | | .673 | | | | | |
| COM3 | | | | | | .810 | | | | |
| COM2 | | | | | | .809 | | | | |
| COM1 | | | | | | .801 | | | | |
| COM4 | | | | | | .775 | | | | |
| TA2 | | | | | | | .828 | | | |
| TA3 | | | | | | | .795 | | | |
| TA1 | | | | | | | .766 | | | |
| INV3 | | | | | | | | .834 | | |
| INV2 | | | | | | | | .802 | | |
| INV1 | | | | | | | | .784 | | |
| DM3 | | | | | | | | | .839 | |
| DM2 | | | | | | | | | .820 | |
| DM1 | | | | | | | | | .730 | |

| | Component | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| CI3 | | | | | | | | | | .779 |
| CI2 | | | | | | | | | | .749 |
| CI1 | | | | | | | | | | .673 |

*Extraction Method: Principal Component Analysis.*
*Rotation Method: Varimax with Kaiser Normalization.*
*a. Rotation converged in 7 iterations.*

Three more constructs were extracted namely customer satisfaction, customer loyalty and customer disloyalty. The results are discussed given as follows.

Table 7.3.6 KMO and Bartlett's Test-II (Organizational private CEP users)

| | | |
|---|---|---|
| *Kaiser-Meyer-Olkin Measure of Sampling Adequacy.* | | .932 |
| *Bartlett's Test of Sphericity* | Approx. Chi-Square | 3359.590 |
| | df | 55 |
| | Sig. | 0.000 |

Total 7.3.7 Variance Explained-II (Organizational private CEP users)

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 6.921 | 62.914 | 62.914 | 6.921 | 62.914 | 62.914 | 5.709 | 51.896 | 51.896 |
| 2 | 1.384 | 12.586 | 75.500 | 1.384 | 12.586 | 75.500 | 2.596 | 23.604 | 75.500 |
| 3 | 1.163 | 6.030 | 81.530 | 1.123 | 10.563 | 78.564 | 1.987 | 28.56 | 80.364 |
| 4 | .456 | 4.149 | 85.679 | | | | | | |
| 5 | .335 | 3.045 | 88.724 | | | | | | |
| 6 | .298 | 2.709 | 91.432 | | | | | | |
| 7 | .258 | 2.348 | 93.780 | | | | | | |
| 8 | .234 | 2.128 | 95.908 | | | | | | |
| 9 | .192 | 1.745 | 97.653 | | | | | | |
| 10 | .146 | 1.332 | 98.984 | | | | | | |
| 11 | .112 | 1.016 | 100.000 | | | | | | |

*Extraction Method: Principal Component Analysis.*
*Rotation Method: Varimax with Kaiser Normalization.*
*a. Rotation converged in 3 iterations.*

Table 7.3.8 Rotated Component Matrix-II (Organizational private CEP users)

| | Component | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| CDLTY1 | .893 | | |
| CDLTY5 | .874 | | |
| CDLTY4 | .859 | | |
| CDLTY2 | .858 | | |

| | Component | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| CSAT2 | | .810 | |
| CSAT4 | | .801 | |
| CSAT1 | | .776 | |
| CSAT3 | | .770 | |
| CLTY1 | | | .867 |
| CLTY2 | | | .811 |
| CLTY3 | | | .807 |

*Extraction Method: Principal Component Analysis.*
*Rotation Method: Varimax with Kaiser Normalization.*
*a. Rotation converged in 5 iterations.*

The three tables (7.3.6, 7.3.7, 7.3.8) demonstrate factor analysis structures and validity. Sampling Adequacy test is excellent as KMO score signifies that the variables share a considerable fraction of variation, making the dataset eligible for factor analysis. Bartlett's Test of Sphericity also yields a significance results. This reveals that the correlation matrix is not an identity matrix, which factor analysis requires. Significant results ($p < 0.05$) indicate considerable correlations between variables, qualifying for factoring. Both tests confirm that the data is suitable for factor analysis. The total variance explained table demonstrates that the first three components explain 80.36% of the variance, with the first two accounting for 75.5% after extraction, indicating a robust structure. Rotation sums of squared loadings refine this by uniformly dispersing variance among components, making comprehension easier. This structure shows that the data has separate dimensions like customer loyalty, satisfaction, and disloyalty with clear patterns.

### 7.3.2 Assessment of measurement model

#### *7.3.2.1 Reliability and validity*

Table 7.3.9 Outer loadings, validity, and reliability for constructs (Organizational private CEP users)

| Items | Outer loadings | Cronbach's alpha | Composite reliability (rho_a) | Composite reliability (rho_c) | Average variance extracted (AVE) | VIF |
|---|---|---|---|---|---|---|
| DAP1 | 0.864 | 0.905 | 0.906 | 0.927 | 0.678 | 2.669 |
| DAP2 | 0.782 | | | | | 1.891 |
| DAP3 | 0.805 | | | | | 2.149 |

| Items | *Outer loadings* | *Cronbach's alpha* | *Composite reliability (rho_a)* | *Composite reliability (rho_c)* | *Average variance extracted (AVE)* | *VIF* |
|---|---|---|---|---|---|---|
| *DAP4* | 0.818 | | | | | 2.176 |
| *DAP5* | 0.855 | | | | | 2.655 |
| *DAP6* | 0.812 | | | | | 2.203 |
| *DM1* | 0.861 | 0.821 | 0.830 | 0.894 | 0.737 | 1.898 |
| *DM2* | 0.904 | | | | | 2.326 |
| *DM3* | 0.809 | | | | | 1.685 |
| *TA1* | 0.897 | 0.854 | 0.865 | 0.911 | 0.773 | 2.189 |
| *TA2* | 0.896 | | | | | 2.381 |
| *TA3* | 0.844 | | | | | 1.912 |
| *INV1* | 0.886 | 0.834 | 0.847 | 0.900 | 0.749 | 1.968 |
| *INV2* | 0.875 | | | | | 1.982 |
| *INV3* | 0.836 | | | | | 1.852 |
| *LGE1* | 0.893 | 0.911 | 0.917 | 0.931 | 0.693 | 3.148 |
| *LGE2* | 0.794 | | | | | 2.058 |
| *LGE3* | 0.821 | | | | | 2.276 |
| *LGE4* | 0.796 | | | | | 2.079 |
| *LGE5* | 0.838 | | | | | 2.489 |
| *LGE6* | 0.849 | | | | | 2.599 |
| *OPE1* | 0.889 | 0.935 | 0.937 | 0.947 | 0.719 | 3.425 |
| *OPE2* | 0.833 | | | | | 2.438 |
| *OPE3* | 0.852 | | | | | 2.810 |
| *OPE4* | 0.853 | | | | | 2.793 |
| *OPE5* | 0.812 | | | | | 2.336 |
| *OPE6* | 0.836 | | | | | 2.556 |
| *OPE7* | 0.856 | | | | | 2.915 |
| *RRL1* | 0.817 | 0.895 | 0.896 | 0.923 | 0.705 | 1.952 |
| *RRL2* | 0.854 | | | | | 2.450 |
| *RRL3* | 0.834 | | | | | 2.224 |
| *RRL4* | 0.839 | | | | | 2.303 |
| *RRL5* | 0.854 | | | | | 2.518 |
| *FLEX1* | 0.879 | 0.870 | 0.885 | 0.911 | 0.718 | 2.250 |
| *FLEX2* | 0.809 | | | | | 1.917 |
| *FLEX3* | 0.848 | | | | | 2.209 |
| *FLEX4* | 0.853 | | | | | 2.115 |
| *COM1* | 0.832 | 0.830 | 0.850 | 0.886 | 0.661 | 1.846 |
| *COM2* | 0.846 | | | | | 1.989 |
| *COM3* | 0.849 | | | | | 2.065 |
| *COM4* | 0.719 | | | | | 1.576 |
| *CI1* | 0.888 | 0.846 | 0.853 | 0.906 | 0.764 | 2.075 |
| *CI2* | 0.889 | | | | | 2.242 |
| *CI3* | 0.844 | | | | | 1.873 |
| *CDLTY1* | 0.955 | 0.956 | 0.956 | 0.968 | 0.883 | 2.384 |
| *CDLTY2* | 0.929 | | | | | 3.328 |
| *CDLTY3* | 0.936 | | | | | 2.939 |
| *CDLTY4* | 0.938 | | | | | 3.849 |
| *CLTY1* | 0.891 | 0.823 | 0.826 | 0.895 | 0.739 | 2.166 |
| *CLTY2* | 0.862 | | | | | 1.926 |
| *CLTY3* | 0.825 | | | | | 1.672 |
| *CSAT1* | 0.866 | 0.914 | 0.915 | 0.939 | 0.795 | 2.454 |
| *CSAT2* | 0.893 | | | | | 2.848 |
| *CSAT3* | 0.897 | | | | | 2.961 |
| *CSAT4* | 0.909 | | | | | 3.237 |
| *WLP* | 1.000 | | | | | 1.000 |

Table 7.3.10 Heterotrait-monotrait ratio (HTMT) – Matrix (Organizational private CEP users)

| | CDLTY | CI | CLTY | COM | CSAT | DAP | DM | FLEX | INV | LGE | OPE | RRL | TA | WLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CDLTY | | | | | | | | | | | | | | |
| CI | 0.508 | | | | | | | | | | | | | |
| CLTY | 0.696 | 0.555 | | | | | | | | | | | | |
| COM | 0.287 | 0.229 | 0.264 | | | | | | | | | | | |
| CSAT | 0.845 | 0.674 | 0.840 | 0.345 | | | | | | | | | | |
| DAP | 0.508 | 0.318 | 0.543 | 0.267 | 0.594 | | | | | | | | | |
| DM | 0.365 | 0.491 | 0.465 | 0.224 | 0.550 | 0.389 | | | | | | | | |
| FLEX | 0.520 | 0.590 | 0.504 | 0.244 | 0.696 | 0.339 | 0.352 | | | | | | | |
| INV | 0.416 | 0.387 | 0.504 | 0.112 | 0.579 | 0.415 | 0.418 | 0.365 | | | | | | |
| LGE | 0.580 | 0.673 | 0.554 | 0.234 | 0.692 | 0.329 | 0.327 | 0.673 | 0.370 | | | | | |
| OPE | 0.530 | 0.530 | 0.458 | 0.211 | 0.663 | 0.406 | 0.287 | 0.594 | 0.354 | 0.597 | | | | |
| RRL | 0.381 | 0.282 | 0.346 | 0.079 | 0.477 | 0.325 | 0.249 | 0.395 | 0.326 | 0.334 | 0.489 | | | |
| TA | 0.414 | 0.419 | 0.508 | 0.241 | 0.542 | 0.564 | 0.427 | 0.360 | 0.400 | 0.251 | 0.325 | 0.277 | | |
| WLP | 0.561 | 0.406 | 0.559 | 0.135 | 0.668 | 0.490 | 0.348 | 0.470 | 0.350 | 0.388 | 0.444 | 0.352 | 0.389 | |

Table 7.3.11 Fornell-Larcker criterion (Organizational private CEP users)

| | CDLTY | CI | CLTY | COM | CSAT | DAP | DM | FLEX | INV | LGE | OPE | RRL | TA | WLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CDLTY | 0.940 | | | | | | | | | | | | | |
| CI | -0.460 | 0.874 | | | | | | | | | | | | |
| CLTY | -0.618 | 0.465 | 0.860 | | | | | | | | | | | |
| COM | -0.262 | 0.202 | 0.221 | 0.813 | | | | | | | | | | |
| CSAT | -0.790 | 0.596 | 0.729 | 0.309 | 0.891 | | | | | | | | | |
| DAP | -0.474 | 0.280 | 0.470 | 0.232 | 0.542 | 0.823 | | | | | | | | |
| DM | -0.325 | 0.412 | 0.383 | 0.191 | 0.479 | 0.338 | 0.859 | | | | | | | |
| FLEX | -0.481 | 0.514 | 0.434 | 0.213 | 0.629 | 0.304 | 0.303 | 0.848 | | | | | | |
| INV | -0.377 | 0.329 | 0.420 | 0.098 | 0.511 | 0.363 | 0.350 | 0.320 | 0.866 | | | | | |
| LGE | -0.544 | 0.599 | 0.485 | 0.212 | 0.636 | 0.302 | 0.290 | 0.607 | 0.331 | 0.833 | | | | |
| OPE | -0.503 | 0.478 | 0.405 | 0.198 | 0.616 | 0.376 | 0.254 | 0.543 | 0.320 | 0.557 | 0.848 | | | |
| RRL | -0.354 | 0.250 | 0.301 | 0.069 | 0.433 | 0.293 | 0.216 | 0.353 | 0.286 | 0.305 | 0.450 | 0.840 | | |
| TA | -0.378 | 0.358 | 0.429 | 0.204 | 0.483 | 0.495 | 0.370 | 0.318 | 0.340 | 0.226 | 0.288 | 0.241 | 0.879 | |
| WLP | -0.548 | 0.376 | 0.507 | 0.127 | 0.639 | 0.466 | 0.317 | 0.444 | 0.322 | 0.375 | 0.430 | 0.332 | 0.364 | 1.000 |

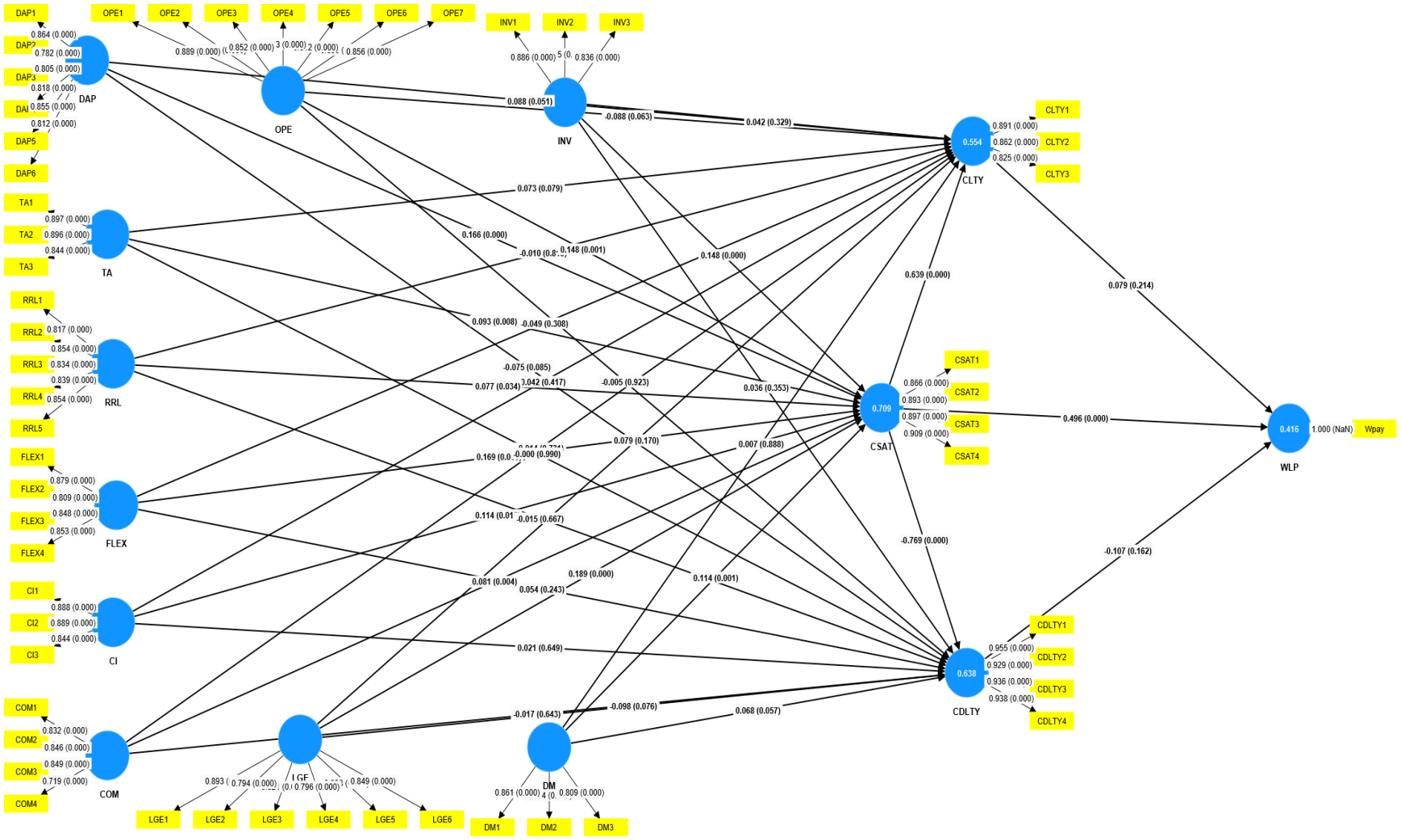


Figure 7.3.1 CSQ Model-III model generated in SMARTPLS (Organizational private CEP users)

The measuring model includes convergent validity, discriminant validity, and construct reliability (Table 7.3.9). This demonstrates that the composite reliability (CR) values of constructs were all over 0.7, with a range of 0.947 to 0.830, indicating high reliability. Cronbach alpha value was also above 0.7. This discovery validated the notion that the measuring scales provide a sufficient level of internal consistency reliability for a new scale, as stated by Hair et al. (2019).

The average variance extracted (AVE) of all constructs were higher than 0.5, indicating that the measurement scales have adequate convergent validity.

The Fornell-Larker criterion in Table 7.3.11 confirms the presence of discriminant validity, as all square roots of the AVE are greater than the corresponding correlations between the components.

The cross-loading results indicate that all the constructs demonstrated discriminant validity, as none of the cross-loading values were below 0.1 (Chin, 1998). Furthermore, all the indicators exhibit a significant degree of loading on the relevant constructions rather than other constructs. This observation suggests that each of the constructs inside the framework exhibits a high degree of distinctiveness from the others. The findings of cross-loading are presented in the Appendix. The HTMT values suggest the absence of any values greater than 0.85. Consequently, it has been verified that all of the constructs demonstrated satisfactory levels of discriminant validity. The findings of the HTMT are presented in Table 7.3.10.

#### *7.3.2.2 Common method variance (CVM)*

The measurement approach utilized collinearity statistics, focusing on evaluating the variance inflation factor (VIF) with a stringent threshold of VIF values equal to or below 5. The study used Harman's (1967) single-factor test and conducted unrotated principal component factor analysis in SPSS. The research identified ten separate factors of service quality with eigenvalues of 1.00 or above, explaining a total of 72.71% of the variation, which contradicts the idea of a single underlying factor. The common approach variance was found to be less than 50%, with the first factor accounting for 30.27% of the variance, in line with Podsakoff et al.'s (2003) suggestions.

### 7.3.3 Structural Equation Model

#### *7.3.3.1 Evaluation of the structural model*

Table 7.3.12 Assessment of direct relationship (Organizational private CEP users)

| *Hypotheses* | *Path coefficients* | *SE* | *T values* | *Bias Corrected at 95% confidence Intervals* | | *P Values* | *Decision* |
|---|---|---|---|---|---|---|---|
| | | | | **Lower Level** | **Upper Level** | | |
| *LGE -> CSAT* | 0.189 | 0.044 | 4.263 | 0.104 | 0.280 | 0.000 | Supported |
| *FLEX -> CSAT* | 0.169 | 0.041 | 4.076 | 0.089 | 0.253 | 0.000 | Supported |
| *DAP -> CSAT* | 0.166 | 0.042 | 3.988 | 0.083 | 0.248 | 0.000 | Supported |
| *INV -> CSAT* | 0.148 | 0.037 | 4.046 | 0.075 | 0.218 | 0.000 | Supported |
| *OPE -> CSAT* | 0.148 | 0.045 | 3.305 | 0.062 | 0.236 | 0.001 | Supported |
| *CI -> CSAT* | 0.114 | 0.047 | 2.416 | 0.019 | 0.206 | 0.016 | Supported |
| *DM -> CSAT* | 0.114 | 0.035 | 3.301 | 0.048 | 0.185 | 0.001 | Supported |
| *COM -> CSAT* | 0.081 | 0.028 | 2.912 | 0.026 | 0.136 | 0.004 | Supported |
| *TA -> CSAT* | 0.093 | 0.035 | 2.639 | 0.024 | 0.163 | 0.008 | Supported |
| *RRL -> CSAT* | 0.077 | 0.036 | 2.116 | 0.007 | 0.149 | 0.034 | Supported |
| | | | | | | | |
| *CI -> CLTY* | 0.042 | 0.051 | 0.812 | -0.059 | 0.141 | 0.417 | Not Supported |
| *COM -> CLTY* | -0.014 | 0.040 | 0.344 | -0.093 | 0.063 | 0.731 | Not Supported |
| *DAP -> CLTY* | 0.088 | 0.045 | 1.949 | -0.002 | 0.173 | 0.051 | Partially Supported |
| *DM -> CLTY* | 0.007 | 0.046 | 0.141 | -0.084 | 0.095 | 0.888 | Not Supported |
| *FLEX -> CLTY* | -0.049 | 0.048 | 1.020 | -0.142 | 0.047 | 0.308 | Not Supported |
| *INV -> CLTY* | 0.042 | 0.043 | 0.976 | -0.042 | 0.128 | 0.329 | Not Supported |
| *LGE -> CLTY* | 0.079 | 0.058 | 1.371 | -0.031 | 0.197 | 0.170 | Not Supported |
| *OPE -> CLTY* | -0.088 | 0.047 | 1.861 | -0.185 | 0.000 | 0.063 | Not Supported |
| *RRL -> CLTY* | -0.010 | 0.043 | 0.230 | -0.093 | 0.075 | 0.818 | Not Supported |
| *TA -> CLTY* | 0.073 | 0.042 | 1.757 | -0.006 | 0.159 | 0.079 | Not Supported |
| | | | | | | | |
| *CI -> CDLTY* | 0.021 | 0.045 | 0.455 | -0.069 | 0.108 | 0.649 | Not Supported |
| *COM -> CDLTY* | -0.017 | 0.036 | 0.464 | -0.086 | 0.053 | 0.643 | Not Supported |
| *DAP -> CDLTY* | -0.075 | 0.044 | 1.725 | -0.161 | 0.012 | 0.085 | Not Supported |
| *DM -> CDLTY* | 0.068 | 0.036 | 1.905 | -0.001 | 0.139 | 0.057 | Partially Supported |
| *FLEX -> CDLTY* | 0.054 | 0.046 | 1.168 | -0.038 | 0.144 | 0.243 | Not Supported |
| *INV -> CDLTY* | 0.036 | 0.039 | 0.928 | -0.039 | 0.113 | 0.353 | Not Supported |
| *LGE -> CDLTY* | -0.098 | 0.055 | 1.778 | -0.208 | 0.010 | 0.076 | Not Supported |
| *OPE -> CDLTY* | -0.005 | 0.048 | 0.097 | -0.095 | 0.090 | 0.923 | Not Supported |
| *RRL -> CDLTY* | -0.015 | 0.035 | 0.431 | -0.085 | 0.053 | 0.667 | Not Supported |
| *TA -> CDLTY* | 0.000 | 0.040 | 0.012 | -0.078 | 0.078 | 0.990 | |
| | | | | | | | |
| *CSAT -> CLTY* | 0.639 | 0.070 | 9.140 | 0.499 | 0.771 | 0.000 | Supported |
| *CSAT -> CDLTY* | -0.769 | 0.056 | 13.750 | -0.877 | -0.657 | 0.000 | Supported |
| *CSAT -> WLP* | 0.496 | 0.084 | 5.931 | 0.330 | 0.656 | 0.000 | Supported |
| *CDLTY -> WLP* | -0.107 | 0.077 | 1.398 | -0.254 | 0.044 | 0.162 | Not Supported |
| *CLTY -> WLP* | 0.079 | 0.064 | 1.243 | -0.044 | 0.206 | 0.214 | Not Supported |

The path coefficients of PLS structural equation model are presented in Table 7.3.12.

a) ***Impact of quality of courier service on satisfaction of customers:*** As shown in model 3 (Figure 7.3.1) ten factors of service quality are identified in the context of private courier services. Ten factors namely logistics efficiency ((β = 0.189), flexibility (β = 0.169), dynamic adaptability (β = 0.166), operational efficiency (β = 0.148), innovativeness (β = 0.148), disruption preparedness (β = 0.114), customer involvement (β = 0.114), technological adaptability (β = 0.093), competitiveness (β = 0.081), resilience reach logistics (β = 0.077), and significantly influenced customer satisfaction. The $R^2$ value shows that the perception of the customers on courier service quality explains 71% of the variance in customer satisfaction. Hence, H4a is supported.

b) ***Impact of quality of courier service on loyalty of customers****:* Only one factor dynamic adaptability (β = 0.045), partially influenced customer loyalty. H4b is supported partially.

c) ***Impact of quality of courier service on disloyalty of customers****:* There is no such direct relationship was found between courier service quality and customer disloyalty (Table 7.3.12). Therefore, we cannot accept H4c.

d) ***Impact of satisfaction with customers on loyalty to customers, customer disloyalty and willingness to pay:*** Customer satisfaction (β = 0.639) positively influences customer loyalty and negatively influences customer disloyalty (β = -0.769). Customer satisfaction positively influences willingness to pay (β = 0.496). Hence H4d, H4e, H4h are supported.

e) ***Effects of customer loyalty and customer disloyalty on willingness to pay:*** Customer loyalty and customer disloyalty have no such interaction with willingness to pay. But H4i and H4j are not supported.

Table 7.3.13 Mediation analysis (Organizational private CEP users)

| *Hypotheses* | *Path coefficients* | *SE* | *T Values* | *Bias Corrected at 95% confidence Intervals* | | *P values* | *Decision* |
|---|---|---|---|---|---|---|---|
| | | | | ***Lower level*** | ***Upper level*** | | |
| *LGE -> CSAT -> CLTY* | 0.121 | 0.032 | 3.735 | 0.063 | 0.190 | 0.000 | Full Mediation |
| *FLEX -> CSAT -> CLTY* | 0.108 | 0.029 | 3.722 | 0.055 | 0.167 | 0.000 | Full Mediation |
| *DAP -> CSAT -> CLTY* | 0.106 | 0.030 | 3.524 | 0.050 | 0.168 | 0.000 | Partial Mediation |
| *INV -> CSAT -> CLTY* | 0.095 | 0.025 | 3.793 | 0.046 | 0.145 | 0.000 | Full Mediation |
| *OPE -> CSAT -> CLTY* | 0.094 | 0.031 | 3.077 | 0.038 | 0.157 | 0.002 | Full Mediation |

| Hypotheses | Path coefficients | SE | T Values | Bias Corrected at 95% confidence Intervals | | P values | Decision |
|---|---|---|---|---|---|---|---|
| | | | | Lower level | Upper level | | |
| DM -> CSAT -> CLTY | 0.073 | 0.023 | 3.142 | 0.031 | 0.122 | 0.002 | Full Mediation |
| TA -> CSAT -> CLTY | 0.060 | 0.023 | 2.606 | 0.016 | 0.106 | 0.009 | Full Mediation |
| COM -> CSAT -> CLTY | 0.052 | 0.019 | 2.795 | 0.016 | 0.089 | 0.005 | Full Mediation |
| RRL -> CSAT -> CLTY | 0.049 | 0.023 | 2.116 | 0.005 | 0.096 | 0.034 | Full Mediation |
| CI -> CSAT -> CLTY | 0.073 | 0.032 | 2.254 | 0.012 | 0.139 | 0.024 | Full Mediation |
| | | | | | | | |
| CI -> CSAT -> CDLTY | -0.088 | 0.037 | 2.359 | -0.162 | -0.014 | 0.018 | Full Mediation |
| COM -> CSAT -> CDLTY | -0.063 | 0.021 | 2.918 | -0.105 | -0.020 | 0.004 | Full Mediation |
| DAP -> CSAT -> CDLTY | -0.128 | 0.033 | 3.873 | -0.195 | -0.063 | 0.000 | Full Mediation |
| FLEX -> CSAT -> CDLTY | -0.130 | 0.033 | 3.900 | -0.199 | -0.067 | 0.000 | Full Mediation |
| LGE -> CSAT -> CDLTY | -0.145 | 0.036 | 4.083 | -0.219 | -0.078 | 0.000 | Full Mediation |
| RRL -> CSAT -> CDLTY | -0.059 | 0.028 | 2.104 | -0.116 | -0.006 | 0.035 | Full Mediation |
| DM -> CSAT -> CDLTY | -0.088 | 0.027 | 3.213 | -0.144 | -0.037 | 0.001 | Partial Mediation |
| INV -> CSAT -> CDLTY | -0.114 | 0.030 | 3.825 | -0.173 | -0.056 | 0.000 | Full Mediation |
| OPE -> CSAT -> CDLTY | -0.114 | 0.036 | 3.193 | -0.186 | -0.047 | 0.001 | Full Mediation |
| TA -> CSAT -> CDLTY | -0.072 | 0.027 | 2.629 | -0.126 | -0.019 | 0.009 | Full Mediation |

***f) Customer satisfaction mediates the relationship between service quality and customer loyalty and customer disloyalty:*** The study revealed a significant correlation between the quality of courier services and customer loyalty, as well as between courier service quality and consumer disloyalty. The results of mediation analysis provide us the evidence that there is indirect relationship exists between courier service quality and customer loyalty. All the eight factors namely logistics efficiency ((β = 0.121), flexibility (β = 0.108), dynamic adaptability (β = 0.106), operational efficiency (β = 0.094), innovativeness (β = 0.095), disruption mitigation (β = 0.073), technological adaptability (β = 0.060), customer involvement (β = 0.066), competitiveness (β = 0.052), resilience logistics reach (β = 0.049) and have significantly influenced customer loyalty via customer satisfaction. The $R^2$ value shows that the perception of the customers on courier service quality explains 40% of the variance in customer loyalty. Hence H4f is supported.

The results of mediation analysis provide us the evidence that there is indirect relationship exists between courier service quality and customer disloyalty except service interface and logistics efficiency. Seven factors namely flexibility (disruption mitigation (β = 0.130), operational efficiency (β = -0.114), dynamic adaptability (β =

-0.128), competitiveness (β = -0.063), disruption mitigation (β = -0.088), innovativeness (β = -0.114), technological adaptability (β = -0.072), customer involvement (β = -0.088), resilience reach logistics (β = 0.059), disruption mitigation (β = 0.088) significantly influenced customer disloyalty via customer satisfaction. Enhanced service quality leads to happier customers and reduces the switching behaviors of customer from dissatisfied factors. Hence H4g is supported.

Table 7.2.14 $R^2$, $Q^2$ and $f^2$ results (Organizational private CEP users)

| *Endogenous latent constructs* | *$R^2$* | *$Q^2$* | *$f^2$* | *Exogenous Latent constructs* | *$f^2$* |
|---|---|---|---|---|---|
| *Customer Satisfaction* | 0.709 | 0.689 | 0.119 | CI | 0.024 |
| *Customer Loyalty* | 0.554 | 0.397 | 0.267 | COM | 0.020 |
| *Customer Disloyalty* | 0.638 | 0.431 | 0.475 | DAP | 0.061 |
| *Willingness to pay* | 0.416 | 0.319 | | DM | 0.033 |
| | | | | FLEX | 0.052 |
| | | | | TA | 0.020 |
| | | | | INV | 0.056 |
| | | | | LGE | 0.058 |
| | | | | OPE | 0.040 |
| | | | | RRL | 0.015 |

The study model has shown robust explanatory power ($R^2$) and prediction ($Q^2$) ability for all the exogenous constructs customer satisfaction, customer loyalty, customer disloyalty, Willingness to pay (Table 7.2.15). This study intends to evaluate the variation of endogenous components and evaluate the effect size. The $f^2$ statistic quantifies that dynamic adaptability has the highest effect size followed by competitiveness, operational efficiency, innovativeness in second third and fourth place.

### *7.3.3.2 Model fit*

Table 7.3.15 Model fit indices (Organizational private CEP users)

| *Parameters* | *Saturated model* | *Estimated model* | *Thresholds* | *References* |
|---|---|---|---|---|
| *SRMR* | 0.044 | 0.044 | <=0.08 | Hair et al., 2020 |
| *NFI* | 0.837 | 0.836 | >=0.70 | Yusif et al., 2020; German et al., 2022 |
| *d_ULS* | 3.049 | 3.158 | >0.05 | Dash & Paul, 2021 |
| *d_G* | 1.213 | 1.226 | >0.05 | Dash & Paul, 2021 |
| *GoF* | 0.652 | | Small=0.1<br>Medium= 0.25<br>Large= 0.36 | Sheykhfard et al., 2024; Wasko & Faraj, 2005; Wetzels et al., 2009 |
| *VIF* | Between 1 to 5 | | <=5 | Hair et al., 2020; Kock 2015 |

In the present investigation, the saturated model and estimated model for SRMR were found to be 0.044, suggesting a satisfactory fit, as these values fall below the threshold of 0.08 (Citation). The precise model fit assesses the disparity between an empirical covariance test and the exact model fit. The d_ULS value for the saturated model is 3.049, whereas the value for the estimated model is 3.158, which above the threshold of 0.05. In addition, the d_G value for the saturated model is 1.213, whereas the estimated model is 1.226, both of which exceed the significance level of 0.05. This suggests that the model successfully passed the precise model fit tests. According to Bentler and Bonett (1980), values that are closer to 1 in NFI are regarded as having a superior fit. In this investigation, the NFI values for the saturated model and estimated model are 0.837 and 0.836, respectively. These values exceed the threshold of 0.70. Hence, the model satisfied the statistical fitness criterion, as evidenced by the data presented in Table 7.2.15.

**Goodness of fit**: The determined GoF value of 0.652 in this study indicates that the model is highly well-fitting, as stated in Equation (17).

## *7.4 CUSTOMER SATISFACTION EVALUATION OF CEP SERVICE QUALITY IN TIMES OF DISRUPTIONS FROM THE PERSPECTIVE OF ORGANIZATIONAL USERS OF POSTAL SERVICES*

### 7.4.1 Identification of key factors affecting satisfaction level organizational users

Demographic profile of the respondents is already discussed in previous section (7.3.1.1)

#### *7.4.1.1 Descriptive statistics of factors*

Table 7.4.1 Descriptive statistics (Organizational postal users)

| Items | Mean | Std. Error of Mean | Std. Deviation | Skewness | Kurtosis |
|---|---|---|---|---|---|
| DAP1 | 4.32 | .081 | 1.518 | -.069 | -.796 |
| DAP2 | 4.04 | .076 | 1.409 | .039 | -.439 |
| DAP3 | 4.01 | .074 | 1.387 | -.075 | -.351 |
| DAP4 | 3.98 | .081 | 1.506 | .095 | -.671 |
| DAP5 | 4.05 | .076 | 1.420 | .022 | -.476 |
| DAP6 | 4.05 | .079 | 1.469 | .057 | -.689 |
| TA1 | 3.83 | .082 | 1.532 | .128 | -.674 |
| TA2 | 3.63 | .078 | 1.456 | .382 | -.417 |
| TA3 | 3.66 | .078 | 1.464 | .331 | -.564 |
| OPE1 | 4.00 | .077 | 1.435 | .060 | -.536 |
| OPE2 | 3.71 | .076 | 1.416 | .205 | -.519 |
| OPE3 | 4.02 | .078 | 1.456 | .078 | -.636 |
| OPE4 | 3.72 | .076 | 1.424 | .206 | -.551 |
| OPE5 | 3.84 | .076 | 1.409 | .089 | -.475 |
| OPE6 | 3.78 | .077 | 1.432 | .181 | -.481 |
| OPE7 | 3.89 | .082 | 1.535 | .074 | -.683 |
| RRL1 | 4.13 | .079 | 1.478 | -.079 | -.512 |
| RRL2 | 4.01 | .074 | 1.383 | -.056 | -.466 |
| RRL3 | 3.96 | .075 | 1.404 | .102 | -.241 |
| RRL4 | 3.98 | .075 | 1.398 | .035 | -.448 |
| RRL5 | 4.02 | .079 | 1.472 | .052 | -.514 |
| FLEX1 | 4.17 | .081 | 1.508 | -.194 | -.595 |
| FLEX2 | 4.08 | .079 | 1.470 | -.041 | -.528 |
| FLEX3 | 4.02 | .079 | 1.476 | -.051 | -.584 |
| FLEX4 | 4.16 | .078 | 1.463 | -.009 | -.643 |
| LGE1 | 4.02 | .079 | 1.478 | -.013 | -.827 |
| LGE2 | 4.04 | .076 | 1.427 | -.066 | -.639 |
| LGE3 | 3.97 | .077 | 1.440 | -.015 | -.650 |
| LGE4 | 3.97 | .074 | 1.380 | .044 | -.413 |
| LGE5 | 3.95 | .074 | 1.390 | .062 | -.516 |
| LGE6 | 4.02 | .076 | 1.424 | .074 | -.538 |

| *Items* | *Mean* | *Std. Error of Mean* | *Std. Deviation* | *Skewness* | *Kurtosis* |
|---|---|---|---|---|---|
| *CI1* | 3.60 | .079 | 1.470 | .023 | -.689 |
| *CI2* | 3.54 | .075 | 1.398 | .139 | -.698 |
| *CI3* | 3.59 | .081 | 1.517 | .050 | -.835 |
| *DM1* | 3.86 | .079 | 1.482 | -.045 | -.807 |
| *DM2* | 3.92 | .079 | 1.470 | .101 | -.552 |
| *DM3* | 4.02 | .084 | 1.566 | .003 | -.833 |
| *INV1* | 3.72 | .076 | 1.416 | .178 | -.732 |
| *INV2* | 3.66 | .083 | 1.543 | .149 | -.663 |
| *INV3* | 3.45 | .076 | 1.427 | .213 | -.600 |
| *CSAT1* | 4.31 | .088 | 1.634 | -.232 | -.736 |
| *CSAT2* | 4.21 | .086 | 1.601 | -.146 | -.740 |
| *CSAT3* | 4.14 | .085 | 1.595 | -.034 | -.698 |
| *CSAT4* | 4.28 | .087 | 1.621 | -.233 | -.848 |
| *CLTY1* | 4.31 | .066 | 1.234 | -.025 | -.116 |
| *CLTY2* | 3.79 | .071 | 1.326 | .307 | -.253 |
| *CLTY3* | 4.22 | .069 | 1.292 | .055 | -.265 |
| *CDLTY1* | 4.02 | .088 | 1.636 | -.040 | -.946 |
| *CDLTY2* | 3.97 | .081 | 1.511 | .160 | -.758 |
| *CDLTY3* | 3.86 | .082 | 1.537 | .190 | -.645 |
| *CDLTY4* | 3.98 | .082 | 1.538 | .058 | -.701 |
| *COM1* | 4.17 | .077 | 1.434 | .054 | -.551 |
| *COM2* | 3.89 | .076 | 1.416 | .058 | -.399 |
| *COM3* | 3.99 | .078 | 1.448 | .106 | -.547 |
| *COM4* | 4.11 | .077 | 1.443 | .052 | -.551 |
| *WLP* | 4.07 | .091 | 1.693 | -.033 | -.965 |
| *DSP* | 4.00 | .091 | 1.706 | -.007 | -.990 |

The Table 7.4.1 presents descriptive statistics for several variables, representing questionnaire items or constructs measured on a scale (7-point). The mean values range between 3.45 and 4.32 indicate the average response for each item, with higher scores reflecting a tendency toward agreement or positive evaluation. For example, DAP1 (4.32) has a higher average score than CI2 (3.54), suggesting that respondents rated DAP1 more favorably. The standard error of the mean provides a measure of the precision of the mean estimate, where smaller values denote greater precision. The standard deviation captures the spread of responses, showing variability across respondents and ranges between 1.234 and 1.706. Most items exhibit moderate standard deviations, indicating diverse perceptions. The skewness values, ranging between -0.232 to 0.382, highlight the symmetry of responses, with most items

displaying near-zero skewness, implying approximately symmetric distributions. Finally, the kurtosis values, ranging between -0.990 to -0.116, suggest flatter-than-normal distributions, indicating lighter tails in the data. This overview helps assess response patterns and the distribution characteristics for each variable.

#### *7.4.1.2 Exploratory factor analysis*

The exploratory factor analysis (EFA) was conducted using the Statistical Package for the Social Sciences (SPSS). The provided tables detail the results of EFA, assessing data adequacy, factor extraction, and item loadings. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is exceptionally high at 0.951, indicating that the dataset is well-suited for factor analysis (Table 7.4.2). The Bartlett's Test of Sphericity yields a significant result ($p < 0.001$), confirming that the correlation matrix is not an identity matrix and that factor analysis is appropriate (Table 7.4.2). The Total Variance Explained table reveals that the first 10 components have eigenvalues greater than 1, collectively explaining 77.89% of the variance (Table 7.4.3). The rotated component matrix, based on Varimax rotation, shows well-distributed factor loadings, with all items loading strongly onto their respective components (loadings >0.5), ensuring clear factor differentiation (Table 7.4.5). Each factor represents a distinct underlying construct, with the highest loadings for items like OPE2 (0.786) on Component 1, LGE1 (0.794) on Component 2, and DAP4 (0.789) on Component 3, highlighting the strong relationships between these variables and their factors. The results indicate a robust factor structure with clear item clustering. These ten factors were named as *dynamic adaptability, technological adaptability, operational efficiency, resilient reach logistics, flexibility, logistics efficiency, competitiveness, customer involvement, discrepancy mitigation, and innovativeness*.

Table 7.4.2 KMO and Bartlett's Test-I (Organizational postal users)

| | | |
|---|---|---|
| *Kaiser-Meyer-Olkin Measure of Sampling Adequacy.* | | *.951* |
| *Bartlett's Test of Sphericity* | Approx. Chi-Square | 12246.542 |
| | df | 946 |
| | Sig. | 0.000 |

Table 7.4.3 Total Variance Explained-I (Organizational postal users)

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 17.193 | 39.076 | 39.076 | 17.193 | 39.076 | 39.076 | 5.358 | 12.177 | 12.177 |
| 2 | 2.744 | 6.235 | 45.311 | 2.744 | 6.235 | 45.311 | 4.724 | 10.735 | 22.913 |
| 3 | 2.437 | 5.538 | 50.850 | 2.437 | 5.538 | 50.850 | 4.422 | 10.050 | 32.963 |
| 4 | 2.208 | 5.019 | 55.869 | 2.208 | 5.019 | 55.869 | 3.989 | 9.067 | 42.029 |
| 5 | 2.105 | 4.785 | 60.654 | 2.105 | 4.785 | 60.654 | 3.358 | 7.633 | 49.662 |
| 6 | 2.064 | 4.692 | 65.345 | 2.064 | 4.692 | 65.345 | 3.115 | 7.080 | 56.742 |
| 7 | 1.613 | 3.666 | 69.011 | 1.613 | 3.666 | 69.011 | 2.550 | 5.795 | 62.537 |
| 8 | 1.531 | 3.479 | 72.491 | 1.531 | 3.479 | 72.491 | 2.470 | 5.613 | 68.150 |
| 9 | 1.231 | 2.799 | 75.289 | 1.231 | 2.799 | 75.289 | 2.233 | 5.076 | 73.226 |
| 10 | 1.143 | 2.598 | 77.887 | 1.143 | 2.598 | 77.887 | 2.051 | 4.661 | 77.887 |
| 11 | .516 | 1.173 | 79.060 | | | | | | |
| 12 | .499 | 1.135 | 80.194 | | | | | | |
| 13 | .485 | 1.102 | 81.296 | | | | | | |
| 14 | .446 | 1.013 | 82.309 | | | | | | |
| 15 | .430 | .977 | 83.286 | | | | | | |
| 16 | .417 | .947 | 84.233 | | | | | | |
| 17 | .395 | .897 | 85.130 | | | | | | |
| 18 | .367 | .834 | 85.964 | | | | | | |
| 19 | .357 | .812 | 86.776 | | | | | | |
| 20 | .351 | .797 | 87.573 | | | | | | |
| 21 | .342 | .777 | 88.350 | | | | | | |
| 22 | .332 | .755 | 89.106 | | | | | | |
| 23 | .314 | .713 | 89.819 | | | | | | |
| 24 | .299 | .679 | 90.498 | | | | | | |
| 25 | .294 | .667 | 91.166 | | | | | | |
| 26 | .288 | .655 | 91.821 | | | | | | |
| 27 | .278 | .631 | 92.452 | | | | | | |
| 28 | .273 | .620 | 93.073 | | | | | | |
| 29 | .257 | .584 | 93.657 | | | | | | |
| 30 | .245 | .557 | 94.214 | | | | | | |
| 31 | .241 | .548 | 94.762 | | | | | | |
| 32 | .236 | .536 | 95.298 | | | | | | |
| 33 | .229 | .520 | 95.818 | | | | | | |
| 34 | .220 | .500 | 96.317 | | | | | | |
| 35 | .216 | .490 | 96.807 | | | | | | |
| 36 | .197 | .447 | 97.254 | | | | | | |
| 37 | .194 | .441 | 97.695 | | | | | | |
| 38 | .167 | .380 | 98.075 | | | | | | |
| 39 | .161 | .367 | 98.442 | | | | | | |

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 40 | .153 | .347 | 98.789 | | | | | | |
| 41 | .146 | .333 | 99.121 | | | | | | |
| 42 | .137 | .311 | 99.432 | | | | | | |
| 43 | .130 | .295 | 99.727 | | | | | | |
| 44 | .120 | .273 | 100.000 | | | | | | |

Table 7.4.4 Rotated Component Matrix-I (Organizational postal users)

| | Component | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| OPE2 | .786 | | | | | | | | | |
| OPE4 | .774 | | | | | | | | | |
| OPE5 | .767 | | | | | | | | | |
| OPE1 | .765 | | | | | | | | | |
| OPE6 | .765 | | | | | | | | | |
| OPE7 | .761 | | | | | | | | | |
| OPE3 | .742 | | | | | | | | | |
| LGE1 | | .794 | | | | | | | | |
| LGE6 | | .794 | | | | | | | | |
| LGE5 | | .781 | | | | | | | | |
| LGE4 | | .775 | | | | | | | | |
| LGE2 | | .769 | | | | | | | | |
| LGE3 | | .765 | | | | | | | | |
| DAP4 | | | .789 | | | | | | | |
| DAP1 | | | .781 | | | | | | | |
| DAP5 | | | .769 | | | | | | | |
| DAP6 | | | .764 | | | | | | | |
| DAP2 | | | .750 | | | | | | | |
| DAP3 | | | .730 | | | | | | | |
| RRL5 | | | | .798 | | | | | | |
| RRL1 | | | | .798 | | | | | | |
| RRL4 | | | | .794 | | | | | | |
| RRL3 | | | | .791 | | | | | | |
| RRL2 | | | | .766 | | | | | | |
| COM3 | | | | | .836 | | | | | |
| COM4 | | | | | .814 | | | | | |
| COM1 | | | | | .813 | | | | | |
| COM2 | | | | | .794 | | | | | |
| FLEX4 | | | | | | .786 | | | | |
| FLEX3 | | | | | | .782 | | | | |
| FLEX1 | | | | | | .767 | | | | |

| | Component | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| FLEX2 | | | | | | .754 | | | | |
| TA1 | | | | | | | .853 | | | |
| TA2 | | | | | | | .846 | | | |
| TA3 | | | | | | | .846 | | | |
| INV3 | | | | | | | | .839 | | |
| INV2 | | | | | | | | .836 | | |
| INV1 | | | | | | | | .801 | | |
| CI3 | | | | | | | | | .821 | |
| CI2 | | | | | | | | | .757 | |
| CI1 | | | | | | | | | .745 | |
| DM2 | | | | | | | | | | .808 |
| DM3 | | | | | | | | | | .693 |
| DM1 | | | | | | | | | | .664 |

*Extraction Method: Principal Component Analysis.*
*Rotation Method: Varimax with Kaiser Normalization.*
*a. Rotation converged in 7 iterations.*

Three more constructs were extracted namely customer satisfaction, customer loyalty and customer disloyalty. The results are discussed given as follows.

Table 7.4.5 KMO and Bartlett's Test-II (Organizational postal users)

| | | |
|---|---|---|
| *Kaiser-Meyer-Olkin Measure of Sampling Adequacy.* | | .909 |
| *Bartlett's Test of Sphericity* | Approx. Chi-Square | 3360.842 |
| | df | 55 |
| | Sig. | 0.000 |

Table 7.4.6 Total Variance Explained-II (Organizational postal users)

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 6.435 | 58.501 | 58.501 | 6.435 | 58.501 | 58.501 | 3.465 | 31.501 | 31.501 |
| 2 | 1.433 | 13.030 | 71.530 | 1.433 | 13.030 | 71.530 | 3.319 | 30.169 | 61.670 |
| 3 | 1.152 | 10.472 | 82.002 | 1.152 | 10.472 | 82.002 | 2.237 | 20.332 | 82.002 |
| 4 | .524 | 4.767 | 86.769 | | | | | | |
| 5 | .373 | 3.395 | 90.164 | | | | | | |
| 6 | .261 | 2.376 | 92.540 | | | | | | |
| 7 | .224 | 2.033 | 94.573 | | | | | | |
| 8 | .185 | 1.683 | 96.257 | | | | | | |
| 9 | .174 | 1.582 | 97.839 | | | | | | |
| 10 | .131 | 1.195 | 99.034 | | | | | | |
| 11 | .106 | .966 | 100.000 | | | | | | |

*Extraction Method: Principal Component Analysis.*
*Rotation Method: Varimax with Kaiser Normalization.*
*Rotation converged in 3 iterations.*

Table 7.4.7 Rotated Component Matrix-II (Organizational postal users)

| | Component | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| CDLTY1 | .887 | | |
| CDLTY4 | .878 | | |
| CDLTY2 | .851 | | |
| CDLTY3 | .849 | | |
| CSAT1 | | .855 | |
| CSAT2 | | .855 | |
| CSAT4 | | .844 | |
| CSAT3 | | .813 | |
| CLTY2 | | | .822 |
| CLTY1 | | | .796 |
| CLTY3 | | | .772 |

*Extraction Method: Principal Component Analysis.*
*Rotation Method: Varimax with Kaiser Normalization.*
*a. Rotation converged in 5 iterations.*

The results of the exploratory factor analysis (EFA) identify three distinct constructs: Customer disloyalty, customer satisfaction, and customer loyalty are presented in (Table 7.4.5, 7.4.6, 7.4.7). The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is 0.909, signifying that the dataset is highly suitable for factor analysis. The Bartlett's Test of Sphericity is significant ($p = 0.000$), confirming the appropriateness of factor analysis for the given data. The total variance explained (Table shows that the three extracted components explain a cumulative 82.00% of the total variance, with Component 1 contributing 31.50%, Component 2 contributing 30.17%, and Component 3 contributing 20.33%.

The rotated component matrix, based on varimax rotation, displays strong and well-defined factor loadings. The first component, representing customer disloyalty, has high loadings for items like CDLTY1 (0.887) and CDLTY4 (0.878). The second component, customer satisfaction, is characterized by loadings such as CSAT1 (0.855) and CSAT4 (0.844). The third component, customer loyalty, includes items like CLTY2 (0.822) and CLTY1 (0.796). These results indicate clear clustering of items within their respective constructs, reinforcing the validity of the identified dimensions.

### 7.4.2 Assessment of measurement model

#### *7.4.2.1 Reliability and validity*

Table 7.4.8 Outer loadings, validity, and reliability for constructs (Organizational postal users)

| | *Outer loadings* | *Cronbach's alpha* | *Composite reliability (rho_a)* | *Composite reliability (rho_c)* | *Average variance extracted (AVE)* | *VIF* |
|---|---|---|---|---|---|---|
| *CI1* | 0.859 | 0.832 | 0.834 | 0.899 | 0.748 | 1.820 |
| *CI2* | 0.873 | | | | | 1.960 |
| *CI3* | 0.863 | | | | | 1.991 |
| *COM1* | 0.930 | 0.943 | 0.943 | 0.959 | 0.854 | 4.524 |
| *COM2* | 0.900 | | | | | 3.148 |
| *COM3* | 0.930 | | | | | 4.201 |
| *COM4* | 0.936 | | | | | 4.662 |
| *DAP1* | 0.880 | 0.908 | 0.913 | 0.929 | 0.686 | 2.913 |
| *DAP2* | 0.822 | | | | | 2.249 |
| *DAP3* | 0.789 | | | | | 1.981 |
| *DAP4* | 0.828 | | | | | 2.412 |
| *DAP5* | 0.801 | | | | | 2.137 |
| *DAP6* | 0.847 | | | | | 2.524 |
| *DM1* | 0.902 | 0.864 | 0.871 | 0.916 | 0.785 | 2.320 |
| *DM2* | 0.883 | | | | | 2.347 |
| *DM3* | 0.874 | | | | | 2.048 |
| *FLEX1* | 0.926 | 0.920 | 0.926 | 0.943 | 0.806 | 3.663 |
| *FLEX2* | 0.885 | | | | | 2.753 |
| *FLEX3* | 0.884 | | | | | 2.813 |
| *FLEX4* | 0.894 | | | | | 2.985 |
| *INV1* | 0.895 | 0.870 | 0.872 | 0.920 | 0.793 | 2.250 |
| *INV2* | 0.892 | | | | | 2.348 |
| *INV3* | 0.885 | | | | | 2.287 |
| *LGE1* | 0.919 | 0.942 | 0.945 | 0.954 | 0.777 | 4.298 |
| *LGE2* | 0.869 | | | | | 2.971 |
| *LGE3* | 0.869 | | | | | 3.044 |
| *LGE4* | 0.874 | | | | | 3.056 |
| *LGE5* | 0.860 | | | | | 2.816 |
| *LGE6* | 0.897 | | | | | 3.563 |
| *OPE1* | 0.877 | 0.938 | 0.939 | 0.950 | 0.730 | 3.264 |
| *OPE2* | 0.847 | | | | | 2.768 |
| *OPE3* | 0.837 | | | | | 2.628 |
| *OPE4* | 0.853 | | | | | 2.797 |
| *OPE5* | 0.854 | | | | | 2.883 |
| *OPE6* | 0.855 | | | | | 2.785 |
| *OPE7* | 0.858 | | | | | 2.927 |
| *RRL1* | 0.917 | 0.928 | 0.930 | 0.946 | 0.777 | 3.962 |
| *RRL2* | 0.850 | | | | | 2.444 |
| *RRL3* | 0.863 | | | | | 2.756 |

| | *Outer loadings* | *Cronbach's alpha* | *Composite reliability (rho_a)* | *Composite reliability (rho_c)* | *Average variance extracted (AVE)* | *VIF* |
|---|---|---|---|---|---|---|
| *RRL4* | 0.886 | | | | | 3.101 |
| *RRL5* | 0.888 | | | | | 3.050 |
| *TA1* | 0.925 | 0.895 | 0.900 | 0.935 | 0.827 | 3.004 |
| *TA2* | 0.914 | | | | | 2.904 |
| *TA3* | 0.888 | | | | | 2.389 |
| *CSAT1* | 0.937 | 0.942 | 0.943 | 0.959 | 0.853 | 4.681 |
| *CSAT2* | 0.917 | | | | | 3.795 |
| *CSAT3* | 0.908 | | | | | 3.478 |
| *CSAT4* | 0.932 | | | | | 4.505 |
| *CLTY1* | 0.813 | 0.786 | 0.798 | 0.875 | 0.701 | 1.609 |
| *CLTY2* | 0.884 | | | | | 1.878 |
| *CLTY3* | 0.812 | | | | | 1.577 |
| *CDLTY1* | 0.949 | 0.951 | 0.951 | 0.965 | 0.872 | 4.099 |
| *CDLTY2* | 0.923 | | | | | 3.999 |
| *CDLTY3* | 0.926 | | | | | 4.306 |
| *CDLTY4* | 0.938 | | | | | 3.263 |
| *WLP* | 1.000 | | | | | |

The measuring model includes convergent validity, discriminant validity, and construct reliability (Table 7.4.8). This demonstrates that the composite reliability (CR) values of constructs were all over 0.7, with a range of 0.798 to 0.959, indicating high reliability. Cronbach alpha value was also above 0.7. This discovery validated the notion that the measuring scales provide a sufficient level of internal consistency reliability for a new scale, as stated by Hair et al. (2019). The average variance extracted (AVE) of all constructs were higher than 0.5, indicating that the measurement scales have adequate convergent validity.

The Fornell-Larker criterion in Table 7.4.10 confirms the presence of discriminant validity, as all square roots of the AVE are greater than the corresponding correlations between the components. The cross-loading results indicate that all the constructs demonstrated discriminant validity, as none of the cross-loading values were below 0.1 (Chin, 1998).

Table 7.4.9 Heterotrait-monotrait ratio (HTMT) – Matrix (Organizational postal users)

| | CDLTY | CI | CLTY | COM | CSAT | DAP | DM | FLEX | INV | LGE | OPE | RRL | TA | WLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CDLTY | | | | | | | | | | | | | | |
| CI | 0.473 | | | | | | | | | | | | | |
| CLTY | 0.509 | 0.335 | | | | | | | | | | | | |
| COM | 0.601 | 0.389 | 0.432 | | | | | | | | | | | |
| CSAT | 0.682 | 0.572 | 0.593 | 0.610 | | | | | | | | | | |
| DAP | 0.464 | 0.454 | 0.382 | 0.454 | 0.603 | | | | | | | | | |
| DM | 0.606 | 0.535 | 0.469 | 0.523 | 0.736 | 0.553 | | | | | | | | |
| FLEX | 0.609 | 0.553 | 0.449 | 0.537 | 0.679 | 0.438 | 0.580 | | | | | | | |
| INV | 0.460 | 0.423 | 0.365 | 0.470 | 0.545 | 0.304 | 0.470 | 0.460 | | | | | | |
| LGE | 0.563 | 0.525 | 0.511 | 0.491 | 0.672 | 0.547 | 0.579 | 0.557 | 0.425 | | | | | |
| OPE | 0.551 | 0.472 | 0.527 | 0.553 | 0.647 | 0.490 | 0.595 | 0.551 | 0.378 | 0.546 | | | | |
| RRL | 0.575 | 0.407 | 0.456 | 0.469 | 0.618 | 0.445 | 0.582 | 0.543 | 0.396 | 0.514 | 0.573 | | | |
| TA | 0.398 | 0.169 | 0.352 | 0.422 | 0.529 | 0.353 | 0.400 | 0.371 | 0.261 | 0.428 | 0.426 | 0.371 | | |
| WLP | 0.565 | 0.463 | 0.552 | 0.499 | 0.838 | 0.483 | 0.577 | 0.546 | 0.456 | 0.570 | 0.526 | 0.472 | 0.460 | |

Table 7.4.10 Fornell-Larcker criterion (Organizational postal users)

| | CDLTY | CI | CLTY | COM | CSAT | DAP | DM | FLEX | INV | LGE | OPE | RRL | TA | WLP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CDLTY | 0.934 | | | | | | | | | | | | | |
| CI | -0.421 | 0.865 | | | | | | | | | | | | |
| CLTY | -0.439 | 0.275 | 0.837 | | | | | | | | | | | |
| COM | -0.570 | 0.346 | 0.373 | 0.924 | | | | | | | | | | |
| CSAT | -0.646 | 0.507 | 0.513 | 0.575 | 0.924 | | | | | | | | | |
| DAP | -0.433 | 0.396 | 0.326 | 0.422 | 0.561 | 0.828 | | | | | | | | |
| DM | -0.551 | 0.455 | 0.395 | 0.477 | 0.668 | 0.496 | 0.886 | | | | | | | |
| FLEX | -0.572 | 0.486 | 0.384 | 0.502 | 0.635 | 0.405 | 0.522 | 0.898 | | | | | | |
| INV | -0.420 | 0.363 | 0.300 | 0.427 | 0.495 | 0.272 | 0.411 | 0.414 | 0.891 | | | | | |
| LGE | -0.535 | 0.468 | 0.444 | 0.463 | 0.634 | 0.507 | 0.528 | 0.520 | 0.387 | 0.881 | | | | |
| OPE | -0.521 | 0.418 | 0.454 | 0.520 | 0.609 | 0.456 | 0.539 | 0.514 | 0.343 | 0.515 | 0.855 | | | |
| RRL | -0.540 | 0.359 | 0.392 | 0.438 | 0.580 | 0.412 | 0.527 | 0.503 | 0.357 | 0.483 | 0.535 | 0.881 | | |
| TA | -0.369 | 0.147 | 0.298 | 0.388 | 0.486 | 0.321 | 0.356 | 0.336 | 0.232 | 0.394 | 0.392 | 0.340 | 0.909 | |
| WLP | -0.552 | 0.423 | 0.494 | 0.484 | 0.814 | 0.463 | 0.539 | 0.525 | 0.426 | 0.554 | 0.511 | 0.456 | 0.436 | 1.000 |

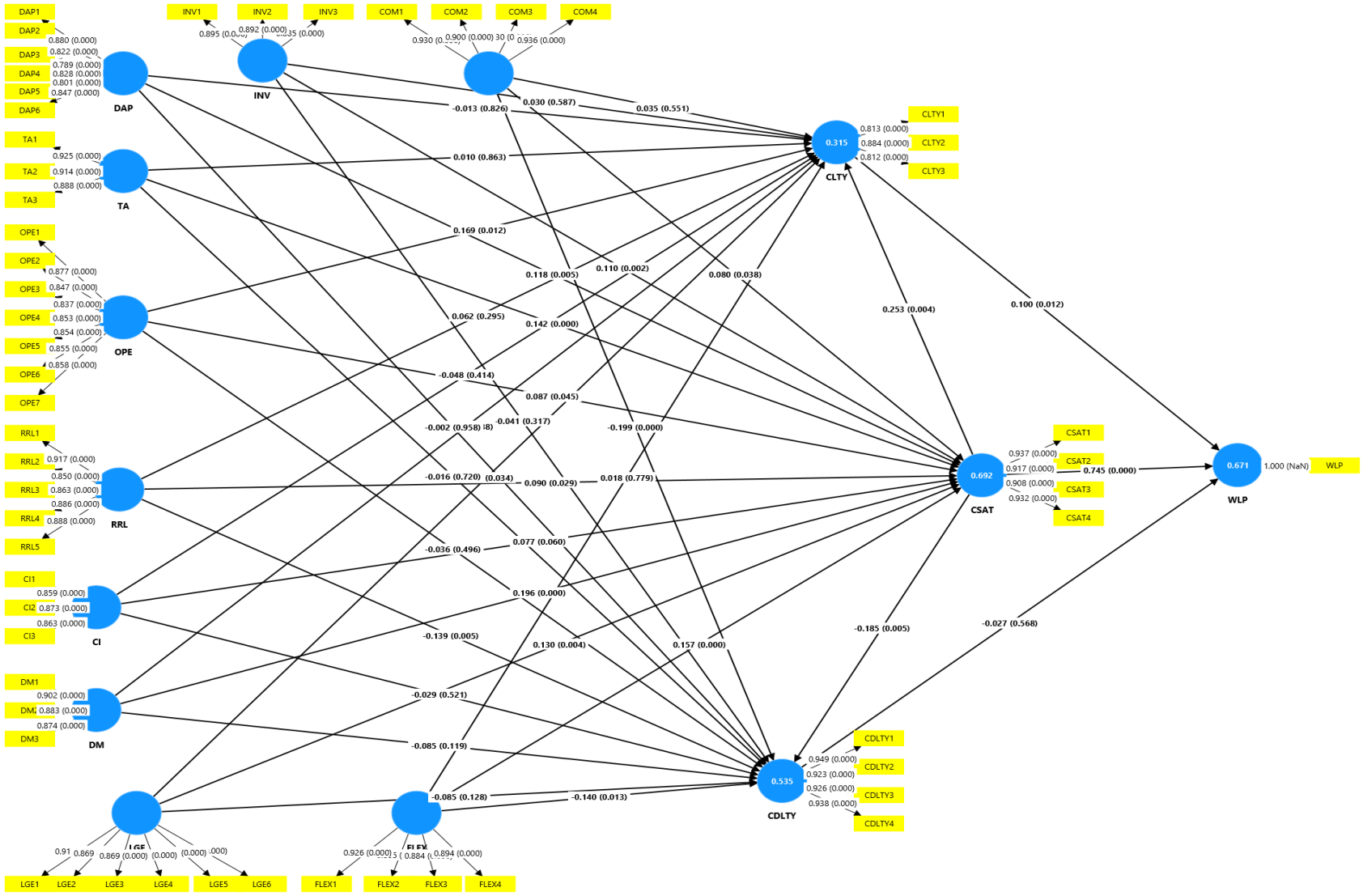


Figure 7.4.1 CSQ Model-IV generated in SMARTPLS (Organizational postal users)

Furthermore, all the indicators exhibit a significant degree of loading on the relevant constructions rather than other constructs. This observation suggests that each of the constructs inside the framework exhibits a high degree of distinctiveness from the others. The findings of cross-loading are presented in the Appendix. The HTMT values suggest the absence of any values greater than 0.85 (Table 7.4.9). Consequently, it has been verified that all of the constructs demonstrated satisfactory levels of discriminant validity.

#### *7.4.2.2 Common method variance (CVM)*

The measurement approach utilized Collinearity Statistics, focusing on evaluating the variance inflation factor (VIF) with a stringent threshold of VIF values equal to or below 5. The study used Harman's (1967) single-factor test and conducted unrotated principal component factor analysis in SPSSThe research identified ten separate factors of service quality with eigenvalues of 1.00 or above, explaining a total of 77.89% of the variation, which contradicts the idea of a single underlying factor. The common approach variance was found to be less than 50%, with the first factor accounting for 39.08% of the variance.

### 7.4.3 Structural Equation Model

#### *7.4.3.1 Evaluation of the structural model*

Table 7.4.11 Assessment of direct relationship (Organizational postal users)

| *Hypothesis* | *Path coefficients* | *SE* | *T values* | *Bias Corrected at 95% confidence Intervals* | | *P values* | *Decision* |
|---|---|---|---|---|---|---|---|
| | | | | ***Lower level*** | ***Upper level*** | | |
| *COM -> CSAT* | 0.081 | 0.039 | 2.073 | 0.005 | 0.159 | 0.038 | Supported |
| *DAP -> CSAT* | 0.118 | 0.042 | 2.792 | 0.035 | 0.200 | 0.005 | Supported |
| *DM -> CSAT* | 0.194 | 0.048 | 4.116 | 0.101 | 0.287 | 0.000 | Supported |
| *FLEX -> CSAT* | 0.157 | 0.042 | 3.749 | 0.074 | 0.238 | 0.000 | Supported |
| *INV -> CSAT* | 0.111 | 0.036 | 3.027 | 0.038 | 0.182 | 0.002 | Supported |
| *LGE -> CSAT* | 0.130 | 0.045 | 2.883 | 0.043 | 0.217 | 0.004 | Supported |
| *OPE -> CSAT* | 0.087 | 0.044 | 2.003 | 0.003 | 0.173 | 0.045 | Supported |
| *RRL -> CSAT* | 0.090 | 0.041 | 2.178 | 0.009 | 0.170 | 0.029 | Supported |
| *TA -> CSAT* | 0.140 | 0.033 | 4.332 | 0.077 | 0.204 | 0.000 | Supported |
| *CI -> CSAT* | 0.077 | 0.041 | 1.884 | -0.005 | 0.156 | 0.060 | Not Supported |
| | | | | | | | |
| *COM -> CLTY* | 0.035 | 0.059 | 0.596 | -0.080 | 0.154 | 0.551 | Not Supported |
| *DAP -> CLTY* | -0.012 | 0.058 | 0.220 | -0.124 | 0.102 | 0.826 | Not Supported |
| *DM -> CLTY* | 0.009 | 0.065 | 0.141 | -0.119 | 0.138 | 0.888 | Not Supported |
| *FLEX -> CLTY* | 0.017 | 0.065 | 0.280 | -0.111 | 0.144 | 0.779 | Not Supported |

| Hypothesis | Path coefficients | SE | T values | Bias Corrected at 95% confidence Intervals | | P values | Decision |
|---|---|---|---|---|---|---|---|
| | | | | Lower level | Upper level | | |
| INV -> CLTY | 0.031 | 0.055 | 0.544 | -0.078 | 0.137 | 0.587 | Not Supported |
| LGE -> CLTY | 0.147 | 0.070 | 2.125 | 0.007 | 0.284 | 0.034 | Supported |
| OPE -> CLTY | 0.171 | 0.068 | 2.499 | 0.036 | 0.303 | 0.012 | Supported |
| RRL -> CLTY | 0.063 | 0.059 | 1.048 | -0.052 | 0.175 | 0.295 | Not Supported |
| TA -> CLTY | 0.009 | 0.058 | 0.173 | -0.104 | 0.123 | 0.863 | Not Supported |
| CI -> CLTY | -0.049 | 0.059 | 0.817 | -0.164 | 0.068 | 0.414 | Not Supported |
| | | | | | | | |
| COM -> CDLTY | -0.197 | 0.051 | 3.920 | -0.295 | -0.098 | 0.000 | Supported |
| DAP -> CDLTY | -0.002 | 0.045 | 0.053 | -0.089 | 0.084 | 0.958 | Not Supported |
| DM -> CDLTY | -0.083 | 0.055 | 1.560 | -0.192 | 0.024 | 0.119 | Not Supported |
| FLEX -> CDLTY | -0.141 | 0.056 | 2.485 | -0.252 | -0.034 | 0.013 | Supported |
| INV -> CDLTY | -0.042 | 0.041 | 1.001 | -0.124 | 0.039 | 0.317 | Not Supported |
| LGE -> CDLTY | -0.085 | 0.056 | 1.522 | -0.195 | 0.023 | 0.128 | Not Supported |
| OPE -> CDLTY | -0.037 | 0.052 | 0.680 | -0.141 | 0.066 | 0.496 | Not Supported |
| RRL -> CDLTY | -0.139 | 0.049 | 2.810 | -0.238 | -0.045 | 0.005 | Supported |
| TA -> CDLTY | -0.017 | 0.044 | 0.358 | -0.103 | 0.068 | 0.720 | Not Supported |
| CI -> CDLTY | -0.031 | 0.045 | 0.642 | -0.119 | 0.057 | 0.521 | Not Supported |
| | | | | | | | |
| CSAT -> CDLTY | -0.183 | 0.065 | 2.829 | -0.312 | -0.055 | 0.005 | Supported |
| CSAT -> CLTY | 0.254 | 0.087 | 2.913 | 0.084 | 0.424 | 0.004 | Supported |
| CDLTY -> WLP | -0.027 | 0.047 | 0.571 | -0.118 | 0.065 | 0.568 | Not Supported |
| CLTY -> WLP | 0.100 | 0.040 | 2.515 | 0.023 | 0.179 | 0.012 | Supported |
| CSAT -> WLP | 0.744 | 0.040 | 18.613 | 0.664 | 0.819 | 0.000 | Supported |

The path coefficients of PLS structural equation model are presented in Table 7.4.11

a) ***Impact of quality of courier service on satisfaction of customers****:* As shown in model-IV ten factors of service quality are identified in the context of postal services, namely logistics efficiency ((β = 0.189), flexibility (β = 0.157), dynamic adaptability (β = 0.118), operational efficiency (β = 0.087), innovativeness (β = 0.111), discrepancy mitigation (β = 0.194), customer involvement (β = 0.114), technological adaptability (β = 0.140), resilience reach logistics (β = 0.090) significantly influenced customer satisfaction except competitiveness (β = 0.077). The $R^2$ value shows that the perception of the customers on courier service quality explains 69% of the variance in customer satisfaction. Hence, H4a is supported.

b) ***Impact of quality of courier service on loyalty of customers:*** **Only two factors namely logistics efficiency (β = 0.147)** and operational efficiency (β = 0.171) positively influenced customer loyalty. H4b is supported partially.

c) ***Impact of quality of courier service on disloyalty of customers****:* Three factors of courier service quality namely competitiveness (β = -0.197), flexibility (β = -0.141), resilient reach logistics (β = -0.139) negatively affected customer disloyalty. Therefore, H4c is supported partially.

d) ***Impact of satisfaction with customers on loyalty to customers, customer disloyalty and willingness to pay:*** Customer satisfaction positively influences customer loyalty (β = 0.254) and negatively influences customer disloyalty (β = -0.183). Customer satisfaction positively influences willingness to pay (β = 0.744). Hence H4d, H4e, H4h are supported.

e) ***Effects of customer loyalty and customer disloyalty on willingness to pay:*** Customer loyalty (β = 0.100) positively influence customers willingness to pay and but customer disloyalty has no such interaction with willingness to pay. Hence, H4i is supported but H4j is not supported.

Table 7.4.12 Mediation analysis (Organizational postal users)

| *Hypothesis* | *Path coefficients* | *SE* | *T values* | *Bias Corrected at 95% confidence Intervals* | | *P values* | *Decision* |
|---|---|---|---|---|---|---|---|
| | | | | *Lower level* | *Upper level* | | |
| *COM -> CSAT -> CLTY* | 0.021 | 0.013 | 1.538 | 0.001 | 0.052 | 0.124 | No Mediation |
| *DAP -> CSAT -> CLTY* | 0.030 | 0.015 | 1.957 | 0.006 | 0.064 | 0.049 | Full Mediation |
| *FLEX -> CSAT -> CLTY* | 0.040 | 0.017 | 2.306 | 0.011 | 0.078 | 0.021 | Full Mediation |
| *LGE -> CSAT -> CLTY* | 0.033 | 0.016 | 2.056 | 0.007 | 0.069 | 0.040 | Partial Mediation |
| *RRL -> CSAT -> CLTY* | 0.023 | 0.013 | 1.709 | 0.002 | 0.053 | 0.087 | No Mediation |
| *DM -> CSAT -> CLTY* | 0.050 | 0.022 | 2.206 | 0.014 | 0.099 | 0.027 | Full Mediation |
| *INV -> CSAT -> CLTY* | 0.028 | 0.013 | 2.098 | 0.006 | 0.058 | 0.036 | Full Mediation |
| *OPE -> CSAT -> CLTY* | 0.022 | 0.014 | 1.615 | 0.000 | 0.053 | 0.106 | No Mediation |
| *TA -> CSAT -> CLTY* | 0.036 | 0.015 | 2.338 | 0.010 | 0.069 | 0.019 | Full Mediation |
| *CI -> CSAT -> CLTY* | 0.020 | 0.013 | 1.491 | -0.001 | 0.050 | 0.136 | No Mediation |
| | | | | | | | |
| *COM -> CSAT -> CDLTY* | -0.015 | 0.010 | 1.524 | -0.038 | 0.000 | 0.127 | No Mediation |
| *DAP -> CSAT -> CDLTY* | -0.022 | 0.011 | 1.905 | -0.046 | -0.004 | 0.047 | Full Mediation |
| *FLEX -> CSAT -> CDLTY* | -0.029 | 0.013 | 2.189 | -0.058 | -0.007 | 0.029 | Partial Mediation |
| *LGE -> CSAT -> CDLTY* | -0.023 | 0.011 | 2.099 | -0.049 | -0.005 | 0.036 | Full Mediation |
| *RRL -> CSAT -> CDLTY* | -0.016 | 0.010 | 1.705 | -0.038 | -0.001 | 0.088 | No Mediation |
| *DM -> CSAT -> CLTY* | -0.036 | 0.016 | 2.272 | -0.072 | -0.009 | 0.023 | Full Mediation |
| *INV -> CSAT -> CDLTY* | -0.020 | 0.010 | 2.131 | -0.042 | -0.004 | 0.033 | Full Mediation |
| *OPE -> CSAT -> CDLTY* | -0.016 | 0.010 | 1.563 | -0.040 | 0.000 | 0.118 | No Mediation |

| Hypothesis | Path coefficients | SE | T values | Bias Corrected at 95% confidence Intervals | | P values | Decision |
|---|---|---|---|---|---|---|---|
| | | | | Lower level | Upper level | | |
| TA -> CSAT -> CDLTY | -0.026 | 0.011 | 2.313 | -0.051 | -0.007 | 0.021 | Full Mediation |
| CI -> CSAT -> CDLTY | -0.014 | 0.010 | 1.492 | -0.036 | 0.001 | 0.136 | No Mediation |

***f) Customer satisfaction mediates the relationship between service quality and customer loyalty and customer disloyalty (Table 7.4.12):*** The study revealed a significant correlation between the quality of courier services and customer loyalty, as well as between courier service quality and consumer disloyalty. The results of mediation analysis provide us the evidence that there is indirect relationship exists between courier service quality and customer loyalty. All the six factors of courier service quality namely logistics efficiency ((β = 0.033), flexibility (β = 0.040), dynamic adaptability (β = 0.030), innovativeness (β = 0.028), discrepancy mitigation (β = 0.050), technological adaptability (β = 0.036) have significantly influenced customer loyalty via customer satisfaction. The $R^2$ value shows that the perception of the customers on courier service quality explains 32% of the variance in customer loyalty. Hence H4f is supported partially.

The results of mediation analysis provide us the evidence that there is indirect relationship exists between courier service quality and customer disloyalty except service interface and logistics efficiency. Six factors of courier service quality namely flexibility (β = 0.029), logistics efficiency (= 0.023), dynamic adaptability (β = -0.022), disruption mitigation (β = -0.036), innovativeness (β = -0.020), technological adaptability (β = -0.026), significantly influenced customer disloyalty via customer satisfaction. Enhanced service quality leads to happier customers and reduces the switching behaviour of customer from dissatisfied factors. Hence, H4g is supported partially.

Table 7.2.13 $R^2$, $Q^2$ and $f^2$ results (Organizational postal users)

| Endogenous latent constructs | $R^2$ | $Q^2$ | f2 | Exogeneous latent variables | f2 |
|---|---|---|---|---|---|
| CSAT | 0.692 | 0.670725 | 0.873 | CI | 0.012 |
| CLTY | 0.315 | 0.250218 | 0.256 | COM | 0.012 |
| CDLTY | 0.535 | 0.493699 | 0.357 | DAP | 0.028 |
| WLP | 0.671 | 0.472234 | | DM | 0.064 |
| | | | | FLEX | 0.042 |

| Endogenous latent constructs | $R^2$ | $Q^2$ | f2 | Exogeneous latent variables | f2 |
|---|---|---|---|---|---|
| | | | | INV | 0.028 |
| | | | | LGE | 0.028 |
| | | | | OPE | 0.013 |
| | | | | RRL | 0.015 |
| | | | | TA | 0.048 |

The study model has shown robust explanatory power ($R^2$) prediction ($Q^2$) ability for all the exogenous constructs customer satisfaction, customer loyalty, customer disloyalty, Willingness to pay (Table 7.4 13). This study intends to evaluate the variation of endogenous components and evaluate the effect size. The $f^2$ statistic quantifies that discrepancy mitigation has the highest effect size followed by technological adaptability, flexibility, dynamic adaptability, innovativeness, logistics efficiency

### *7.4.3.2 Model fit*

Table 7.2.14 Model fit indices (Organizational postal users)

| Indices | Saturated model | Estimated model | Thresholds | References |
|---|---|---|---|---|
| SRMR | 0.035 | 0.035 | <=0.08 | Hair et al., 2020 |
| d_ULS | 1.951 | 1.979 | >=0.70 | Yusif et al., 2020; German et al., 2022 |
| d_G | 1.158 | 1.162 | >0.05 | Dash & Paul, 2021 |
| NFI | 0.868 | 0.868 | >0.05 | Dash & Paul, 2021 |
| GoF | 0.644 | | Small=0.1 Medium= 0.25 Large= 0.36 | Sheykhfard et al., 2024; Wasko & Faraj, 2005; Wetzels et al., 2009 |
| VIF | Between 1 to 5 | | | Hair et al., 2020; Kock 2015 |

In the present investigation, the saturated model and estimated model for SRMR were found to be 0.035, suggesting a satisfactory fit, as these values fall below the threshold of 0.08. The precise model fit assesses the disparity between an empirical covariance test and the exact model fit. The d_ULS value for the saturated model is 1.951, whereas the value for the estimated model is 1.979, which above the threshold of 0.05. In addition, the d_G value for the saturated model is 1.158, whereas the estimated model is 1.162, both of which exceed the significance level of 0.05. This suggests that the model successfully passed the precise model fit tests. According to Bentler and Bonett (1980), values that are closer to 1 in NFI are regarded as having a superior fit. In this investigation, the NFI values for the saturated model and estimated model are 0.868 and 0.868, respectively. These values exceed the threshold of 0.7.

Hence, the model satisfied the statistical fitness criterion, as evidenced by the data presented in Table 7.4.14.

**Goodness of fit:** The determined GoF value of 0.644in this study indicates that the model is highly well-fitting, as stated in Equation (15)

## 7.5 Summary

This chapter identifies four distinct customer segments: individual postal users, individual private CEP users, organizational postal users, and organizational private CEP users. Courier service quality factors for each segment were identified through Exploratory Factor Analysis (EFA). Courier Service Quality (CSQ) model was subsequently developed using Partial Least Squares Structural Equation Modeling (PLS-SEM) for all four segments. Then the model fits were checked for robustness and found to be adequate. The model evaluates the antecedents and consequences of customer satisfaction across segments. The findings highlight a higher willingness to pay more for improved services among postal users. Additionally, the analysis reveals distinct needs and preferences between individual and organizational users.