

## *Chapter VIII*

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## CHAPTER VIII

# TO DEVELOP SERVICE QUALITY DIMENSION MODEL THAT ANALYSES THE ADOPTION AND ACCEPTANCE LEVEL OF DIGITAL BANKING SERVICES

This section presents the analysis of various factors associated with the acceptance and adoption of digital banking services, and the empirical confirmation of nine constructs which influenced the acceptance and adoption of digital banking services. Survey instrument used was subjected to test of reliability and construct validity to check whether the factors identified are scientifically valid.

### 8.1 Survey Instrument Validation

Validation of the instrument used for the survey is necessary before applying any statistical test for testing the research model. Different validities and what they test in a survey instrument are given in table Straub (1989) and Straub et al., (2004) provides excellent guidelines for conducting instrument validation in positivistic studies in MIS. In their guidelines for research validities, the authors observe that checking for construct validity, reliability (internal consistency and statistical conclusion validity) should be considered mandatory. Content validity of the survey instrument in this study is ensured by:

- Extensive literature review
- A customer elicitation study using an open questionnaire to understand the customer concerns.
- Previously validated variables in past studies

Construct validity and reliability of the instrument was checked by using factor analysis and calculation of Cronbach's alpha. Techniques used for testing the validity are discussed in the following paragraphs.

**TABLE 8.1.1****Instrument Validation – Questions Answered by the Validities**

<b>Validity</b>	<b>Questions raised by the validity</b>
Content Validity	Are instrument measures drawn from all possible measures of the properties under investigation?
Construct Validity	Do measures show stability across methodologies? That is, are the data a reflection of true scores or artefacts of the kind of instrument chosen?
Reliability	Do measures show the stability across the units of various observation from the research?
Internal Validity	Is there any untested hypotheses for the observed effects?
Statistical Validity	Do the variables demonstrate Conclusion relationships not explainable by chance or some other standard of comparison?

*Source: (Straub, 1989)*

**8.1.2 Reliability Testing****TABLE 8.1.2.1 (a)****Opinion on Factors under Tangibility**

<b>Item No.</b>	<b>Factors on Tangibility</b>	<b>Mean</b>	<b>S.D.</b>	<b>C.V.</b>
T1	Bank has up - to – date information	3.61	.969	.939
T2	Location of the Bank	3.64	.903	.815
T3	Sufficient number of ATM machines	3.93	.932	.868
T4	Cash counting machines	3.68	.898	.806
T5	Counter partitions in bank and its branches	3.97	.905	.819
T6	Materials associated with the banks office (Pamphlets, brochures) are visually appealing at the banks office	3.82	.953	.908
T7	The employees approach	3.93	.964	.930
T8	Guide signs indicating as to which counters are offering which services	3.95	.933	.871

*Source: Computed data*

Sample Size (N) = 601 No. of Items = 8

The mean perception scores of 8 factors viz., T1, T2, T3, T4, T5, T6, T7 and T8 under the construct tangibility lie between 3.61 (T1) to 3.97 (T5). This indicates that customers are extremely satisfied with that bank have counter partition in all its branches. The other 6 factors viz., T2, T3, T4, T6, T7 and T8 are found to have mean scores which lie between 3.64 (T2) and 3.95 (T8). This indicates that the bank customers feel that online banking is very useful. The coefficient of variation indicates that variability from mean ranges between 80.6% (T4) to 93.9% (T1)

**TABLE 8.1.2.1 (b)**

**Reliability for construct Tangibility**

<b>Item No.</b>	<b>Factors on Tangibility</b>	<b>Cronbach's Alpha if item deleted</b>	<b>Cronbach's Alpha</b>
T1	Bank has up - to - date information	.898	0.880
T2	Location of the Bank	.864	
T3	Sufficient number of ATM machines	.865	
T4	Cash counting machines	.872	
T5	Counter partitions in bank and its branches	.845	
T6	Materials associated with the banks office (Pamphlets, brochures) are visually appealing at the banks office	.863	
T7	The employees approach	.846	
T8	Guide signs indicating as to which counters are offering which services	.859	

*Source: Computed data*

From the above table, the Cronbach's Alpha is found be higher for the construct T1 worded "Bank has up - to - date information" is 0.898 followed by T4 worded "cash counting machines" and the least is T7 worded "The employees' approach" i.e., 0.846. The overall Cronbach's Alpha for the variable "Tangibility" is 0.880 which is more than the standard value 0.7. Hence it has been proved that the questionnaire is reliable.

**TABLE 8.1.2.2 (a)****Opinion on Factors under Reliability**

<b>Item No.</b>	<b>Factors on Reliability</b>	<b>Mean</b>	<b>S.D.</b>	<b>C.V.</b>
R1	The bank website does not freeze after customer put in all the information	3.98	.948	.898
R2	Information provided on website	3.97	.904	.817
R3	Up to date content	4.12	.926	.858
R4	Process of transactions	3.93	.931	.867
R5	Wide range of products and services provided	3.68	.899	.808

*Source: Computed data*

The mean perception scores of 8 factors viz., R1, R2, R3, R4 and R5 under the construct Reliability lie between 3.68 (R5) to 4.12 (R3). This indicates that banks provide up to date content to the customers. The other 3 factors viz., R1, R2 and R4 are found to have mean scores which lie between 3.93 (R4) to 3.98 (R1). This indicates that the customers are highly satisfied with the process of transactions. The coefficient of variation indicates that variability from mean ranges between 80.8% (R5) to 89.8% (R1).

**TABLE 8.1.2.2 (b)****Reliability for construct Reliability**

<b>Item No.</b>	<b>Factors on Reliability</b>	<b>Cronbach's Alpha if item deleted</b>	<b>Cronbach's Alpha</b>
R1	The bank website does not freeze after customer put in all the information	.788	0.853
R2	Information provided on website	.785	
R3	Up to date content	.836	
R4	Process of transactions	.834	
R5	Wide range of products and services provided	.863	

*Source: Computed data*

From the above table, the Cronbach's Alpha is found to be higher for the construct R5 worded "Wide range of products and services provided" is 0.863 followed by R3 worded "Up to date content" and the least is R2 worded "Information provided on website" The overall Cronbach's Alpha for the variable "Reliability" is 0.853 which is more than the standard value 0.7. Hence it has been proved that the questionnaire is reliable.

**TABLE 8.1.2.3 (a)**

**Opinion on Factors under Responsiveness**

<b>Item No.</b>	<b>Factors on Responsiveness</b>	<b>Mean</b>	<b>S.D.</b>	<b>C.V.</b>
RE1	Customer service representative.	3.97	.905	.819
RE2	Bank performs the services right the first time	3.82	.953	.908
RE3	Quick confirmation	3.93	.957	.916
RE4	Requests are handled promptly	3.95	.933	.871

*Source: Computed data*

The mean perception scores of 8 factors viz., RE1, RE2, RE3 and RE4 under the construct Responsiveness lie between 3.97 (RE1) to 3.82 (RE2). This indicates that customer are highly satisfied with Customer service representative. The other 2 factors viz., RE3 and RE4 are found to have mean scores which lie between 3.93 (R3) to 3.95 (R4). This indicates that the bankers handle the request promptly. The coefficient of variation indicates that variability from mean ranges between 91.6% (RE3) to 81.9% (RE1).

**TABLE 8.1.2.3 (b)****Reliability for construct Responsiveness**

<b>Item No.</b>	<b>Factors on Responsiveness</b>	<b>Cronbach's Alpha if item deleted</b>	<b>Cronbach's Alpha</b>
RE1	Customer service representative.	.788	0.853
RE2	Bank performs the services right the first time	.785	
RE3	Quick confirmation	.836	
RE4	Requests are handled promptly	.834	

*Source: Computed data*

From the above table, the Cronbach's Alpha is found to be higher for the construct RE3 worded "Quick confirmation" is 0.836 followed by RE4 worded "our requests are handled promptly" and the least is RE2 worded "Bank performs the services right the first time" The overall Cronbach's Alpha for the variable "Responsiveness" is 0.853 which is more than the standard value 0.7. Hence it has been proved that the questionnaire is reliable.

**TABLE 8.1.2.4 (a)****Opinion on Factors under Assurance**

<b>Item No.</b>	<b>Factors on Assurance</b>	<b>Mean</b>	<b>S.D.</b>	<b>C.V.</b>
ASS1	Employees of bank have the knowledge to answer customer questions	3.99	.948	.898
ASS2	Politeness and friendly staff	3.97	.900	.811
ASS3	Employees are always willing to help you.	4.13	.919	.844
ASS4	Experienced management team.	3.67	.900	.810

*Source: Computed data*

The mean perception scores of 4 factors viz., ASS1, ASS2, ASS3 and ASS4 under the construct Assurance lie between 3.67 (ASS4) to 4.13 (ASS3). This indicates that customer is highly satisfied with willingness of employees in helping the customers. The other 2 factors viz., ASS1 and ASS2 are found to have mean scores which lie between 3.99 (ASS1) to 3.97 (ASS2). This indicates that the Employees are knowledgeable and behave politely with the customers. The coefficient of variation indicates that variability from mean ranges between 89.8% (ASS1) to 81% (ASS4).

**TABLE 8.1.2.4 (b)**

**Reliability for construct Assurance**

<b>Item No.</b>	<b>Factors on Assurance</b>	<b>Cronbach's Alpha if item deleted</b>	<b>Cronbach's Alpha</b>
ASS1	Employees of bank have the knowledge to answer customer questions	.844	0.891
ASS2	Politeness and friendly staff	.890	
ASS3	Employees are always willing to help you.	.844	
ASS4	Experienced management team.	.860	

*Source: Computed data*

From the above table, the Cronbach's Alpha is found be higher for the construct ASS2 worded "Politeness and friendly staff" is 0.890 followed by ASS4 worded "Experienced management team". The overall Cronbach's Alpha for the variable "Assurance" is 0.891 which is more than the standard value 0.7. Hence it has been proved that the questionnaire is reliable.



**TABLE 8.1.2.5 (a)****Opinion on Factors under Security**

<b>Item No.</b>	<b>Factors on Security</b>	<b>Mean</b>	<b>S.D.</b>	<b>C.V.</b>
S1	Security for ATMs	3.97	.905	.819
S2	Online filling	3.82	.953	.908
S3	Protection of banking transactions	3.94	.958	.917
S4	Privacy/Confidentiality of the bank	3.96	.934	.871
S5	Care in collection of personal information	2.90	1.626	.644

*Source: Computed data*

The mean perception scores of 5 factors viz., S1, S2, S3, S4 and S5 under the construct Security lie between 2.90 (S5) to 3.96 (S4). This indicates that customer is highly satisfied with Privacy/Confidentiality of the bank. The other 3 factors viz., S1, S2 and S3 are found to have mean scores which lie between 3.97 (S1) to 3.82 (S2). This indicates that the customers are satisfied with Security for ATMs provided by banks. The coefficient of variation indicates that variability from mean ranges between 91.7% (S3) to 64.4% (S5).

**TABLE 8.1.2.5 (b)****Reliability for construct Security**

<b>Item No.</b>	<b>Factors on Security</b>	<b>Cronbach's Alpha if item deleted</b>	<b>Cronbach's Alpha</b>
S1	Security for ATMs	.741	0.835
S2	Online filling	.741	
S3	Protection of banking transactions	.817	
S4	Privacy/Confidentiality of the bank	.851	
S5	Care in collection of personal information	.741	

*Source: Computed data*

From the above Table, the Cronbach's Alpha is found to be higher for the construct S4 worded "Privacy/Confidentiality of the bank" is 0.851 followed by S3 worded "Protection of banking transactions". The overall Cronbach's Alpha for the variable "Security" is 0.835 which is more than the standard value 0.7. Hence it has been proved that the questionnaire is reliable.

**TABLE 8.1.2.6 (a)**

**Opinion on Factors under Perceived Usefulness**

<b>Item No.</b>	<b>Factors on Perceived Usefulness</b>	<b>Mean</b>	<b>S.D.</b>	<b>C.V.</b>
PU1	The apps helps me to accomplish things more quickly	3.91	.953	.909
PU2	Using the digital banking apps is efficient	4.02	.983	.966
PU3	The digital banking apps is useful for me	3.68	.899	.808
PU4	The apps are more convenient in finding sources	4.10	.882	.777
PU5	The digital banking apps have more number of features	3.96	.934	.871
PU6	Only young people use digital banking apps vastly	4.01	.866	.749
PU7	Using a digital banking app distinguishes me from others	3.94	.958	.917
PU8	Digital banking apps improves my image	3.99	.966	.933

*Source: Computed data*

The mean perception scores of 8 factors viz., PU1, PU2, PU3, PU4, PU5, PU6, PU7 and PU8 under the construct Perceived Usefulness lie between 3.68 (PU3) to 4.10 (PU4). This indicates that the apps are more convenient in finding sources. The other 6 factors viz., PU1, PU2, PU5, PU6, PU7 and PU8 are found to have mean scores which lie between 3.91 (PU1) to 4.02 (PU2). This indicates that digital banking applications improves customer image. The coefficient of variation indicates that variability from mean ranges between 96.6 % (PU2) to 74.9% (PU6).

**TABLE 8.1.2.6 (b)****Reliability for construct Perceived Usefulness**

<b>Item No.</b>	<b>Factors on Perceived Usefulness</b>	<b>Cronbach's Alpha if item deleted</b>	<b>Cronbach's Alpha</b>
PU1	The apps helps me to accomplish things more quickly	.726	0.703
PU2	Using the digital banking apps is efficient	.649	
PU3	The digital banking apps is useful for me	.672	
PU4	The apps are more convenient in finding sources	.718	
PU5	The digital banking apps have more number of features	.628	
PU6	Only young people use digital banking apps vastly	.736	
PU7	Using a digital banking app distinguishes me from others	.611	
PU8	Digital banking apps improves my image	.616	

*Source: Computed data*

From the above table, the Cronbach's Alpha is found be higher for the construct PU6 worded "Only young people use digital banking apps vastly" is 0.736 followed by PU1 worded "The apps helps me to accomplish things more quickly". The overall Cronbach's Alpha for the variable "Perceived Usefulness" is 0.703 which is more than the standard value 0.7. Hence it has been proved that the questionnaire is reliable.

**TABLE 8.1.2.7 (a)****Opinion on Factors under Perceived Ease of Use**

<b>Item No.</b>	<b>Factors on Perceived Ease of Use</b>	<b>Mean</b>	<b>S.D.</b>	<b>C.V.</b>
PE1	The digital banking apps are easy to use	3.90	.961	.924
PE2	The digital banking applications insists on error notifications	3.94	.905	.820
PE3	The apps helps me in what I want to do	4.07	.944	.891
PE4	My interaction with the digital banking apps is clear and understandable	3.99	.919	.845
PE5	I find the digital banking apps are pleasant	3.99	.966	.933

*Source: Computed data*

The mean perception scores of 8 factors viz., PE1, PE2, PE3, PE4 and PE5 under the construct Perceived ease of use and lie between 3.90 (PE1) to 4.07 (PE3). This indicates that the apps helps me in what customers want to do. The other 3 factors viz., PE2, PE4 and PE5 are found to have mean scores which lie between 3.94 (PE2) to 3.99 (PU4 & PU5). This indicates that the digital banking apps are easy to use. The coefficient of variation indicates that variability from mean ranges between 93.3% (PE5) to 82% (PE2).

**TABLE 8.1.2.7 (b)****Reliability for construct Perceived Ease of Use**

<b>Item No.</b>	<b>Factors on Perceived Ease of Use</b>	<b>Cronbach's Alpha if item deleted</b>	<b>Cronbach's Alpha</b>
PE1	The digital banking apps are easy to use	.865	0.868
PE2	The digital banking applications insists on error notifications	.858	
PE3	The apps helps me in what I want to do	.828	
PE4	My interaction with the digital banking apps is clear and understandable	.837	
PE5	I find the digital banking apps are pleasant	.843	

*Source: Computed data*

From the above table, the Cronbach's Alpha is found be higher for the construct PE1 worded "The digital banking apps are easy to use" is 0.865 followed by PE2 worded "The digital banking apps are easy to use". The least Cronbach's Alpha is found for PE3 worded "The apps help me in what I want to do" The overall Cronbach's Alpha for the variable "Perceived Ease of Use" is 0.868 which is more than the standard value 0.7. Hence it has been proved that the questionnaire is reliable.

## STRUCTURAL EQUATION MODEL - PLS SEM ANALYSIS

TABLE 8.2

### Model Fit Indices

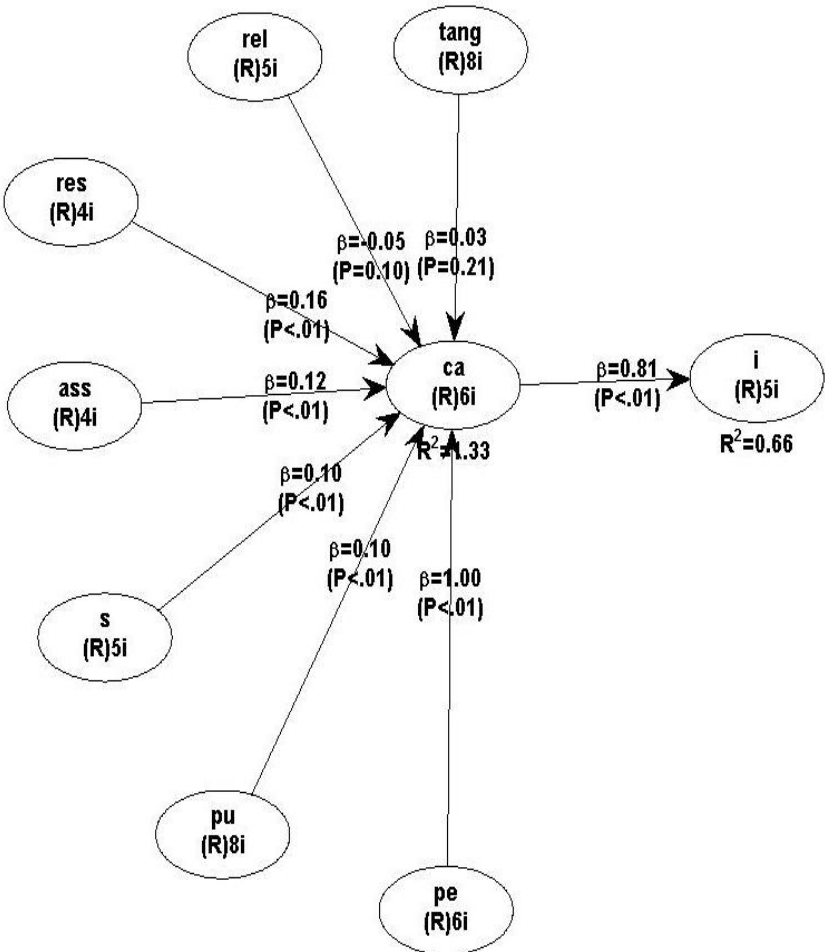
Average Path coefficient (APC)	Average R-squared (ARS)	Average Adjusted R-squared (AARS)	Average block VIF (AVIF)	Average full collinearity (AFVIF)	Tenenhaus GOF (GOF)	Sympson's Paradox Ratio (SPR)
0.296	0.691	0.698	3.985	4.162	0.148	0.875

\*Significant at 1% Level of Significance

*Source: Computed data*

The above table shows the fit indices. The APC value of the above model is 0.296 and the ARS value is 0.691. The AVIF value is 3.985. The AFVIF value is 4.162 (standard value < 5). The GOF value is 0.148 (standard values: small  $\geq 0.01$ ; medium  $\geq 0.25$ ; large  $\geq 0.36$ ), so the value fits in small range. The SPR value is 0.875 (standard value  $\Rightarrow 0.7$ ). The average adjusted R square value is found to be 0.698 which is above 0.30 and hence from the above observations it could be inferred that the model fit indices are within the standard values. Thus, it indicates that the model fits with the data.

**STRUCTURAL MODEL – ACCEPTANCE AND ADOPTION LEVEL OF  
DIGITAL BANKING SERVICES**



**Legend:**

- Tang - Tangibility
- Rel - Reliability
- Res - Responsiveness
- Ass - Assurance
- S - Security
- Pu - Perceived usefulness
- Pe - Perceived ease of use
- Ca - Customer Acceptance
- I - Intention to adopt banking services

The model reveals that once the customers accept the digital banking then it is easy for the banks to make them adopt digital banking services. Hence, banks must take measure to create awareness on the acceptance of digital banking services by organizing training sessions, conducting campaigns at customer locations and by conducting periodic self-assessments on their steps taken to enhance digital banking features.

**TABLE 8.3**

**Path Coefficients**

<b>Path</b>	<b>Beta Coefficient</b>	<b>P value</b>	<b>T Value</b>	<b>Results</b>
Tangibility→ Customer Acceptance	-0.03	0.21	2.541	<b>Negative Significant</b>
Reliability→ Customer Acceptance	-0.05	0.10	1.541	<b>Negative Significant</b>
Responsiveness→ Customer Acceptance	0.16	0.000	2.654	<b>Positive Significant</b>
Assurance → Customer Acceptance	0.12	0.000	2.148	<b>Positive Significant</b>
Security→ Customer Acceptance	0.10	0.000	1.410	<b>Positive Significant</b>
Perceived Usefulness→ Customer Acceptance	0.10	0.000	1.025	<b>Positive Significant</b>
Perceived ease of use →Customer Acceptance	1.001	0.000	1.741	<b>Positive Significant</b>
Customer Acceptance → Intention to adopt banking services	0.081	0.000	2.541	<b>Positive Significant</b>

*Source: Computed data*

From the above table, it is inferred that significant positive relationship exists between the paths Responsiveness and Customer Acceptance ( $\beta = 0.16$ ;  $t = 2.654$ ;  $p = 0.000$ ); Assurance and Customer Acceptance ( $\beta = 0.12$ ;  $t = 2.148$ ;  $p = 0.000$ ); and Security and



Customer Acceptance ( $\beta = 0.10$ ;  $t = 1.410$ ;  $p = 0.000$ ); Perceived usefulness and Customer Acceptance ( $\beta = 0.000$ ;  $t = 1.025$ ;  $p = 0.07$ ); Perceived ease of use and Customer Acceptance ( $\beta = 1.001$ ;  $t = 1.741$ ;  $p = 0.00$ ); Customer Acceptance and Intention to adopt banking services ( $\beta = 0.081$ ;  $t = 2.541$ ;  $p = 0.000$ ).

**TABLE 8.4**

**Intention to Adopt Digital Banking Services - Indirect Effects**

Construct	Intention to adopt banking services			
	Indirect Effects	P Value	Standard errors	Effect sizes
Tangibility	0.027	0.210	0.029	0.022
Reliability	-0.042	0.101	0.029	0.036
Responsiveness	0.129	0.000*	0.028	0.108
Assurance	0.094	0.000*	0.029	0.079
Security	0.080	0.000*	0.029	0.066
Perceived Usefulness	0.084	0.000*	0.029	0.072
Perceived ease of use	0.808	0.000*	0.026	0.663
Customer Acceptance	0.810	0.000*	0.037	0.655

**Note:** \* indicates 1% level of significance

*Source: Computed data*

The indirect effect of Tangibility and reliability is found insignificant since their p values are 0.210 and 0.101. Whereas, the indirect effect of Responsiveness and intention to adopt banking services is 0.129 ( $\beta = 0.129$ ;  $p = 0.000$ ) and it is significant at 1 per cent. The indirect effect of Assurance on intention to adopt digital banking services is 0.094 ( $\beta = 0.094$ ;  $p = 0.000$ ) and it is significant at 1 per cent. The indirect effect of Security on intention to adopt digital banking services is found to be 0.080 ( $\beta = 0.080$ ;  $p = 0.000$ ) and it is significant at 1 per cent. The indirect effect of Perceived usefulness on intention to adopt digital banking services is ( $\beta = 0.084$ ;  $p = 0.000$ ) and it is significant at 1 per cent.

The indirect effect of Perceived ease of use on intention to adopt digital banking services is found to be 0.808 ( $\beta = 0.808$ ;  $p = 0.000$ ) and it is significant at 1 per cent. The indirect effect of Customer Acceptance and Intention to adopt banking services is 0.810 ( $\beta = 0.810$ ;  $p = 0.000$ ) and it is significant at 1 per cent. Hence it could be inferred that constructs Responsiveness, Assurance, Security, Perceived usefulness, Perceived ease of use and Customer acceptance have a significant and indirect effect on Intention to adopt digital banking services.