Chapter VII

CHAPTER VII

TO QUANTIFY VARIOUS SECURITY MEASURES ADOPTED BY CUSTOMERS WHILE USING DIGITAL BANKING SERVICES

7.1 Introduction

The security measures adopted by customers while using Digital banking services are analyzed through "Factor Analysis Model." All the 22 factors/items given in the questionnaire related to security measures adopted by customers while using Digital banking services were selected for factor analysis by using Principal Component Extraction with an Orthogonal (Varimax) Rotation. The number of factors is unconstrained. For the sake of convergent validity, 0.50 was used as a factor loading cut-off point. The researcher rotated the components 11 times to get the significant variables under 4 factors.

TABLE 7.1

Kaiser-Meyer-Olkin and Bartlett's Test

Measure of Sampling Adequacy		.903
Bartlett's Test of Sphericity	Approx. Chi-Square	7592
	df	231
	Sig.	.000

Source: Computed data

The above table reveals that the Kaiser-Meyer-Olkin (KMO) measure. Its found that the sampling adequacy is 0.903. Since it is greater than 0.5 and Bartlett's Test of sphericity which is 0.000, it indicates that form the variables are found to be adequate.

TABLE 7.2

Communalities Factors of Security Measures Adopted by Customers while using Digital Banking Services

	Initial	Extraction
Access your bank website only after typing the URL in the address bar of your browser. (Item 1)	1.000	.571
Do not click on any links in any e-mail message to access the site. (Item 2)	1.000	.623
Never respond to email/SMS or calls which enquire about your personal information, password or one time SMS (high security) password (Item 3)	1.000	.635
Ensure your computer is protected with the latest anti-virus and firewall protection software at all times. (Item 4)	1.000	.622
Choose a Password that is memorable to you but not easy to guess by someone else. (Item 5)	1.000	.650
Do not choose a Password that you use for other services (Item 6)	1.000	.578
Change your Digital Banking Password on a regular basis (Item 7)	1.000	.566
Never disclose your Digital Banking Password to anyone (Item 8)	1.000	.631
Do not write your Digital Banking Username together with your Password (Item 9)	1.000	.699
Disable functionality on your computer or browsers that remembers logon details (Item 10)	1.000	.593
Keep your Web Browser updated(Item 11)	1.000	.589
Enable Firewall.(Item 12)	1.000	.614
Check the site certificate. (Item 13)	1.000	.666
Check your accounts regularly(Item 14)	1.000	.783

	Initial	Extraction
Always keep your Bank's customer service desk number handy (Item 15)	1.000	.650
Always log-out after using Online Banking (Item 16)	1.000	.608
Avoid the use of public computers to do your banking (Item 17)	1.000	.529
Log out if you leave the computer, even if it is just for a moment (Item 18)	1.000	.556
Delete your browsing history before you log out of the computer (Item 19)	1.000	.558
Don't type in sensitive information (Item 20)	1.000	.532
Change your Digital Banking password at periodical intervals (Item 21)	1.000	.646
Always check the last log-in date and time in the post login page (Item 22)	1.000	.543

Extraction Method: Principal Component Analysis   *Source: Computed data*

The above table indicates the Communalities which states the amount of variance that is accounted for. This is the estimates of the variance in each variable that is accounted for remaining factors. These values are the proportion (for correlation analysis) or the amount (for covariance analysis) of variance accounted for in each variable by the rest of the variables.

TABLE 7.3

Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.230	41.955	41.955	9.230	41.955	41.955	65.315	24.157	24.157
2	1.942	8.827	50.783	1.942	8.827	50.783	4.420	20.089	44.246
3	1.196	5.437	56.220	1.196	5.437	56.220	2.611	11.868	56.114
4	1.074	4.880	61.100	1.074	4.880	61.100	1.097	4.985	61.100
5	.972	4.418	65.517						
6	.893	4.061	69.578						
7	.824	3.744	73.322						
8	.717	3.260	76.582						
9	.620	2.820	79.402						
10	.592	2.693	82.095						
11	.585	2.657	84.752						
12	.503	2.286	87.039						
13	.423	1.921	88.960						
14	.402	1.827	90.787						
15	.387	1.758	92.546						
16	.338	1.535	94.081						
17	.273	1.243	95.324						
18	.257	1.170	96.494						
19	.228	1.034	97.528						
20	.192	.871	98.399						
21	.188	.853	99.252						
22	.164	.748	100.000						
Extraction Method: Principal Component Analysis.									

Source: Computed data

The following Table depicts the total variance explained. The eigen values for factor 1, 2, 3 and 4 are 65.315, 4.420, 2.611 and 1.097 respectively. Percentage of variance for factors 1, 2, 3 and 4 are 24.157, 20.089, 11.868 and 4.985 respectively. It indicates that four factors extracted from 22 factors have a cumulative percentage of up to 61.10 % of the total variance.

Rotated component matrix using the principal component analysis

The rotated component matrix is discussed in the following table. All the 4 factors have given appropriate names on the basis of the variable represented in each case.

TABLE 7.4

Rotated Component Matrix using the Principal Component Analysis

Factor	Statement	Factor loading	Eigen Value	Percentage of Variance	Cumulative percentage Variance
I **User regular security Practices in Digital banking**	Do not write your Digital Banking Username together with your Password	.776	9.230	41.955	41.955
	Keep your Web Browser updated	.760			
	Ensure your computer is protected with the latest anti-virus and firewall protection software at all times	.750			
	Access your bank website only after typing the URL in the address bar of your browser	.745			
	Disable functionality on your computer or browsers that remembers logon details	.739			

Factor	Statement	Factor loading	Eigen Value	Percentage of Variance	Cumulative percentage Variance
	Choose a Password that is memorable to you but not easy to guess by someone else	.735			
	Check the site certificate	.712			
	Don't type in sensitive information	.696			
II **User awareness of Threats**	Check your accounts regularly	-.446	1.942	8.827	50.783
	Do not click on any links in any e-mail message to access the site	-.383			
	Always log-out after using Online Banking	.372			
	Never respond to email/SMS or calls which enquire about the personal information, password or one time SMS	-.323			
	Do not choose a Password that you use for other services	.414			
	Always keep your Bank's customer service desk number handy	.498			
	Delete your browsing history before you log out of the computer	.461			
	Enable Firewall	-.518			

Factor	Statement	Factor loading	Eigen Value	Percentage of Variance	Cumulative percentage Variance
III **User** **Precautionary** **Measures**	Avoid the use of public computers to do your banking	.420	1.196	5.437	56.220
	Change your Digital Banking Password on a regular basis	-.424			
	Change your Digital Banking password at periodical intervals	.566			
IV **Users safety** **concerns** **before and** **after logging** **out**	Never disclose your Digital Banking Password to anyone	.366	1.074	4.880	61.100
	Log out if you leave the computer, even if it is just for a moment	-.309			
	Always check the last log-in date and time in the post login page	.709			
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization					

Source: Computed data

The above Table 7.4 shows the rotated component matrix, in which the extracted factors are assigning a new naming related together.

a) The percentage of variances in "Factor One," accounted for **41.95**% of the variance, where 8 items loaded on this factor. The variables are item 9 - 0.776, item 11 – 0.760, item 4 – 0.750, item 1 - 0.745, item 10 – 0.739, item 5 - 0.735, item 13 - 0.712 and item 20 – 0.696. Among the 8 variables, the variable such as "Do not write your Digital Banking Username together with your Password" and 'Access your bank website only after typing the URL in the address bar of your browser' are the statements that contributes to regular and routine activities by the user in order to protect from security challenges. Hence, the researcher grouped these factors as "**Users regular security practices in Digital banking**".

b) The percentage of variances in "Factor Two" accounted for 50.783% of the variance, where 8 statements were loaded on this factor such item 14 – 0.446, item 2 - 0.383, item 16 - 0.372, item 3 - 0.323, item 6 – 0.414, item 15 - 0.498, item 19- 0.461 and item 12-0.518. Among the 8 variables, the variable such as "Never respond to email/SMS or calls which enquire about your personal information, password or one time SMS." are the statements that creates awareness on possible threats. Hence, the researcher grouped these factors as "**User awareness of Threats**".

c) **"**Factor Three" which accounted for 56.220% of the variances. In this segment, another 3 statements were loaded they are item 17 - 0.420, item 7 - 0.424 and item 21 - 0.566. Among the 3 variables, the variable such as "Change your Digital Banking Password on a regular basis" are the statements that encourages employees for quality of work life. Hence, the researcher grouped these factors as "**User Precautionary Measures**".

d) In "Fourth Factor" the percentage of variance accounted for 61.100%. In this segment, another 3 items which were loaded they are item 8 – 0.366, item 18 - 0.309 and item 22 – 0.709. Among the 4 variables, the variable such as "Always check the last log-in date and time in the post login page" are the statements that encourages employees for quality of work life. Hence, the researcher grouped these factors as "**Users safety concerns before and after logging out**" provided by the health care sector which leads to quality of work life.

The present study has divided the **Security measures adopted by customers while using Digital Banking services** into 4 categories. The factors were grouped into four categories such as **Users regular security practices in Digital banking, User awareness of Threats, User Precautionary Measures**, **User's safety concerns before and after logging out**".

The above analysis shows the total composition of each factor that provides information regarding the items that constituted these four factors with their factor loadings and eigen values and they explain the variance of each factor. The four-factor solution is accounted for 61.100% of the explained variance, which is higher than 50%. All the dimensions are named on the basis of the contents of final items making up each of the four dimensions. The commonly used procedure is "Varimax Orthogonal Rotation" for the factors whose eigen values are greater than 1.0 that is employed in the analysis.