CHAPTER – VII

STRUCTURAL EQUATION MODELLING

CHAPTER VII

STRUCTURAL EQUATION MODELING OF CONSUMPTION EXPENDITURE PATTERN AND INVESTMENT PRACTICES, ON SATISFACTION MEDIATED BY PURCHASE BEHAVIOUR

A research model is identified based on the items included in the questionnaire which theoretically explain the relationship between consumption factors, Investment factors, and Purchase Behaviour factors which mediate the effect of satisfaction.

Expenditure dimension consisted of two factors and Investment dimension consisted of two factors. The Purchase behaviour dimension and Satisfaction consisted of five and two factors respectively. The factor analysis done in previous sections for each of these dimensions identified the latent factors as follows:

I. Expenditure:

1. Standard
2. Essential

II. Investment:

1. Risk and Return
2. Dependability

III. Purchase Behaviour:

1. Prudent Buying
2. Product Awareness
3. Quality Conscious
4. Family Involvement
5. Buying dependence

IV. Satisfaction:

1. Personal Attention
2. Personal Enjoyment

The expenditure and Investment dimensions are assumed to affect the life satisfaction of the retired households. Purchase Behaviour factors mediate the effect of expenditure and Investment dimensions on life satisfaction.

Research Model

The initial proposed research model is shown in the following diagram. The latent factors for each dimension, namely, Consumption expenditure pattern, Investment and Purchase Behaviour were measured by the respective leading arrows drawn from these dimensions. For example, the Standard and Essential are measures from the Expenditure dimension with the leading arrows drawn from it. Risk and Return and Dependability are shown by the leading arrows from Investment dimension. Similarly, Prudent Buying, Product Awareness, Quality Conscious, Family Involvement and Buying dependence are the five latent factors drawn from the Purchase Behaviour dimension.

Satisfaction has two factors namely Personal Attention and Personal Enjoyment.

The arrows leading from Consumption to satisfaction measures the direct effect of Consumption on Life Satisfaction.

The arrow leading from Investment to Satisfaction measures the direct effect of Investment on Life Satisfaction.

The arrow leading from Purchase Behaviour to Satisfaction measures the direct effect of Purchase Behaviour on Life Satisfaction.

Also these Purchase Behaviour acts as mediating variable to measure the indirect effect of Consumption and Investment dimensions on Life satisfaction (Fig 7.1)

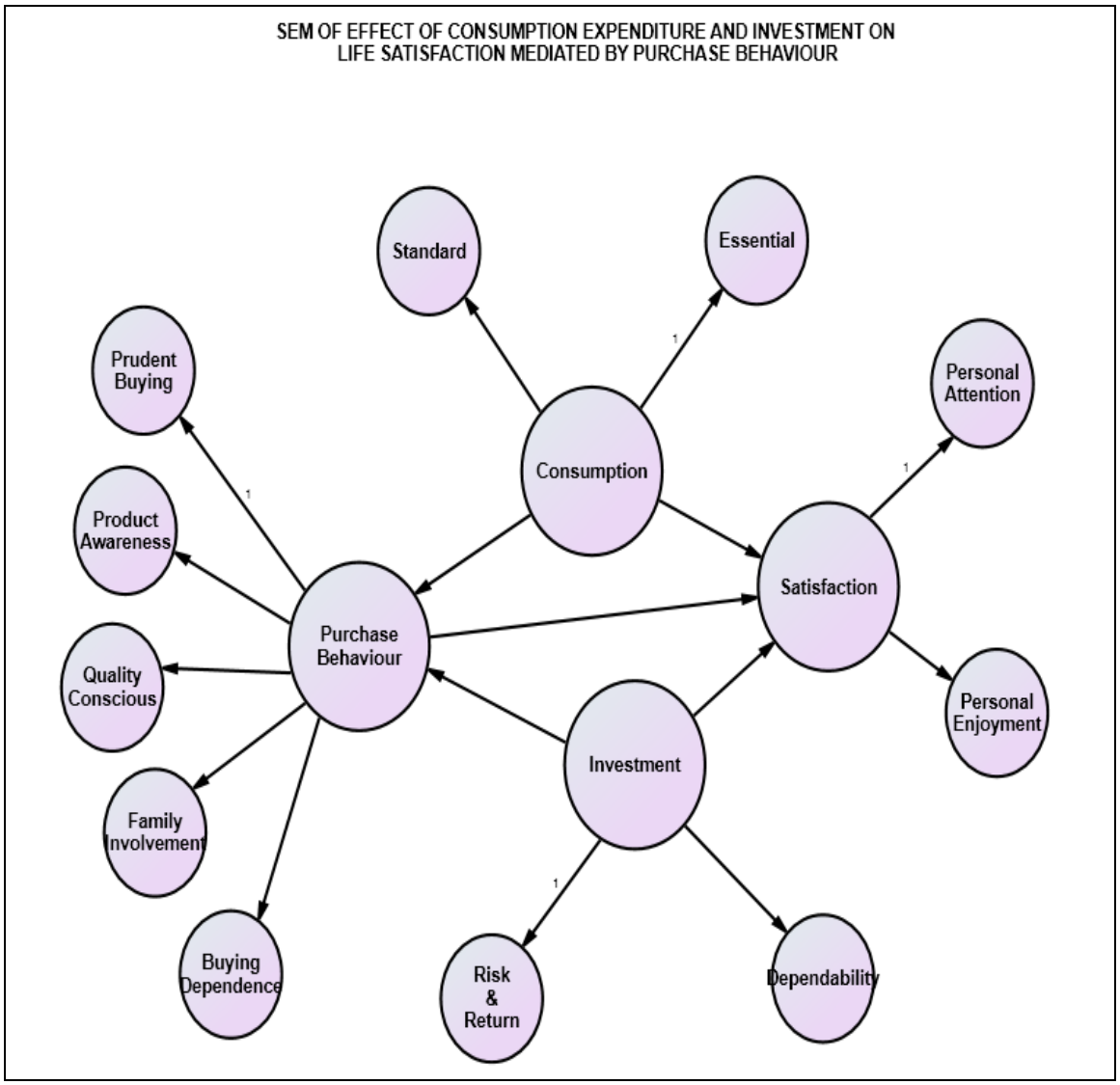

Fig 7.1 : Structural equation modelling

The model was developed using the objectives given below.

- To examine how the Consumption expenditure dimension is explained by the latent factors namely 1. Standard and 2. Essential. That is to assess whether the model consisting of these two factors load on Consumption dimension.
- To examine how the Investment dimension is explained by the latent factors namely 1. Risk and Return and 2. Dependability. That is to assess whether the model consisting of these two factors load on Investment dimension.

- To examine how the Purchase Behaviour dimension is explained by the latent factors namely 1.Prudent Buying, 2.Product Awareness, 3.Quality Conscious, 4.Family Involvement and 5.Buying dependence. That is to assess whether the model consisting of these five factors load on Purchase Behaviour dimension.
- Personal Attention and Personal Enjoyment, the two factors derived from life satisfaction were examined to find whether these two factors load on Life Satisfaction as expected.
- To establish a causal relationship of Consumption expenditure and Investment with Life satisfaction separately also effect of these dimensions on Life Satisfaction when mediated by the factors of Purchase Behaviour.

Consumption expenditure dimension which consisted of 10 items in the interview schedule explain the constructs for the factors of Standard (4 items) and Essential (6 items).

Investment dimension consisted of 13 items grouped into 2 factors, where Dependability factor consisted of 7 items and Risk and Return factor consisted of 6 items.

Purchase Behaviour dimension consisted of 20 items totally from which 5 factors were derived and they are: 1.Prudent buying with 6 items, 2. Product awareness with 5 items, 3. Quality conscious with 3 items, 4. Family involvement with 3 items and 5. Buying dependence with 3 items.

Life satisfaction, which consisted of 12 items. Two factors emerged from this dimension. Personal Attention was one latent factor with 6 items and Buying Dependence is another factor with 6 items.

Reliability of Constructs:

Initially, in this study, the reliability coefficients for the all the latent constructs involved were found out. Cranach's Alpha was found out for each construct. The results are given in the following table.

Table 7.1 - Reliability Coefficients for constructs used in the study.

Sl.No.	Constructs	Number of items	Cronbach's Alpha	Variable Names Given
	Consumption expenditure			
1	Essential	6	0.758	X25_1 to X25_6
2	Standard	4	0.733	X25_7 to X25_10
	Investment			
3	Risk and Return	6	0.793	X24_1 to X24_6
4	Dependability	7	0.828	X24_7 to X24_13
	Purchase Behaviour			
5	Prudent Buying	6	0.740	X28_10, X28_14, X28_17, to X28_20
6	Product Awareness	5	0.680	X28_11 to X28_13, X28_15, X28_16
7	Quality conscious	3	0.703	X28_7 to X28_9
8	Family involvement	3	0.736	X28_4 to X28_6
9	Buying dependence	3	0.724	X28_1 to X28_3
	Life Satisfaction			
10	Personal Attention	6	0.755	X29_1 to X29_3, X29_8 to X29_10
11	Personal Enjoyment	6	0.809	X29_4 to X29_7, X29_11, X29_12

It is seen from the above table that the reliability coefficient, Cronbach's Alpha is well above 0.70 for majority of the constructs except Product Awareness (0.680), which is moderately reliable.

Confirmatory Factor Analysis of factors used in the model

The research model now consisted of 4 dimensions. The research model proposes to explain that the Consumption expenditure and Investment, as independent variables, explain the relationship in the endogenous (dependent) factors, Purchase Behaviour and Life Satisfaction. Purchase Behaviour explains the relationship with Life satisfaction as an independent variable and as a mediating variable. Overall, the research model is proposed with two latent independent constructs having direct or indirect effect on Life satisfaction and one mediating variable.

Next, Confirmatory Factor Analysis (CFA) was adopted to validate the constructed scales developed for Consumption expenditure, Investment, Purchase behaviour and Life Satisfaction Dimensions, each dimension measuring 2 to 5 latent constructs. The first step was to consider the fitting of the measurement model for each of the latent factor of 4 individual dimensions proposed in the model. If the measurement models were good representation of the respective domains individually, in the next step a second-order factor model was developed to test whether the hypothesized higher order factor accounted for the relations among lower order factors. This further simplified the interpretations of complex structures of the first-order model. Hence, the last step was to test for the fitting of the second order factor model to assess whether each of the four dimensions was well captured and represented by their respective underlying factors. The data were analyzed using AMOS ver. 20.0 the parameters of the models were estimated by maximum likelihood method.

Measures of Model Fit

The adequacy of the model fit was arrived at based on the chi-square test statistics (given as CMIN in AMOS), that tests whether the population covariance matrix equals to the model-implied covariance matrix. A significant result indicates a poor fit ($P < 0.05$) while a non-significant test result indicates that model fit is good. That is the model fits the data well. However the chi-square test statistic is sensitive to the sample size that it tends to give highly significant results in the cases with moderate to large sample size. Hence, apart from chi square test other goodness-of-fit statistics were also considered, namely, the ratio of the chi-square value to its associated degrees of freedom (CMIN/DF),

Root Mean Square Error of Approximation (RMSEA), Goodness-of-Fit Index (GFI), Comparative Fit Index (CFI), and Normed Fit Index (NFI). For a good model fit, the ratio π^2 / *df* should be as small as possible (π^2 / *df* < 3), RMSEA should have a value 0.05 or below. The GFI, CFI and NFI should have values above 0.95. However, the π^2 / *df value between* 3-5, RMSEA between 0.05 – 0.08, GFI, CFI and NFI between 0.90 - 0.95 can be considered as an acceptable model fit.

Modification indices (MI) were given by AMOS to improve the model fit by allowing correlations between error terms and interdependence of the scales in the analysis. The model fitting could be improved after modification, and hence this was performed minimally in this study to have a better fit without affecting the stability of the model.

Confirmatory Factor Analysis is applied to each of the factors of four dimensions of the model to measure whether the items listed under each construct were in turn intended to measure what it had to measure. That is, the items of each construct loads well on their respective constructs.

I. First Order Confirmatory Factor Analysis (CFA) for Consumption Expenditure Factors.

1. First Order Confirmatory Factor Analysis (CFA) for Essential.

The Essential factor consists of 6 items which were measured on the 5 point scale namely strongly highly increased, increased, neither, decreased and highly decreased. The proposed factors of Consumption expenditure were factor analyzed to determine if the items measured the factors they were intended to measure. It is expected that items related with each factor would load high onto them. It was assumed that these items would not cross load onto other factors. The First Order Factor Model would consist of several indicator variables which will explain the latent construct they represent.

The initial First Order CFA model proposed for Essential consisted of the following items.

X25_1: Food and daily necessities

X25_2: Clothing

X25_3: Transport expenses

X25_4: Entertainment and Leisure

X25_5: Religious activities and festivals

X25_6: Health Care

The model is tested with the following hypothesis:

Ho: The observed variables X25_1 to X25_6 load on the factor named Essential.

The initial model exhibiting the relationship between the indicator variables (items) and the latent factor is given in the following diagram. The path diagram shown below gives the results of the model estimation. The values above the arrows are the regression weights of the respective variables. The values given above the rectangles are the squared multiple correlations. The variables e1 to e6 are the associated error terms for the respective indicator variables. The estimation and model fit statistics are given below in Fig 7.2

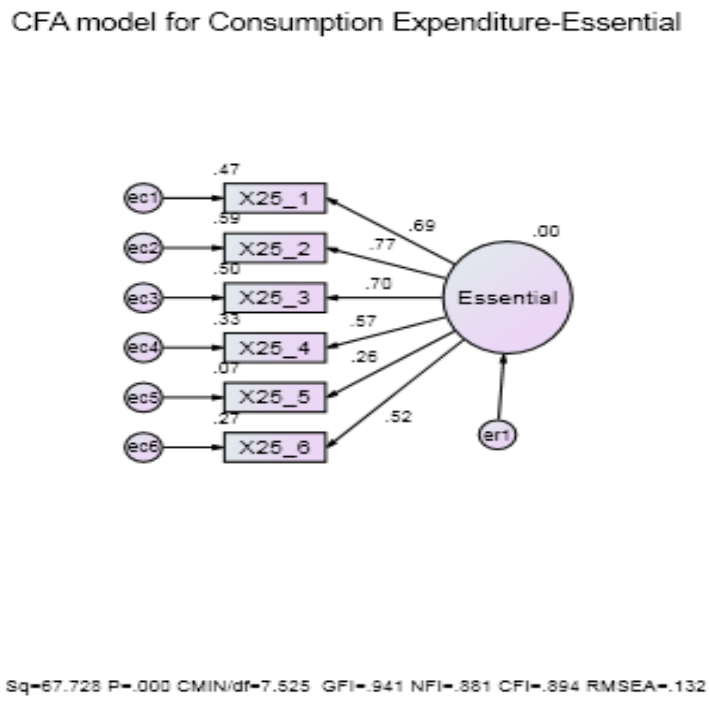

Fig 7.2 : CFA Model for Consumption Expenditure – Essential

Factor loadings:

The path diagram above shows the standardized estimates for the observed variables. These weights are independent of the units with which the variables were measured and hence comparable. The path diagram given above shows the standardized regression coefficients and the squared multiple correlations. The standardized regression weights for each of observed variables of Essential factor are given with the leading arrows. These are nothing but the factor loading of the each variable on the latent variable Essential. The higher the loading the better the variable explains about the factor. The path shows that the variable X25_2 loads higher on Essential factor compared to other variables. The factor loadings of other variables except x25_5 range between 0.50 to 0.70 indicating that most of the variables explain the factor, Essential.

For the construct, Essential, Chi-square test statistic (CMIN) value is 67.728 and the associated probability is 0.000 which shows that the chi square statistics is significant ($P<0.01$). This suggests that the hypothesized model is not a good fit. When considering other goodness-of-fit measures, for instance, the ratio π^2/df, also indicates that the measurement models for Essential construct have not fitted the data well. That is, π^2/df value is found to be greater than 5 (Hereinafter π^2/df will be called as CMIN). The other goodness of fit measure namely GFI is found to be above 0.90 but NFI and CFI are below 0.90 and the RMSEA value is also above the admissible limits (RMSEA is expected to be less than 0.05). Hence the model was revised by using the Modification Indices. Modification indices (MI) were given by AMOS to improve the model fit by allowing correlations between error terms and interdependence of the scales in the analysis. The model fitting could be improved after modification, and hence this was performed in this study to have a better fit.

Modification Indices for Covariances

The modification indices computed for the default model suggested that there was scope for improvement in the fit of the model. The M.I given in the table represent Modification Index and the arrow marks joining the error variables indicate how much the chi square value would reduce if the error terms are allowed to correlate. Par Change gives the expected change in the parameter estimates. The M.I table shows that allowing the error

terms ec4 and ec6 to correlate would greatly decrease the CMIN values. In the beginning the error terms ec4 and ec6 were allowed to correlate and the results were observed. The result is further improved by adding additional correlations with the error terms.

Table 7.2 - Modification indices for Co variances

	M.I.	Par Change
Ec2 <--> ec1	19.027	.098
Ec3 <--> ec1	4.486	-.060
Ec4 <--> ec1	13.203	-.113
Ec4 <--> ec2	5.917	-.070
Ec4 <--> ec3	9.654	.112
Ec5 <--> ec2	7.694	-.081
Ec6 <--> ec2	6.128	-.071
Ec6 <--> ec4	21.313	.180
Ec6 <--> ec5	4.667	.085

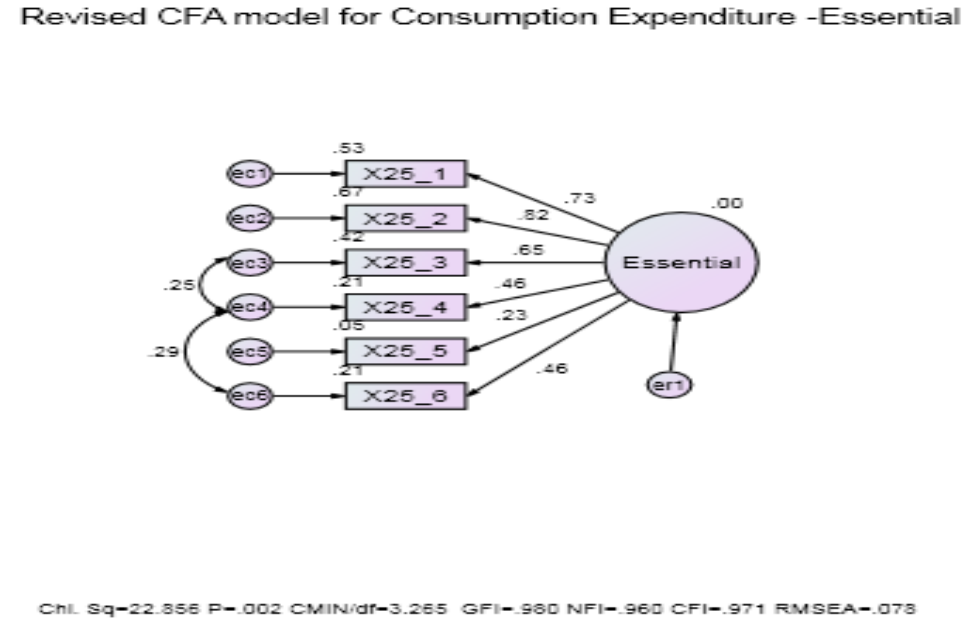

Fig 7.3 : Revised CFA Model for Consumption Expenditure – Essential

A model of good fit is arrived at after correlating the error term variables ec4 with ec6 and ec4 with ec3. The model fit parameters qualified for a better fit. The CMIN value was 3.265 with GFI NFI and CFI all above 0.95 with RMSEA value 0.078 which meets the requirement of acceptable fit when RMSEA is between 0.05-0.08. The factor loading of all the variables from X25_1 to X25_6 have moderate to high loadings. The revised model holds the hypothesis stated above.

2. First order CFA for Standard

The second initial CFA model proposed for Standard factor consisted of the following five items.

X25_7: New home, home repairs and household items

X25_8: Gifts and Cash contributions

X25_9: Reading Materials & Education

X25_10: Personal Insurance/Savings

The model is tested with the following hypothesis

Ho: the observed variables X25_7 to X25_10 load on the factor named Standard.

The initial model exhibiting the relationship between the indicator variables (items) and the latent factor is given in the following diagram (Fig 7.4)

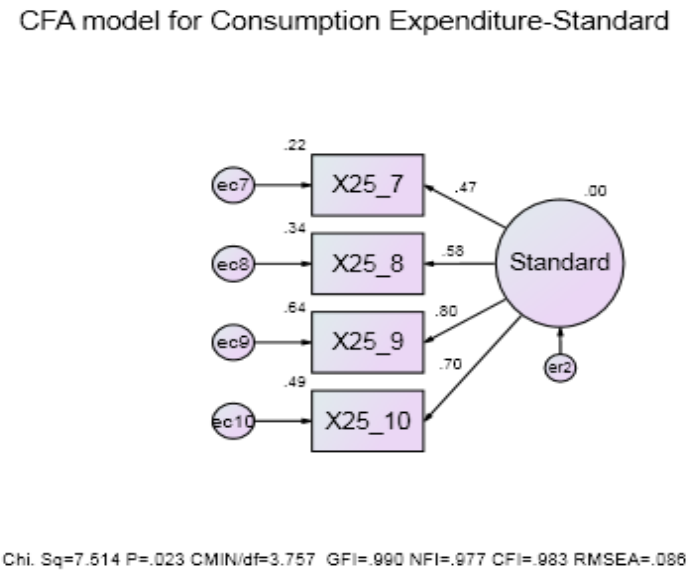

Fig 7.4 : CFA Model for Consumption Expenditure – Standard

It could be seen from the model results given in the diagram that the entire model fit measures except RMSEA are within the admissible level. The CMIN value is 3.757 which are well below the limit of 5. RMSEA value is 0.086 which is above the limit of 0.05 which indicates that the model fit measures do not satisfy the goodness of fit criteria. However, the GFI, NFI and CFI are well above 0.90. The standardized regression weights for all the indicator variables, x25_7 to X25_10 explain that these variables have loaded well on Standard with factor loadings varying between 0.45 and 0.80.

Table 7.3 - Modification Indices for Covariances

	M.I.	Par Change
ec8 <--> ec7	4.850	.107

The modification indices computed for the default model suggested that there was scope for improvement in the fit of the model. The M.I given in the table represent Modification Index and the arrow marks joining the error variables indicate how much the chi square value would reduce if the error terms are allowed to correlate. Par Change gives the expected change in the parameter estimates. The M.I table shows that allowing the error terms ec8 and ec7 to correlate would decrease the CMIN values. After correlating the error terms ec8 and ec7, the revised model incorporating the error terms correlation is given below in Fig 7.5

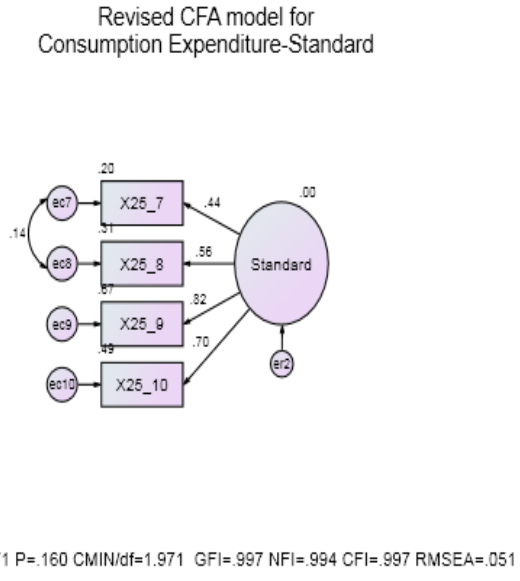

Fig 7.5 : Revised CFA Model for Consumption Expenditure – Standard

A model of acceptable fit is arrived at after correlating the error terms the variables ec7 and ec8. The model fit parameters qualified for a good fit. The CMIN value was 1.971 which is less than 5 with GFI NFI and CFI all above 0.95 with RMSEA value is 0.051 which is just above 0.05, but between 0.05-0.08 to call as an acceptable model fit. Hence the model with the above revisions was accepted as good model. The revised model sustains the hypothesis stated above.

Factor loadings:

The path diagram above shows the standardized estimates for the observed variables. These weights are independent of the units with which the variables were measured and hence comparable. The path diagram given above shows the standardized regression coefficients and the squared multiple correlations. The standardized regression weights for each of observed variables of Standard factor are given with the leading arrows. These are nothing but the factor loading of the each variable on the latent variable Standard. The higher the loading the better the variable explains about the factor. The factor loadings of the variables range between 0.44 to 0.82 indicating that most of the variables explain the Standard factor.

Second Order Factor Model for Consumption Expenditure

The factor models which measurement models are explaining the relationship between the two latent constructs namely Essential and Standard factors and their respective indicator variables were finally arrived at in the revised models. The goodness of fit indices for these measurement models were adequate. In order to fit a second order factor model, which was to see whether the latent factors obtained in the individual measurement CFA models, were good representation of the respective dimension individually, then the second step was to test for the fitting of the second-order factor model considering the two hypothesized factors together. If these constructs (latent factors) were highly correlated in the first-order factor model, a second-order factor model would provide a more parsimonious and interpretable model. A second-order factor model allowed us to test whether the hypothesized higher order factor accounted for the relations among lower order factors and it further simplified the interpretations of complex structures of the

first-order model. The second order factor model with the two factors of Consumption Expenditure with their respective indicator variables was proposed in the initial model. The hypothesis was stated as follows:

Ho: The item of Consumption Expenditure is adequately explained by the two factors namely Essential and Standard.

The following diagram shows the initially obtained second order factor model for Consumption Expenditure.(Fig 7.6)

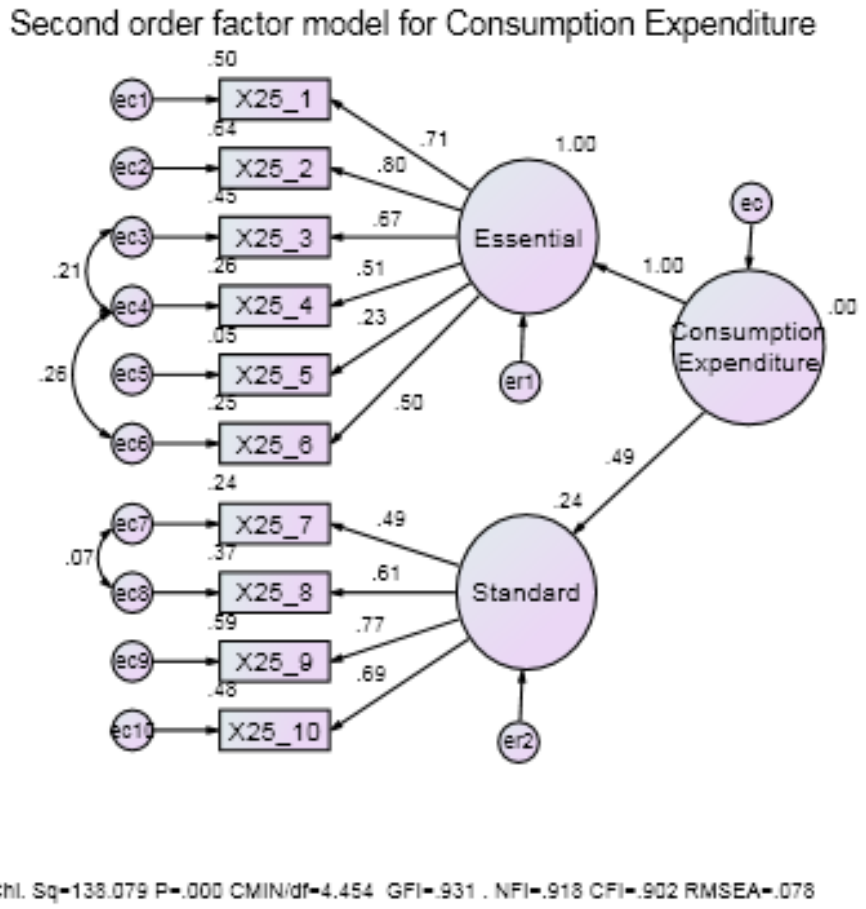

Fig 7.6 : Second order factor Model for Consumption Expenditure

The initially proposed second order factor model consisted of revised measurement models previously arrived at. The results suggest that the model is satisfactorily acceptable. The CMIN/df value is found to be 4.454 which are well below the admissible level of 5. Also the other measures namely the GFI, NFI and CFI values

are above 0.90 and the RMSEA with a value of 0.078 which makes the model satisfactorily acceptable as the value is below 0.08. Since the model is acceptable no further improvements in the model was made and the hypothesis was accepted as the latent factors, Essential and Standard explaining the higher order factor namely, Consumption Expenditure. The following table shows the unstandardised regression coefficients of the paths developed for the model.

Table 7.4 - Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P
cons1	<---	Cons	1.000			
cons2	<---	Cons	.509	.098	5.168	**
X25_10	<---	cons2	1.406	.184	7.654	**
X25_9	<---	cons2	1.673	.216	7.739	**
X25_8	<---	cons2	1.378	.178	7.732	**
X25_7	<---	cons2	1.000			
X25_6	<---	cons1	1.000			
X25_5	<---	cons1	.429	.113	3.813	**
X25_4	<---	cons1	1.056	.131	8.084	**
X25_3	<---	cons1	1.405	.172	8.150	**
X25_2	<---	cons1	1.408	.163	8.651	**
X25_1	<---	cons1	1.274	.152	8.369	**

**** - Significant at 1% level.**

The following variable names were given for the factors included in the model.

Cons – Consumption Expenditure

Cons1 - Essential

Cons2 – Standard

The above estimates are unstandardised regression estimates. That is for example 0.509 under the column estimate says that as the value of Consumption Expenditure goes up by 1, the value of Cons2 (Standard) goes up by 0.509. The values given above are the regression estimates of the corresponding independent variables. S.Es are the Standard Errors of respective regression coefficients. C.R (Critical ratio) is the ratio of regression estimate values to S.E. Probability (P) shows which regression coefficients are significantly contributing to the dependent variables.

It is seen from the above diagram that with two latent factors it was able to generate a model of respectable fit. The model shows that the CMIN value being 4.454 and RMSEA value being 0.084 both are at the acceptable level. The GFI, NFI and CFI are above 0.90. Hence the hypothesis was accepted with the two latent constructs namely, Essential and Standard factors.

II. First Order Confirmatory Factor Analysis (CFA) for Investment Factors:

1. Risk and Return

The Risk and Return factor consists of 6 items which were measured on the 5 point scale namely strongly agree, agree, neutral, disagree and strongly disagree. The proposed factors of Brand Loyalty were factor analyzed to determine if the items measured the dimensions they were intended to measure. It was expected that items related with each dimension would load high onto their expected factors, it was assumed that these items would not cross load onto other factors. The First Order Factor Model would consist of several indicator variables which will explain the latent construct they represent.

The initial First Order CFA model proposed for Risk and Return consisted of the following items.

X24_1: Security of investment

X24_2: High interest return

X24_3: Easy Investment

X24_4: Safety of money

X24_5: Liquidity

X24_6: Lesser risk

The model is tested with the following hypothesis:

Ho: The observed variables X24_1 to X24_6 load on the factor named Risk and Return.

The initial model exhibiting the relationship between the indicator variables (items) and the latent factor is given in the following diagram. The path diagram shown below gives the results of the model estimation. The values above the arrows are the regression weights of the respective variables. The values given above the rectangles are the squared multiple correlations. The variables eb1 to eb10 are the associated error terms for the respective indicator variables. The estimation and model fit statistics are given below in Fig 7.7

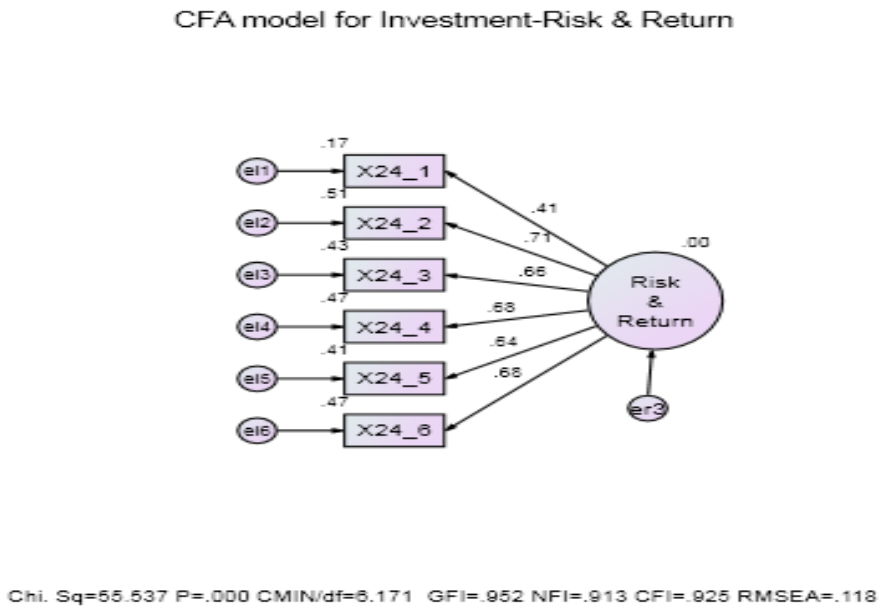

Fig 7.7 : CFA Model for Investment – Risk and Return

For the construct, Risk and return, Chi-square test statistic value is 55.537 and the associated probability is 0.000 which shows that the chi square statistics is significant (P<0.01). This suggests that the hypothesized model is not a good fit. When considering other goodness-of-fit measures, for instance, the ratio π^2/df, also indicates that the measurement model for Risk and return construct have not fitted the data well. That is, π^2/df value is found to be greater than 5. The other goodness of fit measures namely GFI, NFI and CFI are found to be above 0.90 but the RMSEA value is above 0.08, the acceptable maximum limit. Hence the model is revised by using the Modification Indices.

Table: 7.5 Modification Indices for Covariances Covariances: (Group number 1 - Default model)

	M.I.	Par Change
ei5 <--> ei6	23.801	.128
ei2 <--> ei6	4.774	-.062
ei2 <--> ei5	6.056	-.069
ei1 <--> ei3	4.404	-.083
ei1 <--> ei2	21.620	.184

The modification indices computed for the default model suggested that there was scope for improvement in the fit of the model. The M.I given in the table represent Modification Index and the arrow marks joining the error variables indicate how much the chi square value would reduce if the error terms are allowed to correlate. Par Change gives the expected change in the parameter estimates. The M.I table shows that allowing the error terms ei5 and ei64 to correlate would greatly decrease the CMIN values. The revised model incorporating the error terms correlation is given below in Fig 7.8

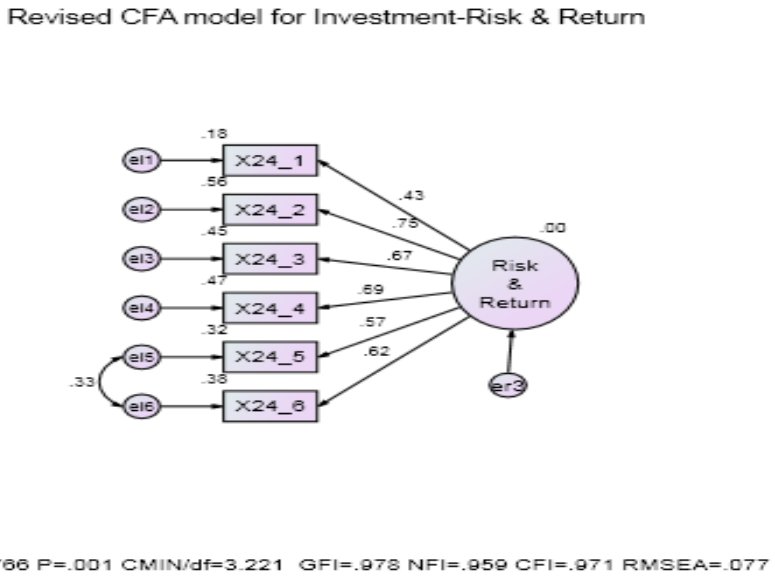

Fig 7.8 : Revised CFA Model for Investment – Risk and Return

A model of good fit is arrived at after correlating the error term variables ei5 and ei6. The model fit parameters very much qualified for a good fit. The CMIN value was 3.221 with GFI NFI and CFI all above 0.95 with RMSEA value 0.077 which meets the requirement of acceptable fit when RMSEA is between 0.05-0.08. The factor loading of all the variables from x24_1 to x24_6 have moderate to high loadings. Since the error term correlation allowed a good fit for the model. The revised model holds the hypothesis stated above.

2. First order CFA for Dependability

The second initial CFA model proposed for Dependability consisted of the following five items.

X24_7: Past performance

X24_8: Social Prestige Value

X24_9: Recommended by friends and family members

X24_10: Quality service

X24_11: Future security

X24_12: Market Stability

X24_13: Easy Withdrawals

The model is tested with the following hypothesis

Ho: the observed variables X24_7 to X24_13 load on the factor named Dependability

The initial model exhibiting the relationship between the indicator variables (items) and the latent factor is given in the following diagram (Fig 7.9)

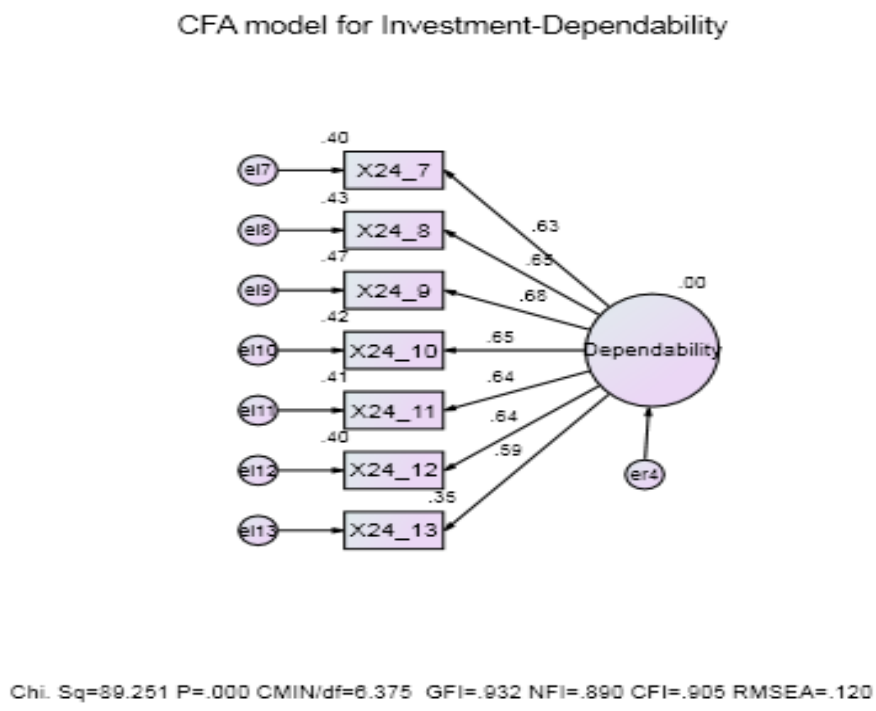

Fig 7.9 : CFA Model for Investment – Dependability

It could be seen from the model results given in the diagram that all the model fit measures are not within the admissible level. The Chi square value 89.251 which is found to be significant (P<0.001) and the CMIN value is 6.375 which is below the limit of 5. RMSEA value is higher than 0.08 which indicates that the model fit measures do not satisfy the goodness of fit criteria. The GFI, NFI and CFI are below 0.90. The standardized regression weights for all the indicator variables explain that these variables have loaded well on Dependability factor with loadings around 0.60.

Table 7.6 - Modification Indices for Covariances

	M.I.	Par Change
ei11 <--> ei12	7.562	.074
ei10 <--> ei13	4.475	.076
ei10 <--> ei12	11.497	-.107
ei9 <--> ei11	15.745	-.113
ei9 <--> ei10	42.169	.218

	M.I.	Par Change
ei8 <--> ei10	7.087	-.080
ei7 <--> ei11	4.324	.051
ei7 <--> ei9	4.703	-.060
ei7 <--> ei8	8.892	.073

The modification indices computed for the default model suggested that there was scope for improvement in the fit of the model. The M.I table shows that allowing the error terms ei9 and ei10 to correlate would decrease the CMIN values. The revised model incorporating the error terms correlation is given below in Fig 7.10

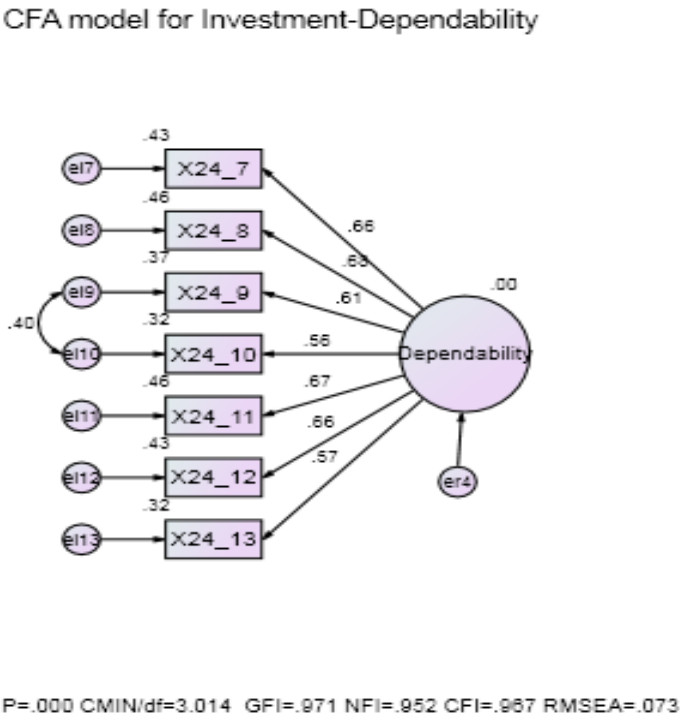

Fig 7.10 Revised CFA Model for Investment – Dependability

A model of acceptable fit was arrived at after correlating the error terms the variables eb5 and eb6. The model fit parameters qualified for a good fit. The CMIN value is 3.014 which is less than 5 with GFI NFI and CFI all above 0.95 with RMSEA value between 0.05 and 0.08 to call it as an acceptable model fit. Hence the model with the above revisions was accepted as good model. The revised model sustains the hypothesis stated above.

Factor loadings:

The standardized regression weights for each of observed variables of Dependability are given with the leading arrows. These are nothing but the factor loading of the each variable on the latent variable Dependability. The higher the loading the better the variable explains about the factor. The factor loadings of the variables range between 0.55 to 0.70 indicating that most of the variables explain the Dependability factor.

Second Order Factor Model for Investment Practices

The factor models which are measurement models explaining the relationship between the three latent constructs namely Risk and return and Dependability and their respective indicator variables were finally arrived at in the revised model. The goodness of fit indices for these measurement models were satisfactory. In order to fit a second order factor model, which was to see whether the latent factors obtained in the individual measurement CFA models, were good representation of the respective dimensions individually, then the second step was to test for the fitting of the first-order factor model considering the two hypothesized factors together. If these constructs (latent factors) were highly correlated in the first-order factor model, a second-order factor model would provide a more parsimonious and interpretable model. A second-order factor model allowed us to test whether the hypothesized higher order factor accounted for the relations among lower order factors and it further simplified the interpretations of complex structures of the first-order model. The second order factor model with the two factors of Investment with their respective indicator variables was proposed in the initial model. The hypothesis is stated as follows:

Ho: The items of Investment are adequately explained by the two factors namely Risk and Return and Dependability.

The following diagram shows the initially obtained second order factor model for Investment. (Fig 7.11)

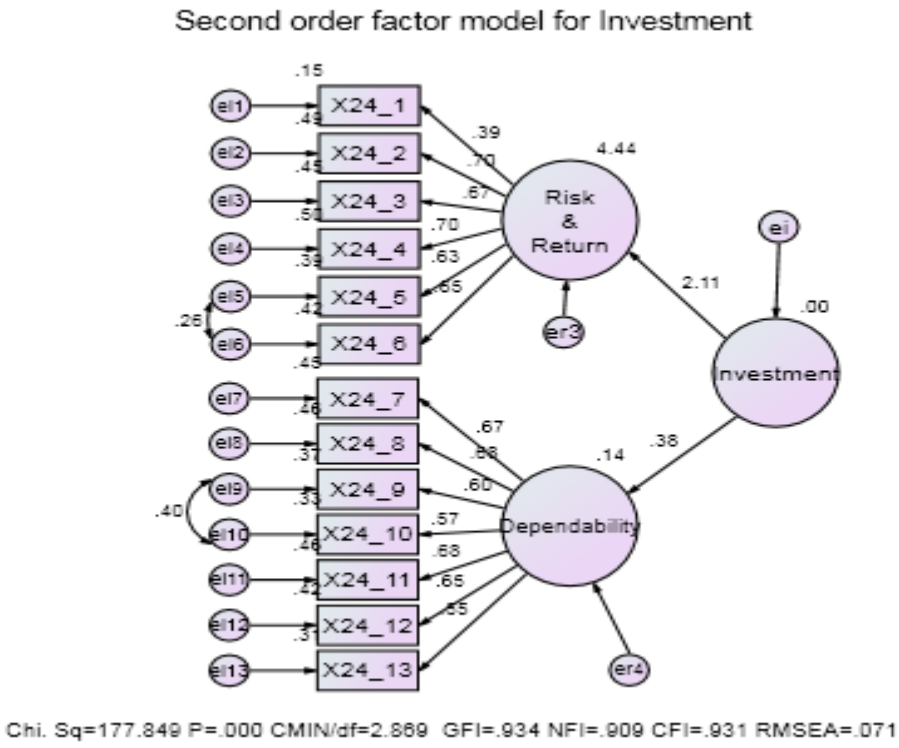

Fig 7.11 Second order Model for Investment

The proposed second order factor model consisted of revised measurement models previously arrived at. The results suggest that the model is acceptable. The CMIN/df value is found to be 2.869 which is well below the admissible level of 5. Also the other measures namely the GFI, NFI and CFI values are above 0.90 and the RMSEA with a value of 0.071 which makes the model satisfactorily acceptable since the value is above 0.05 and below 0.08. Since the model is acceptable no further improvements in the model was made and the hypothesis was accepted as the latent factors, Risk and return and Dependability explaining the higher order factor namely, Investment. The following table shows the unstandardised regression coefficients of the paths developed for the model.

Table 7.7 - Regression Weights

	Estimate	S.E.	C.R.	P	Label
inv1 <--- Invest	1.000				
inv2 <--- Invest	.238				
X24_1 <--- inv1	1.000				
X24_2 <--- inv1	1.659	.243	6.824	***	
X24_3 <--- inv1	1.513	.225	6.721	***	
X24_4 <--- inv1	1.674	.245	6.832	***	
X24_5 <--- inv1	1.297	.198	6.562	***	
X24_6 <--- inv1	1.402	.211	6.633	***	
X24_7 <--- inv2	1.000				
X24_8 <--- inv2	1.066	.096	11.130	***	
X24_9 <--- inv2	1.091	.108	10.064	***	
X24_10 <--- inv2	1.056	.110	9.560	***	
X24_11 <--- inv2	1.062	.095	11.135	***	
X24_12 <--- inv2	1.056	.099	10.684	***	
X24_13 <--- inv2	.985	.106	9.328	***	

The following variable names were given for the factors included in the model.

Invest – Investment

Inv1 – Risk and return

Inv2 – Dependability

BL3 – Switchover Intention

The above estimates are unstandardised regression estimates. That is for example 0.238 under the column estimate says that as the value of Investment goes up by 1, the value of Inv2 (Dependability) goes up by 0.238. This explains the fit of the model that as they Investment factor on the whole increases, the Dependability on others in investment goes up. The values given above are the regression estimates of the corresponding independent variables. S.Es is the Standard Errors of respective regression coefficients. C.R (Critical ratio) is the ratio of regression estimate values to S.E. Probability(P) shows which regression coefficients are significantly contributing to the dependent variables (*** - P<.001).

It is seen from the above diagram that with two latent factors it was able to generate a model of respectable fit. The model shows that the CMIN value being 2.869 and RMSEA value being 0.078 both are below the acceptable limits. The GFI, NFI and CFI are above 0.90. Hence the hypothesis was accepted with the three latent constructs namely, Risk and return and Dependability.

III. First Order Confirmatory Factor Analysis (CFA) for Purchase Behaviour factors:

1. Prudent Buying

The Prudent buying factor consists of 6 items which were measured on the 5 point scale namely strongly agree, agree, neutral, disagree and strongly disagree. The proposed factors of Purchase Behaviour were factor analyzed to determine if the items measured the dimensions they were intended to measure. It was expected that items related with each dimension would load high onto their expected factors, it was assumed that these items would not cross load onto other factors. The First Order Factor Model would consist of several indicator variables which will explain the latent construct they represent.

The initial First Order CFA model proposed for Prudent buying consisted of the following items.

X28_10: I ensure that I purchase items which are reasonable price

X28_14: I always have small amount of cash to prevent impulse buying

X28_17: I did not spend of item which I do not require

X28_18: My purchase focus on necessary items

X28_19: It is important to me to be aware of all the alternatives before buying and Expensive appliances

X28_20: I prepare a list of required items ahead of time before shopping

The model is tested with the following hypothesis:

Ho: the observed variables X28_10, X28_14 and X28_17 to X28_20 load on the factor named Prudent Buying.

The initial model exhibiting the relationship between the indicator variables (items) and the latent factor is given in the following diagram. The path diagram shown below gives the results of the model estimation. The values above the arrows are the regression weights of the respective variables. The values given above the rectangles are the squared multiple correlations. The associated error terms for the respective indicator variables are also drawn. The estimation and model fit statistics are given below in Fig 7.12

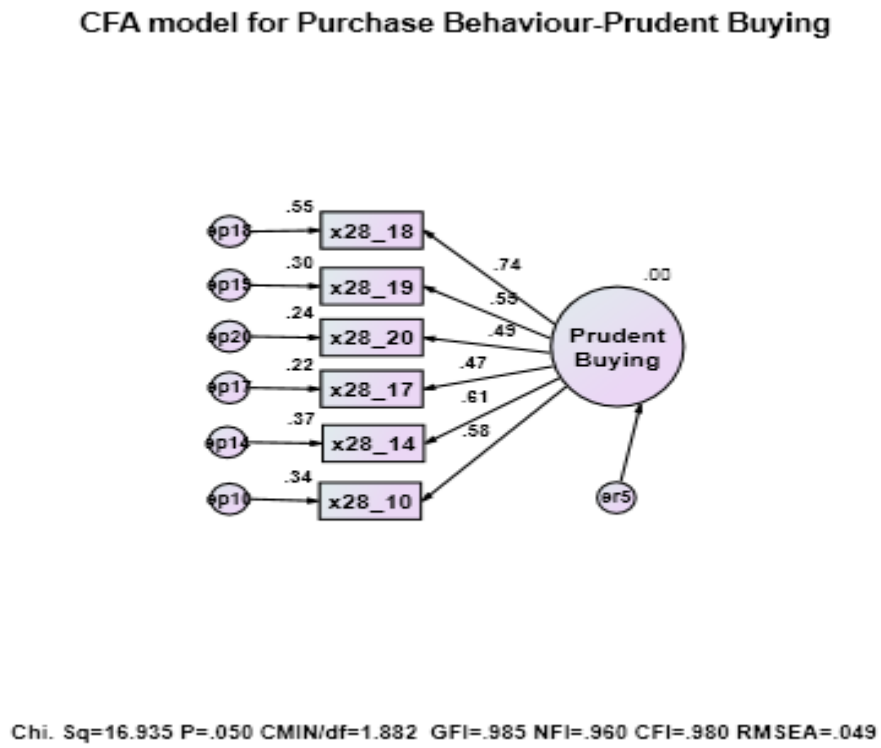

Fig 7.12 : CFA Model for Purchase Behaviour – Prudent Buying

Factor loadings:

The path diagram given above shows the standardized regression coefficients and the squared multiple correlations. The standardized regression weights (factor loadings) for each of observed variables of Prudent Buying are given with the leading arrows. The higher the loading the better the variable explains about the factor. The path shows that the variable X28_18 loads higher on Prudent buying factor compared to other variables. The factor loadings of other variables fall around 0.50 indicating that most of the variables explain the prudent buying.

For the construct, Prudent buying, Chi-square test statistic value is 16.935 and the associated probability is 0.000 which shows that the chi square statistics is significant (P<0.001). But π^2/df value is found to be lesser than 5. The other goodness of fit measures namely GFI, NFI and CFI are found to be above 0.95 and RMSEA value is below 0.05. Hence the model was accepted without any modifications and the hypothesis is accepted.

First order CFA for Product awareness

The second initial CFA model proposed for Product awareness consisted of the following five items.

X28_11: I prefer online shopping

X28_12: I pay attention to advertisement for products I am interested in

X28_13: I focus more on prestigious products

X28_15: For expensive items, I spend a lot of time and effort making my purchase Decision since it is to get the best deal

X28_16: I am interested to prefer time saving purchases

The model is tested with the following hypothesis

Ho: The observed variables X28_11 to X28_13, X28_15 and X28_16 load on the factor named Product Awareness.

The initial model exhibiting the relationship between the indicator variables (items) and the latent factor is given in the following diagram. (Fig 7.13)

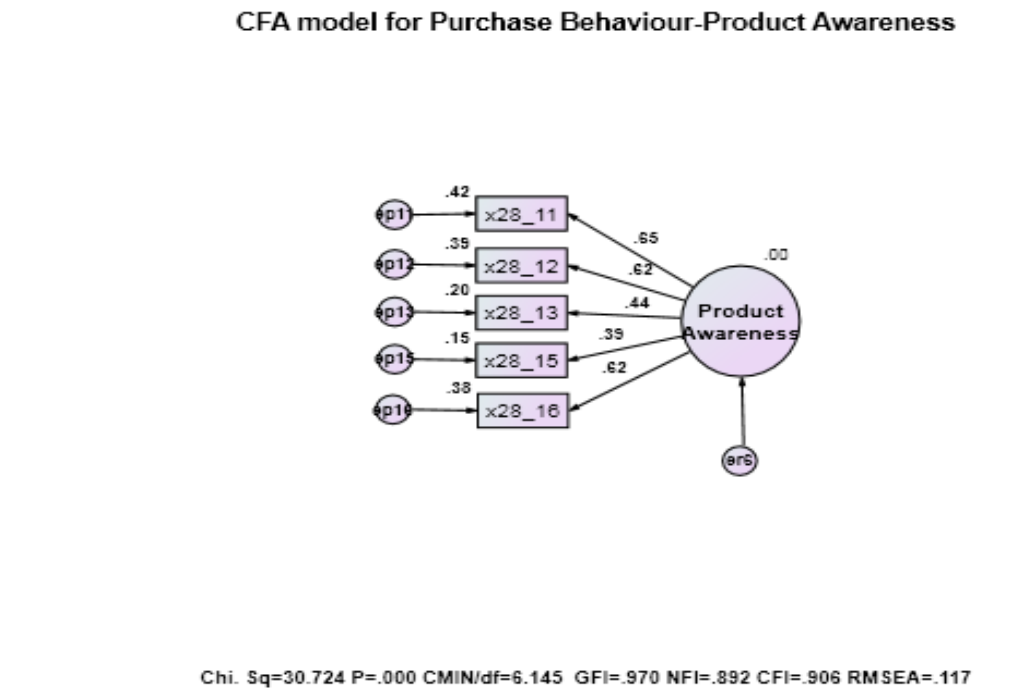

Fig 7.13 : CFA Model for Purchase Behaviour – Product Awareness

All the model fit parameters are not within the acceptable limit and hence a revised model was drawn with error terms correlating using modification indices arrived at. The revised model is given below. (Fig 7.14)

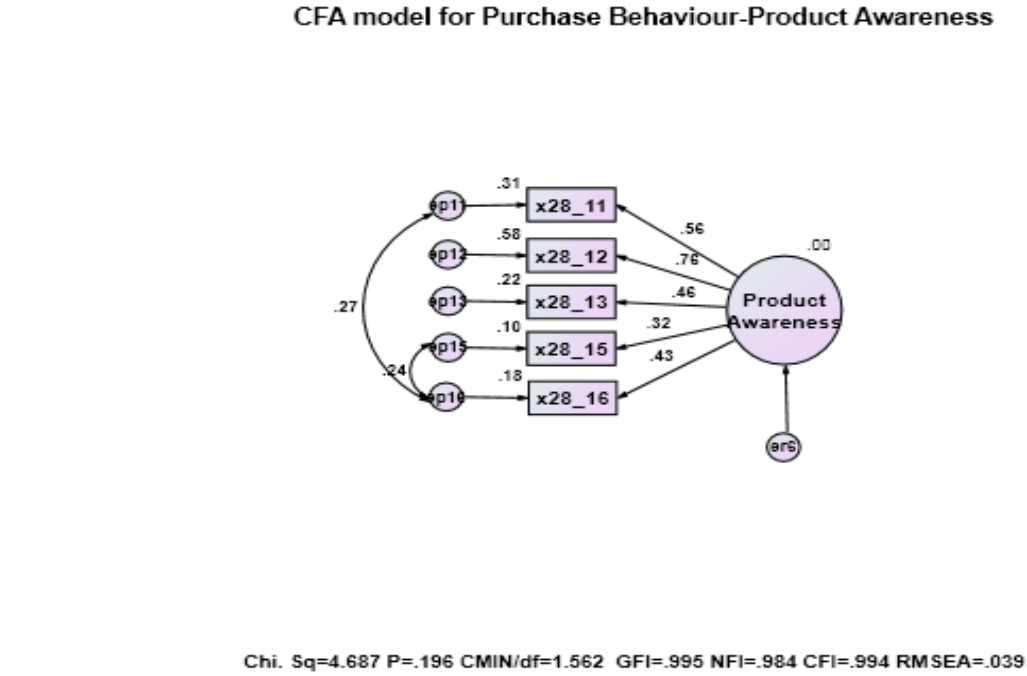

Fig 7.14 : Revised CFA Model for Purchase Behaviour – Product Awareness

For the construct, Product Awareness, Chi-square test statistic value is 4.687 and the associated probability is greater than 0.05 which shows that the chi square statistics is not significant (P>0.05). Also the π^2/df value is found to be lesser than 5. The other goodness of fit measures namely GFI, NFI and CFI are found to be above 0.95 and RMSEA value is below 0.05. Hence the model was accepted without any further modifications and the hypothesis was accepted.

The path diagram above shows the standardized estimates for the observed variables. These weights are independent of the units with which the variables were measured and hence comparable. The path diagram given above shows the standardized regression coefficients and the squared multiple correlations. The standardized regression weights for each of observed variables of Price and Quality are given with the leading arrows. These are nothing but the factor loading of the each variable on the latent variable Accessibility. The variable x28_12 with higher loading explains better about the factor. The factor loadings of the variables explain the Product awareness factor.

3. First order CFA for Quality Conscious

The second initial CFA model proposed for Quality Conscious consisted of the following three items.

X28_7: I prefer to purchase products when offered with free gifts

X28_8: I always purchase cheaper products

X28_9: Quality is the main criteria for my purchase

The model is tested with the following hypothesis

Ho: The observed variables X28_7 to X28_9 load on the factor named Quality Conscious.

The initial model exhibiting the relationship between the indicator variables (items) and the latent factor is given in the following diagram.(Fig 7.15)

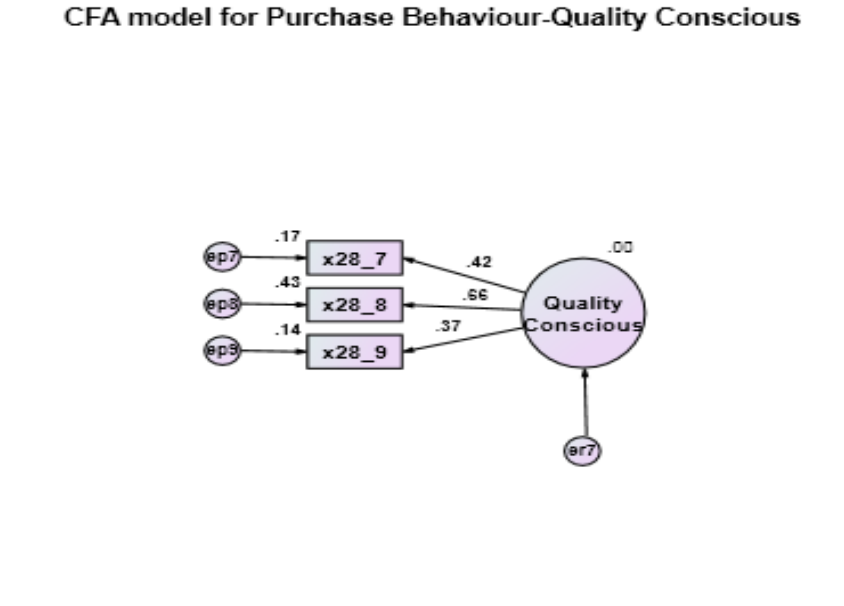

Fig 7.15 : CFA Model for Purchase Behaviour – Quality Conscious

For the construct, Quality conscious, Chi-square test statistic value is 2.287 and the associated probability is greater than 0.05 which shows that the chi square statistics is not significant (P>0.05). Also the π^2/df value is found to be lesser than 5. The other goodness of fit measures namely GFI, NFI and CFI are found to be above 0.95 and RMSEA value is below 0.05. Hence the model was accepted without any further modifications and the hypothesis is accepted.

The path diagram above shows the standardized estimates for the observed variables. These weights are independent of the units with which the variables were measured and hence comparable. The path diagram given above shows the standardized regression coefficients and the squared multiple correlations. The standardized regression weights for each of observed variables of Price and Quality are given with the leading arrows. These are nothing but the factor loading of the each variable on the latent variable Accessibility. The variable x28_8 with higher loading explains better about the factor. The factor loadings of the variables explain the Quality conscious factor.

4. First order CFA for Family involvement

The second initial CFA model proposed for Family involvement consisted of the following three items.

X28_4: I usually manage to carry my point with my family members

X28_5: I often ask my spouse or children├ s opinion before buying something

X28_6: I often do shopping together with my family

The model is tested with the following hypothesis

Ho: The observed variables X28_4 to X28_6 load on the factor named Family involvement.

The initial model exhibiting the relationship between the indicator variables (items) and the latent factor is given in the following diagram.(Fig 7.16)

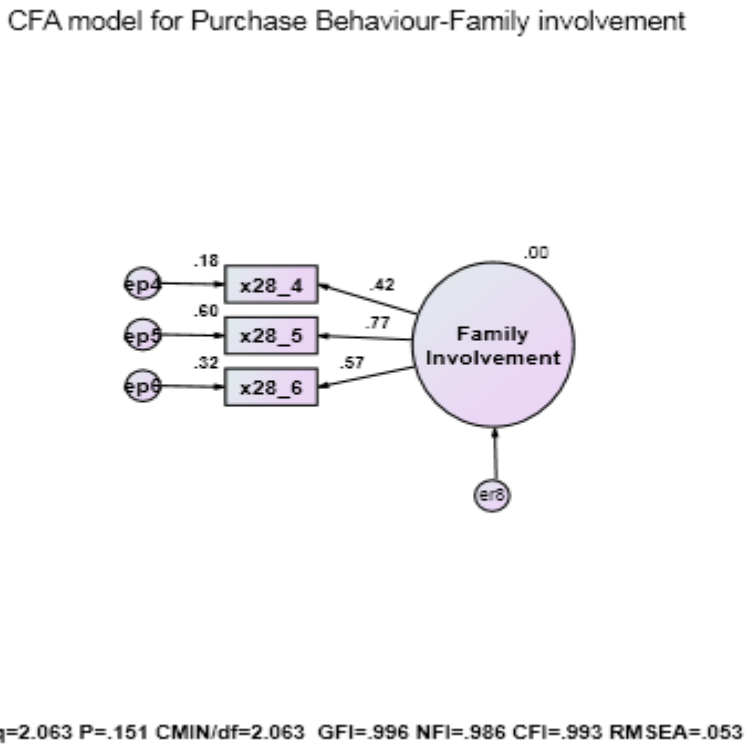

Fig 7.16 : CFA Model for Purchase Behaviour – Family involvement

For the construct, Quality conscious, Chi-square test statistic value is 2.063 and the associated probability is greater than 0.05 which shows that the chi square statistics is

not significant (P>0.05). Also the π^2/df value is found to be lesser than 5. The other goodness of fit measures namely GFI, NFI and CFI are found to be above 0.95 and RMSEA value is between 0.05 and 0.08 Hence the model was accepted without any further modifications and the hypothesis is accepted.

The path diagram above shows the standardized estimates for the observed variables. These weights are independent of the units with which the variables were measured and hence comparable. The path diagram given above shows the standardized regression coefficients and the squared multiple correlations. The standardized regression weights for each of observed variables of Price and Quality are given with the leading arrows. These are nothing but the factor loading of the each variable on the latent variable Accessibility. The variable x28_5 with higher loading explains better about the factor. The factor loadings of the variables are within the range of 0.40 and 0.77 and explain the Family involvement factor.

5. First order CFA for Buying Dependence

The second initial CFA model proposed for Buying Dependence consisted of the following three items.

X28_1: I depend on my children/spouse when I buy something

X28_2: Generally my children decide about what to buy

X28_3: I am financially independent to purchase any products or services

The model is tested with the following hypothesis

Ho: The observed variables X28_1 to X28_3 load on the factor named Buying Dependence.

The initial model exhibiting the relationship between the indicator variables (items) and the latent factor is given in the following diagram.(Fig 7.17)

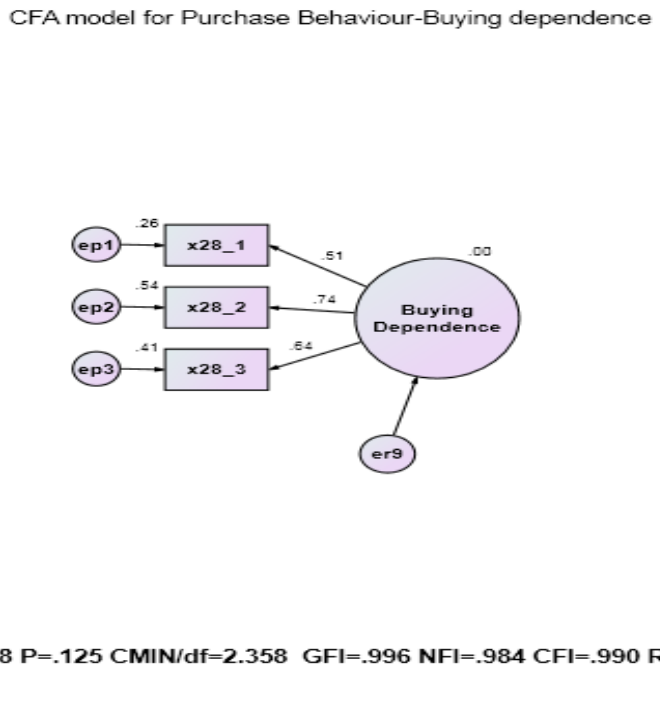

Fig 7.17 : CFA Model for Purchase Behaviour – Buying Dependence

For the construct, Buying Dependence, Chi-square test statistic value is 2.358 and the associated probability is greater than 0.05 which shows that the chi square statistics is not significant (P>0.05). Also the π^2/df value is found to be lesser than 5. The other goodness of fit measures namely GFI, NFI and CFI are found to be above 0.95 and RMSEA value is below 0.05. Hence the model was accepted without any further modifications and the hypothesis is accepted.

The path diagram above shows the standardized estimates for the observed variables. These weights are independent of the units with which the variables were measured and hence comparable. The path diagram given above shows the standardized regression coefficients and the squared multiple correlations. The standardized regression weights for each of observed variables of Buying Dependence are given with the leading arrows. These are nothing but the factor loading of the each variable on the latent variable Buying Dependence. The variable x28_2 with higher loading explains better about the factor. The factor loadings of the variables range between 0.5 and 0.75 explain the Buying Dependence factor.

Second Order Factor Model for Purchase Behaviour

The factor models which are measurement models explaining the relationship between the five latent constructs namely Prudent Buying, Product Awareness, Quality Consciousness, Family Involvement and Buying dependence and their respective indicator variables were finally arrived at. The goodness of fit indices for these measurement models were satisfactory. In order to fit a second order factor model, which was to see whether the latent factors obtained in the individual measurement CFA models, were good representation of the respective dimensions individually, then the second step was to test for the fitting of the first-order factor model considering the two hypothesized factors together. If these constructs (latent factors) were highly correlated in the first-order factor model, a second-order factor model would provide a more parsimonious and interpretable model. A second-order factor model allowed us to test whether the hypothesized higher order factor accounted for the relations among lower order factors and it further simplified the interpretations of complex structures of the first-order model. The second order factor model with the five factors of Purchase Behaviour with their respective indicator variables was proposed in the initial model. The hypothesis is stated as follows:

Ho: The factors of Purchase Behaviour are adequately explained by the five factors namely Prudent Buying, Product Awareness, Quality Consciousness, Family Involvement and Buying dependence.

The following diagram shows the initially obtained second order factor model for Purchase Behaviour. (Fig 7.18)

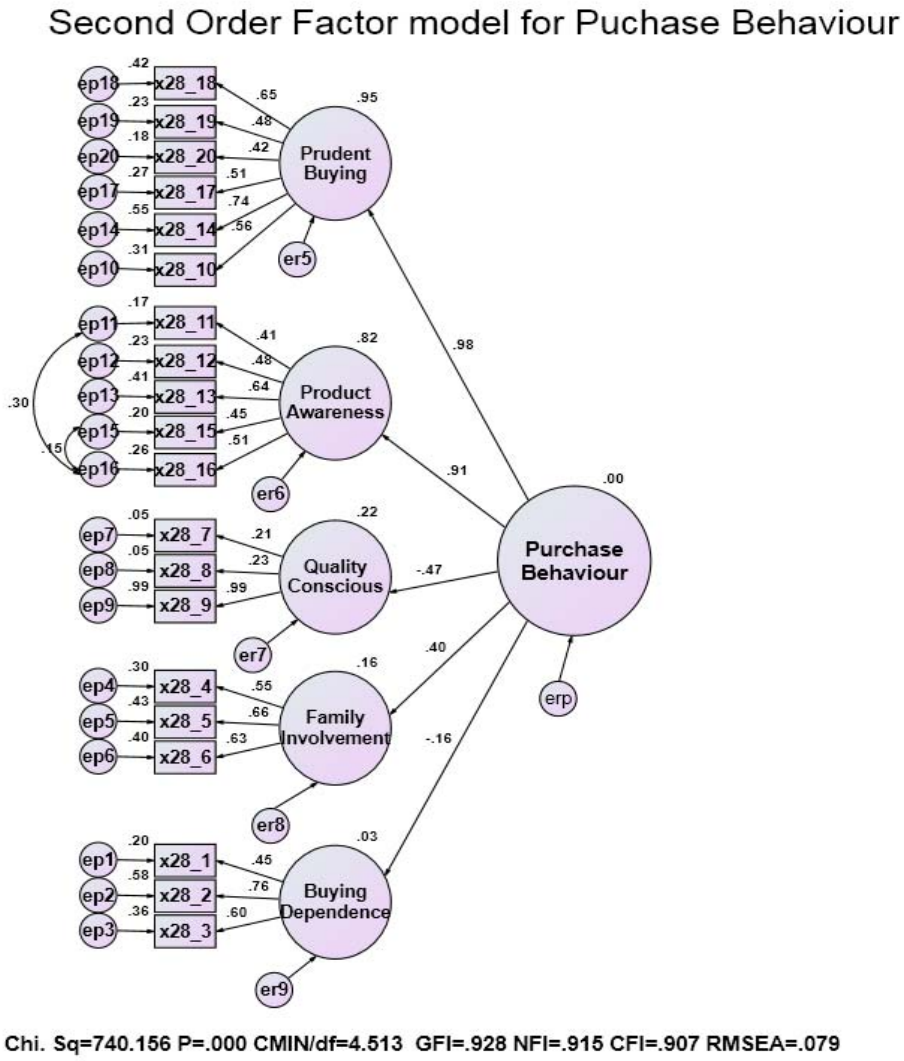

Fig 7.18 : Second order Model for Purchase Behaviour

The proposed second order factor model consisted of measurement models previously arrived at. The results suggest that the model is acceptable. The CMIN/df value is found to be 4.513 which are below the admissible level of 5. Also the other measures namely the GFI, NFI and CFI values are above 0.90 and the RMSEA with a value of 0.079 which makes the model acceptable since the value is above 0.05 and below 0.08. Since the model is acceptable no further improvements in the model was made and the hypothesis is accepted as the five latent factors explaining Purchase Behaviour. The following table shows the unstandardised regression coefficients of the paths developed for the model.

Table 7.8 - Regression Weights

			Estimate	S.E.	C.R.	P
PB1	<---	PB	1.000			
PB2	<---	PB	1.112	.208	5.344	***
PB3	<---	PB	-.275	.078	-3.517	***
PB4	<---	PB	.529	.120	4.405	***
PB5	<---	PB	-.140	.065	-2.174	*
x28_18	<---	PB1	1.228	.138	8.924	***
x28_19	<---	PB1	.988	.136	7.236	***
x28_20	<---	PB1	.875	.133	6.586	***
x28_17	<---	PB1	1.094	.143	7.674	***
x28_14	<---	PB1	1.553	.162	9.609	***
x28_10	<---	PB1	1.000			
x28_11	<---	PB2	1.000			
x28_12	<---	PB2	.993	.174	5.704	***
x28_13	<---	PB2	1.118	.175	6.387	***
x28_15	<---	PB2	.720	.131	5.504	***
x28_16	<---	PB2	1.076	.154	6.982	***
x28_7	<---	PB3	1.000			
x28_8	<---	PB3	1.098	.356	3.082	**
X28_9	<---	PB3	3.603	.855	4.214	***
X28_4	<---	PB4	1.000			
X28_5	<---	PB4	1.209	.178	6.797	***
X28_6	<---	PB4	1.281	.188	6.816	***
X28_1	<---	PB5	1.000			
X28_2	<---	PB5	2.442	.442	5.530	***
X28_3	<---	PB5	1.943	.312	6.230	***

The following variable names were given for the factors included in the model.

PB - Purchase Behaviour

PB1 - Prudent Buying

PB2 - Product Awareness

PB3 - Quality Consciousness

PB4 - Family Involvement

PB5 - Buying dependence

The above estimates are unstandardised regression estimates. That is for example 1.112 under the column estimate says that as the value of Purchase Behaviour goes up by 1, the value of PB2 (Product Awareness) goes up by 1.112. This explains as the opinion regarding Purchase Behaviour goes up, the perception towards Product Awareness also goes up. The values given above are the regression estimates of the corresponding independent variables. S.Es are the Standard Errors of respective regression coefficients. C.R (Critical ratio) is the ratio of regression estimate values to S.E. Probability (P) shows which regression coefficients are significantly contributing to the dependent variables.

It is seen from the above diagram that with five latent factors it was able to generate a model of respectable fit. The model shows that the CMIN value being 4.513 and RMSEA value being 0.079 both are below the acceptable limits. The GFI, NFI and CFI are above 0.90. Hence the hypothesis was accepted with the five latent constructs namely, Prudent Buying, Product Awareness, Quality Conscious, Family Involvement and Buying Dependence.

IV. First Order Confirmatory Factor Analysis (CFA) for Life Satisfaction:

1. Personal Attendance

The Personal Attendance factor of Life Satisfaction consists of 6 items which were measured on the 5 point scale namely Highly Satisfied, Satisfied, Neutral, Dissatisfied, and Highly Dissatisfied. The proposed factors of Life Satisfaction were factor analyzed to determine if the items measured the dimensions they were intended to measure. It was expected that items related with each dimension would load high onto their expected factors, it is assumed that these items would not cross load onto other factors. The First Order Factor Model would consist of several indicator variables which will explain the latent construct they represent.

The initial First Order CFA model proposed for Personal Attention consisted of the following items.

X29_1: Financial independency

X29_2: Usage of modern technologies

X29_3: Life style

X29_8: Health Conditions

X29_9: Saving & Investment

X29_10: Involvement in family decision making

The model is tested with the following hypothesis:

Ho: The observed variables X29_1 to X29_3 and X29_8 thru X29_10 load on the factor named Personal Attention.

The initial model exhibiting the relationship between the indicator variables (items) and the latent factor is given in the following diagram. The path diagram shown below gives the results of the model estimation. The values above the arrows are the regression weights of the respective variables. The values given above the rectangles are the squared multiple correlations. The variables es1 to es3 and es8 to es10 are the associated error terms for the respective indicator variables. The estimation and model fit statistics are given below. (Fig 7.19)

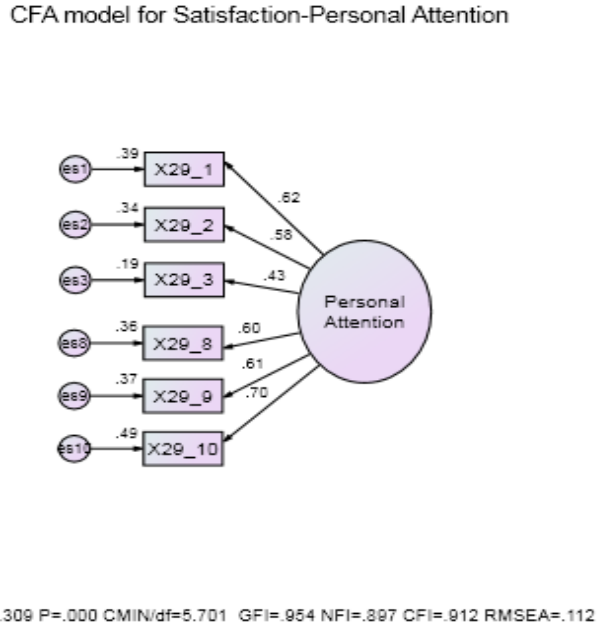

Fig 7.19 : CFA Model for Satisfaction – Personal Attention

Factor loadings:

The path diagram given above shows the standardized regression coefficients and the squared multiple correlations. The standardized regression weights (factor loadings) for each of observed variables of Brand Features are given with the leading arrows. The higher the loading the better the variable explains about the factor. The path shows that the variable X29_1 and X29_10 load higher on Personal Attention factor compared to other variables. The factor loadings of other variables range between 0.40 to 0.60 indicating that most of the variables explain the Personal Attention.

For the construct, Personal Attention, Chi-square test statistic value is 51.309 and the associated probability is 0.000 which shows that the chi square statistics is significant (P<0.001). The π^2/df, indicates that the measurement model for Personal Attention construct have chances of improvement since the value is found to be just greater than 5. The other goodness of fit measures namely GFI and CFI are found to be above 0.95 but the RMSEA value is above 0.08, much higher than the limit value of 0.08. Hence the model was revised by using the Modification Indices. Modification indices (MI) were given by AMOS to improve the model fit by allowing correlations between error terms and interdependence of the scales in the analysis. The model fitting could be improved after modification, and hence this is performed in this study to have a better fit.

Table 7.9 - Modification Indices for CovariancesCovariances: (Group number 1 - Default model)

	M.I.	Par Change
es9 <--> es10	7.910	.102
es3 <--> es10	9.876	-.120
es2 <--> es10	7.731	-.085
es2 <--> es9	5.831	-.080
es2 <--> es3	21.130	.158
es1 <--> es2	8.160	.071

The modification indices computed for the default model suggested that there was scope for improvement in the fit of the model. The M.I given in the table represent Modification Index and the arrow marks joining the error variables indicate how much the chi square value would reduce if the error terms are allowed to correlate. Par Change gives the expected change in the parameter estimates. The M.I table shows that allowing the error terms es2 and es3 to correlate would greatly decrease the CMIN values. In the beginning the error terms es2 and es3 were allowed to correlate and the results were observed. Additional error terms correlations were drawn if necessary to improve the model fit. The revised model incorporating the error terms correlation is given below.(Fig 7.20)

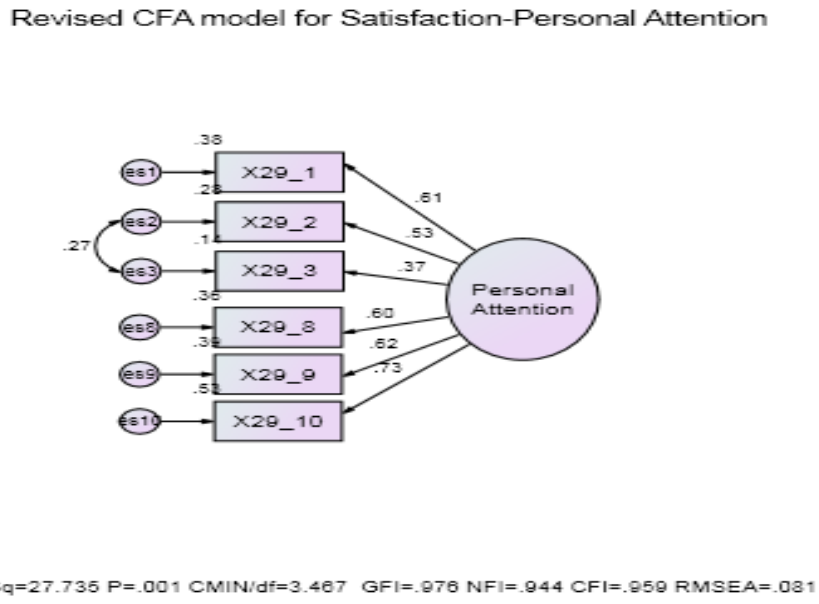

Fig 7.20 : Revised CFA Model for Satisfaction – Personal Attention

A model of good fit was arrived at after correlating the error term variables es2 and es3. The model fit parameters very much qualified for a best fit. The CMIN value was 3.467 with GFI NFI and CFI all above 0.95 with RMSEA value 0.081 which meets the requirement of acceptable fit even though RMSEA is just above 0.08. The factor loading of all the variables from X29_1 to X29_3 and X29_8 to X29_10 have moderate to high loadings. Since the error term correlation allowed a good fit for the model, further inclusion of error term variables for correlations suggested by MI were not included. The revised model holds the hypothesis stated above.

First order CFA for Personal enjoyment

The second initial CFA model proposed for Personal enjoyment consisted of the following six items.

X29_4: Utilization of time after retirement

X29_5: Level of enjoyment in pilgrimage tour

X29_6: Spending of leisure time

X29_7: Expenditure pattern

X29_11: Economic Security

X29_12: Own status

The model is tested with the following hypothesis

Ho: The observed variables X29_4 to X29_7, X29_11 and X29_12 PC9 load on the factor named Personal Enjoyment

The initial model exhibiting the relationship between the indicator variables (items) and the latent factor is given in the following diagram.(Fig 7.21)

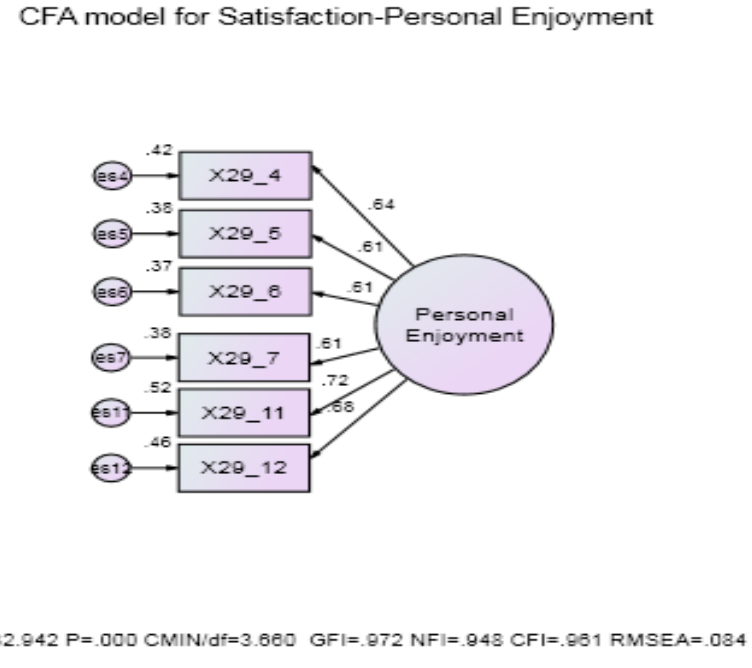

Fig 7.21 : CFA Model for Satisfaction – Personal Enjoyment

The CMIN value was 3.660 which is less than 5 with GFI NFI and CFI all above 0.90 with RMSEA value 0.084 which is less than 0.05 but greater than 0.08 indicates an acceptable model fit can be obtained by use of modification indices. The modification indices are given below.

Table 7.10 - Modification Indices for Covariances

	M.I.	Par Change
es11 <--> es12	7.078	.074
es6 <--> es12	6.314	-.091
es6 <--> es7	16.413	.162

The modification indices computed for the default model suggested that there was scope for improvement in the fit of the model. The M.I given in the table represent Modification Index and the arrow marks joining the error variables indicate how much the chi square value would reduce if the error terms are allowed to correlate. Par Change gives the expected change in the parameter estimates. The M.I table shows that allowing the error terms es6 and es7 to correlate would greatly decrease the CMIN values. The revised model incorporating the error terms correlation is given below.(Fig 7.22)

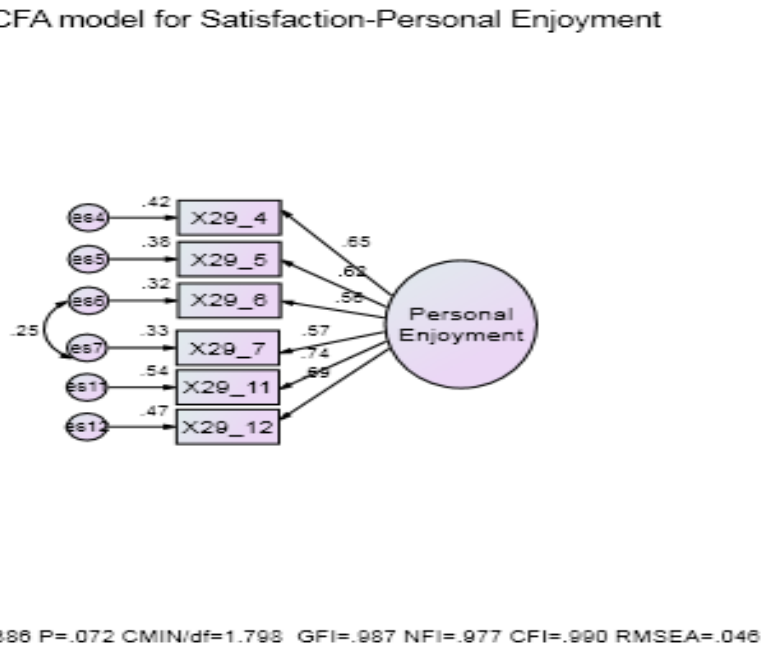

Fig 7.22 : Revised CFA Model for Satisfaction – Personal Enjoyment

A model of good fit was arrived at after correlating the error term variables es6 and es7. The model fit parameters very much qualified for a good fit. The CMIN value was 1.798 with GFI NFI and CFI all above 0.95 with RMSEA value 0.046 which meets the requirement of acceptable fit when RMSEA is below 0.05. The factor loading of all the variables have moderate to high loadings. Since the error term correlation allowed a good fit for the model. The revised model holds the hypothesis stated above.

Factor loadings:

The path diagram above shows the standardized estimates for the observed variables. These weights are independent of the units with which the variables were measured and hence comparable. The path diagram given above shows the standardized regression coefficients and the squared multiple correlations. The standardized regression weights for each of observed variables of Personal Enjoyment are given with the leading arrows. These are nothing but the factor loading of the each variable on the latent variable Personal Enjoyment. The variable X29_6 with lower loading explains lesser about the factor. The factor loadings of the variables range between 0.55 to 0.75 indicating that most of the variables explain the Personal Enjoyment factor.

Second Order Factor Model for Satisfaction

The factor models which are measurement models explaining the relationship between the two latent constructs namely Personal Attention and Personal Enjoyment and their respective indicator variables were finally arrived at with necessary revisions. The goodness of fit indices for these revised measurement models were satisfactory. In order to fit a second order factor model, which was to see whether the latent factors obtained in the individual measurement CFA models, were good representation of the respective dimensions individually, then the second step was to test for the fitting of the first-order factor model considering the two hypothesized factors together. If these constructs (latent factors) were highly correlated in the first-order factor model, a second-order factor model would provide a more parsimonious and interpretable model. A second-order factor model allowed us to test whether the hypothesized higher order factor accounted for the relations among lower order factors and it further simplified the

interpretations of complex structures of the first-order model. The second order factor model with the two factors of Satisfaction with their respective indicator variables was proposed in the initial model. The hypothesis is stated as follows:

Ho: The factors of Satisfaction are adequately explained by the two factors namely Personal Attention and Personal Enjoyment.

The following diagram shows the initially obtained second order factor model for Satisfaction. (Fig 7.23)

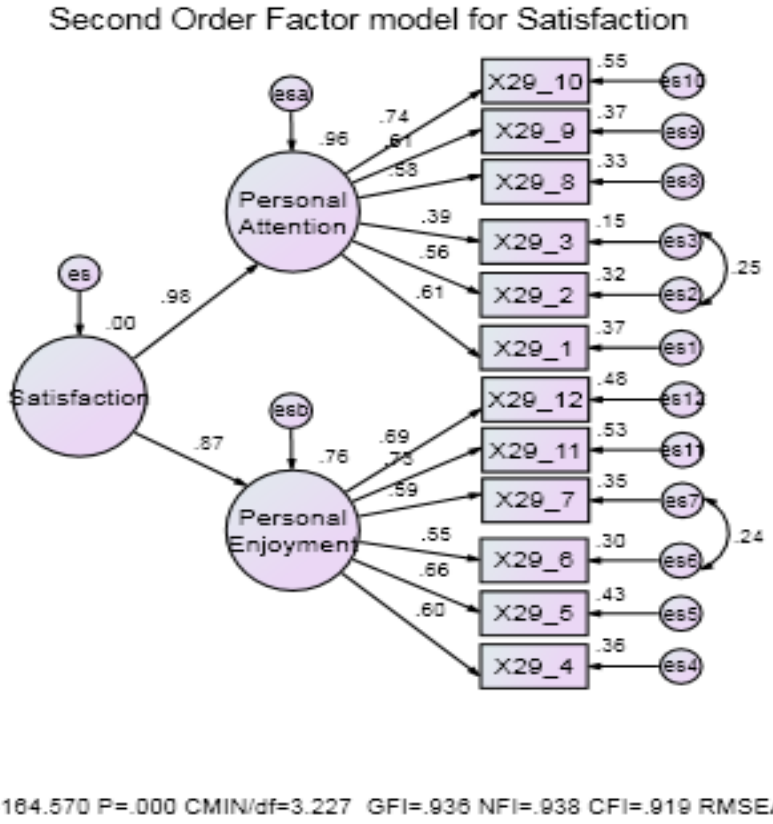

Fig 7.23 : Second Order Factor Model for Satisfaction

The proposed second order factor model consisted of measurement models previously arrived at. The results suggest that the model is acceptable. The CMIN/df value is found to be 3.227 which is well below the admissible level of 5. Also the other measures namely the GFI, NFI and CFI values are above 0.90 and the RMSEA with a value of 0.077 which makes the model acceptable since the value is above 0.05 and

below 0.08. Since the model is acceptable no further improvements in the model was not made and the hypothesis is accepted as the latent factors, Personal Attention and Personal Enjoyment explaining the higher order factor namely, Satisfaction. The following table shows the unstandardised regression coefficients of the paths developed for the model.

Table 7.11 - Regression Weights

			Estimate	S.E.	C.R.	P	Label
sat1	<---	Sat	1.000				
sat2	<---	Sat	1.084	.133	8.143	***	
X29_1	<---	sat1	1.000				
X29_2	<---	sat1	1.006	.115	8.721	***	
X29_3	<---	sat1	.807	.126	6.421	***	
X29_8	<---	sat1	1.500	.169	8.893	***	
X29_9	<---	sat1	1.319	.143	9.255	***	
X29_10	<---	sat1	1.581	.150	10.539	***	
X29_4	<---	sat2	1.000				
X29_5	<---	sat2	1.091	.111	9.819	***	
X29_6	<---	sat2	1.078	.126	8.587	***	
X29_7	<---	sat2	1.001	.110	9.095	***	
X29_11	<---	sat2	1.200	.114	10.484	***	
X29_12	<---	sat2	1.102	.108	10.162	***	

The following variable names were given for the factors included in the model.

Sat – Satisfaction

Sat1– personal Attention

Sat2 – Personal Enjoyment

The above estimates are unstandardised regression estimates. That is for example 1.0846 under the column estimate says that as the value of Satisfaction goes up by 1, the value of Sat2 (Personal Enjoyment) goes up by 1.084. The values given above are the regression estimates of the corresponding independent variables. S.Es are the Standard

Errors of respective regression coefficients. C.R (Critical ratio) is the ratio of regression estimate values to S.E. Probability(P) shows which regression coefficients are significantly contributing to the dependent variables (*** - P<.001).

The objective of the study is to understand the relationship between consumption and investment practices and its dimensions with Satisfaction of retired households. Purchase Behaviour factors are assumed to mediate the effect of Consumption Factors and Investment Practices Factors on Satisfaction. The following hypotheses were framed based on the conceptual research model and the objectives given at the start of SEM discussion are given below

Ho1: There is a direct positive relationship between Consumption factors and satisfaction.

Ho2: There is a direct positive relationship between Investment Factors and Satisfaction.

Ho3: There is a direct positive relationship between Purchase Behaviour Factors and Satisfaction.

Ho4: There is a mediation effect played by Purchase Behaviour between Consumption and Satisfaction.

Ho5: There is a mediation effect played by Purchase Behaviour between Investment and Satisfaction.

After attaining an acceptable level of fit with the measurement models for Consumption, Investment, Purchase Behaviour and Satisfaction, the data were used for construction of full scale structural model which is based on Hypotheses H01 to H05 given above.

The structural equation model given below depicting the relationship between Consumption and Satisfaction individually establishes that Consumption has a positive direct relationship with Satisfaction. However, it is assumed in the study that Consumption also has an indirect effect on Satisfaction. That is the study attempts to find out whether the mediator Purchase Behaviour has significant mediation effect. Similar assumption is also made with Investment. That is assumption is made that Investment has direct and indirect effect on Satisfaction with Purchase Behaviour having mediation effect. The following model represents the relationship between Consumption, Investment, Purchase Behaviour and Satisfaction.

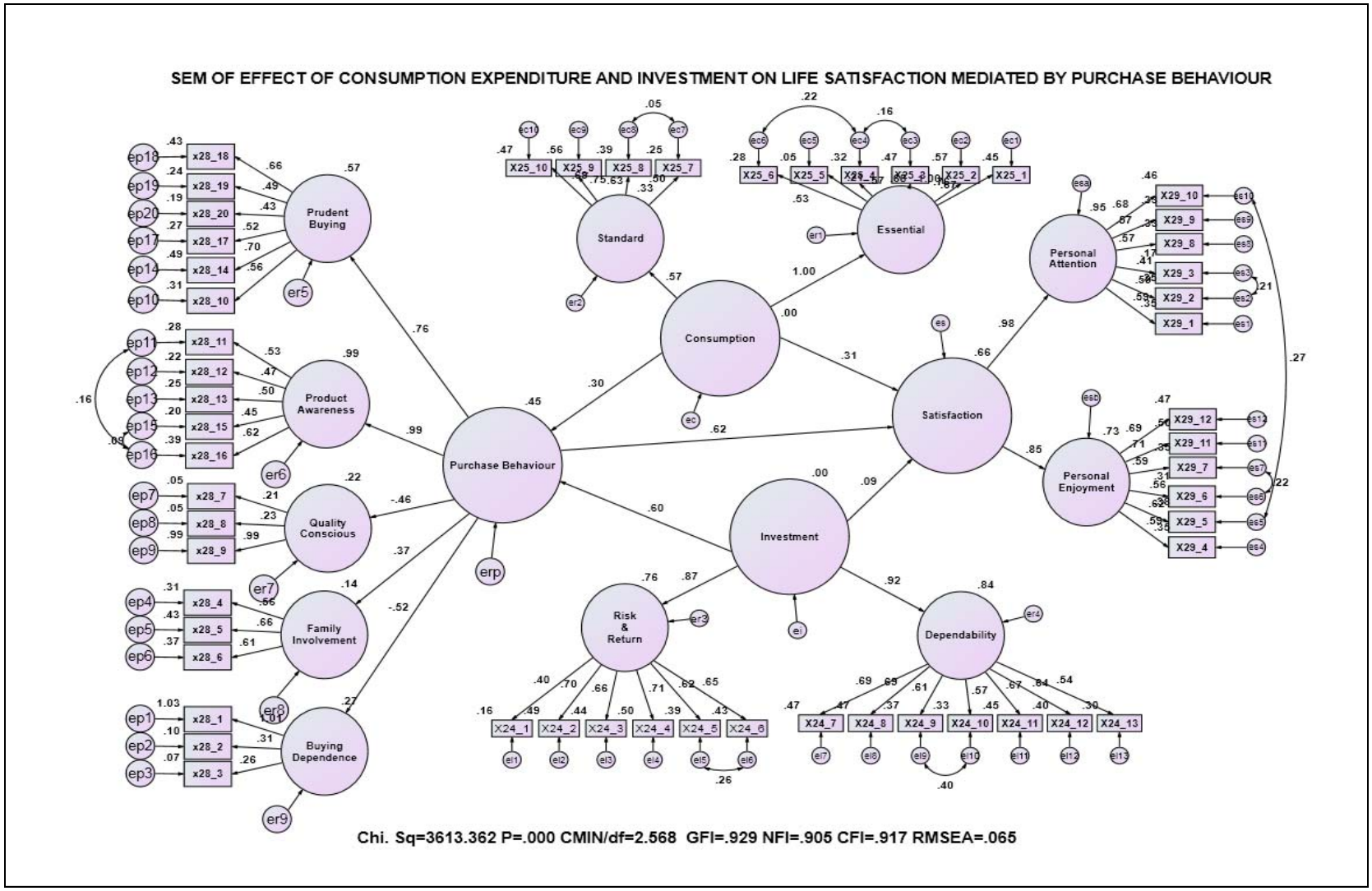

Fig 7.24 : SEM of effect of consumption expenditure and investment on life satisfaction mediated by purchase behaviour

The above diagram shows the direct and indirect relationships between Consumption as well as Investment and Satisfaction. The path coefficients are standardized regression coefficients. The regression estimates produced by AMOS for Unstandardised regression are given below. The model fit statistics show all the goodness of fit indices namely, GFI, NFI and CFI satisfy the criterion value of being above 0.90 and the CMIN value is within the admissible limit of 5. The RMSEA value falls between 0.05 and 0.08 and hence acceptable.

The model shown above gives the standardized regression weights of the corresponding variables and also squared multiple correlations. The regression coefficients show that these coefficients are comparable since they are independent of units of measurement. Among the variables Consumption and Investment have positive relationship with Satisfaction. The direct effect of Consumption on Satisfaction is 0.31 and direct effect of Investment on Satisfaction is 0.09 this shows that Consumption might play a more direct effect on Satisfaction.

The direct effect of Purchase Behaviour explains more on Satisfaction with a regression weight of 0.062. There is a positive relationship between Purchase Behaviour and Satisfaction. The Consumption and Investment variables are also found to have a positive relationship with Purchase Behaviour with regression weights of 0.30 and 0.60. The direct effect of Investment on Satisfaction is found to be very less with regression weight being 0.09. This shows that Investment plays a more indirect effect on Satisfaction when compared to its direct relationship with Satisfaction.

The magnitude and direction of relationship between Consumption, Investment, Purchase Behaviour and Satisfaction are studied in detail with the unstandardised regression weights produced by AMOS which is given below.

Table – 7.12 Model Estimation

Regression Weights - unstandardised

Variable Name	Variable Label	Path Direction	Variable Name	Variable Label	Estimate	S.E.	C.R.	P
PB	Purchase Behaviour	<---	Cons	Consumption	.197	.047	4.245	***
PB	Purchase Behaviour	<---	Invest	Investment	.560	.111	5.061	***
Sat	Satisfaction	<---	PB	Purchase Behaviour	.799	.148	5.386	***
Sat	Satisfaction	<---	Cons	Consumption	.265	.058	4.545	***
Sat	Satisfaction	<---	Invest	Investment	.105	.049	2.143	*
sat1	Personal Attention	<---	Sat	Satisfaction	1.000			
sat2	Personal Enjoyment	<---	Sat	Satisfaction	1.078	.132	8.146	***
PB1	Prudent Buying	<---	PB	Purchase Behaviour	1.000			
PB2	Product Awareness	<---	PB	Purchase Behaviour	2.031	.296	6.856	***
PB3	Quality Conscious	<---	PB	Purchase Behaviour	-.348	.099	-3.515	***
PB4	Family Involvement	<---	PB	Purchase Behaviour	.652	.153	4.267	***
PB5	Buying dependence	<---	PB	Purchase Behaviour	-1.283	.184	-6.972	***
cons1	Standard	<---	Cons	Consumption	1.000			
cons2	Essential	<---	Cons	Consumption	.574	.099	5.794	***
inv1	Risk and Return	<---	Invest	Investment	1.000			
inv2	Dependability	<---	Invest	Investment	1.404	.238	5.895	***

***** - Significant at .01% level ** - Significant at 1% level *- Significant at 5% level.**

Estimate of regression weight

The above estimates are unstandardised regression estimates. The values given above are the regression estimates of the corresponding independent variables. S.Es is the Standard Errors of respective regression coefficients. C.R (Critical ratio) is the ratio of regression estimate values to S.E. Probability (P) shows which regression coefficients are significantly contributing to the dependent variables.

The table further shows that the regression weight of Consumption on Satisfaction is 0.265 which is found to be significant at 0.01% level. It says that Consumption as such does have a direct significant influence on Satisfaction. This shows that the hypothesis no.1 being Consumption have direct positive relationship on Satisfaction holds and hence the hypothesis is accepted.

It is also found that the effect of Investment on Satisfaction is found to be 0.105, which is significant at 5% level. There is a positive relationship between Investment and Satisfaction. The regression result shows that the direct effect of Investment on Satisfaction holds and hence the hypothesis H02 that 'There is a direct positive relationship between Investment and Satisfaction' holds and hence the hypothesis is accepted.

The regression results further shows that there is direct of Purchase Behaviour on Satisfaction which is found to be 0.799, which is significant at .01% level. There is a positive relationship between Purchase behaviour and Satisfaction. The regression result shows that the direct effect of Purchase behaviour on Satisfaction holds and hence the hypothesis H03 that 'There is a direct positive relationship between Purchase behaviour and Satisfaction' holds and hence the hypothesis is accepted.

Table 7.13 - Direct, Indirect and Total Effects – Unstandardised

Variable Name	Variable Labels	Direct Effects				Indirect Effects			Total Effects			
		Invest	Cons	PB	Sat	Invest	Cons	PB	Invest	Cons	PB	Sat
PB	Purchase Behaviour	0.560	0.197	---	---	---	---	---	0.560	0.197	---	---
Sat	Satisfaction	**0.105**	**0.265**	0.799		**0.447**	**0.158**	---	**0.553**	**0.423**	0.799	---
inv2	Dependability	1.404	---	---	---	---	---	---	1.404	---	---	---
inv1	Risk and Return	1.000	---	---	---	---	---	---	1.000	---	---	---
cons1	Standard	---	1.000	---	---	---	---	---	---	1.000	---	---
cons2	Essential	---	0.574	---	---	---	---	---	---	0.574	---	---
PB5	Buying dependence	---	---	-1.283	---	-0.718	-0.253	---	-0.718	-0.253	-1.283	---
PB4	Family Involvement	---	---	0.652	---	0.365	0.129	---	0.365	0.129	0.652	---
PB3	Quality Conscious	---	---	-0.348	---	-0.195	-0.069	---	-0.195	-0.069	-0.348	---
PB2	Product Awareness	---	---	2.031	---	1.137	0.401	---	1.137	0.401	2.031	---
PB1	Prudent Buying	---	---	1.000	---	0.560	0.197	---	0.560	0.197	1.000	---
sat2	Personal Enjoyment	---	---	---	1.078	0.596	0.456	0.862	0.596	0.456	0.862	1.078
sat1	Personal Attention	---	---	---	1.000	0.553	0.423	0.799	0.553	0.423	0.799	1.000

Direct Effects - Estimates

The coefficients associated with the single-headed arrows in a path diagram are sometimes called direct effects. In Unstandardised Model for example, Investment has a direct positive effect on Satisfaction of 0.105. That is, due to the direct (unmediated) effect of Investment on Satisfaction, when Investment goes up by 1, Satisfaction goes up by 0.105. This is in addition to any indirect (mediated) effect that Investment may have on Satisfaction. The direct effect of Consumption seems to have more impact on Satisfaction (0.265) compared to Investment. The table further shows that both Investment and Consumption have direct positive effect on Purchase behaviour with their regression coefficients as 0.560 and 0.197. However, the effect of Investment on Purchase behaviour is more compared to the effect of Consumption.

Indirect Effects - Estimates

The above table describes the indirect effect of each of the column variable on each row variable. The table shows that Investment and Consumption have no indirect effect on Purchase Behaviour but they have indirect effect on Satisfaction and its latent factors, Personal Attention and Personal Enjoyment. It could be seen that Investment has

a positive direct effect on Satisfaction (0.447) which is greater than the direct effect it has on Satisfaction (0.105) in absolute terms.

That is, due to the indirect (mediated) effect of Investment on Satisfaction, when Investment goes up by 1, Satisfaction also goes up by 0.447. This is in addition to any direct (unmediated) effect that Investment may have on Satisfaction.

Also, it is seen that due to the indirect effect of Consumption on Satisfaction, when Consumption goes up by 1, Satisfaction also goes up by 0.158. This is in addition to any direct (unmediated) effect that Consumption may have on Satisfaction.

Thus the indirect effect of Investment is more on Satisfaction and has additive effect in the relationship when mediated by Purchase Behaviour. Similarly, the effect of Consumption is more on Satisfaction and has additive effect in the relationship when mediated by Purchase Behaviour. it is found that the Purchase Behaviour is found to have more significant direct effect on Satisfaction (0.799) compared to Investment and Consumption. These results suggest that there is significant mediation effect of Purchase Behaviour and hence the Hypotheses 4 and 5 can be accepted.

The direct effect of Purchase behaviour on Satisfaction with the regression weight being 0.799 and is found to be significant at 1% level. Hence the hypothesis Ho3 is sustained.

Total Effects - Estimates

The total effect is the combined direct and indirect effect of each column variable on each row variable. For example, total effect of Investment on Satisfaction is 0553, which is the sum of the direct effect and indirect effect it had on Satisfaction. That is, The total (direct and indirect) effect of Investment on Satisfaction shows that, due to both direct (unmediated) and indirect (mediated) effects, when Investment goes up by 1, Satisfaction goes up by 0.553.

This is because the model also observed direct causal relationship between Investment and Satisfaction. The total effects indicate that all the independent variables Investment and Consumption have positive effect on Satisfaction which implies that when the functions or perceptions of Investment and Consumption improve the Satisfaction of the respondents will also increase.

Table 7.14 - Direct, Indirect and Total Effects – Standardized

Variable Name	Variable Labels	Direct Effects				Indirect Effects			Total Effects			
		Invest	Cons	PB	Sat	Invest	Cons	PB	Invest	Cons	PB	Sat
PB	Purchase Behaviour	0.598	0.298	---	---	---	---	---	0.598	0.298	---	---
Sat	Satisfaction	0.087	0.309	0.618	---	0.370	0.184		0.456	0.493	0.618	
Inv2	Dependability	0.918	---	---	---	---	---	---	0.918	---	---	---
inv1	Risk and Return	0.871	---	---	---	---	---	---	0.871	---	---	---
cons1	Standard	---	0.998	---	---	---	---	---	---	0.998	---	---
cons2	Essential	---	0.571	---	---	---	---	---	---	0.571	---	---
PB5	Buying dependence	---	---	-0.515	---	-0.308	-0.153	---	-0.308	-0.153	-0515	---
PB4	Family Involvement	---	---	0.370	---	0.222	0.110	---	0.222	0.110	0.370	---
PB3	Quality Conscious	---	---	-0.464	---	-0.278	-0.138	---	-0.278	-0.138	-0.464	---
PB2	Product Awareness	---	---	0.994	---	0.595	0.296	---	0.595	0.296	0.994	---
PB1	Prudent Buying	---	---	0.756	---	0.452	0.225	---	0.452	0.225	0.756	---
sat2	Personal Enjoyment	---	---	---	0.854	0.390	0.421	0.527	0.390	0.421	0.527	0.854
sat1	Personal Attention	---	---	---	0.976	0.445	0.481	0.603	0.445	0.481	0.603	0.976

Similar to unstandardised regression weights, relative contribution of the standardized direct, indirect and total effects of each of column variable on the row variable is given. For example, it can be said that the direct effect of Consumption on Satisfaction is (0.309) which is comparatively higher than the indirect effect of Consumption on Satisfaction found out as 0.184. The total effect of Consumption on Satisfaction is 0.493 which is the sum of direct and effects of Consumption on Satisfaction. Considering the direct effects of Investment, Consumption and Purchase Behaviour, the standardized regression coefficients indicate that Purchase Behaviour has more positive effect on Satisfaction compared to investment and consumption, and the least effect by investment. The total effect of Consumption on the latent factors of satisfaction namely Personal Enjoyment and Personal attention are positive and comparatively have more positive effect on satisfaction factors than Investment has on these latent factors. The indirect effect of Investment is more on Satisfaction compared to its direct effect. The results further shows that Consumption has more direct effect on Satisfaction, where as Investment have more indirect effect on Satisfaction.

Summary:

Structural Equation Modeling is applied to find the effect of Consumption expenditure and Investment on Satisfaction when mediated by Purchase Behaviour. Initially CFA is applied to validate the items and latent factors involved in each factor and each dimension representing Investment, Consumption, Purchase Behaviour and Satisfaction. The items which were originally thought of as contributing towards their respective factors were validated by Confirmatory Factor Analysis. During the process of CFA for different factors of Investment, Consumption expenditure, Purchase Behaviour and Satisfaction the measurement models were found to explain adequately by their respective items. Those factors which were not adequately explained by their respective indicator variables were examined for possible improvement in the model fit. Modification Indices were used to identify the error terms correlation and improve the model fit. The hypotheses stating that the factors explaining the latent constructs of which are the factors of namely, Investment, Consumption expenditure, Purchase Behaviour and Satisfaction were accepted. The Second order CFA explaining the relationship between first

order latent constructs and the higher order factor were also examined. The respective hypotheses framed were also accepted. All the model fit statistics used for goodness of fit of the model were within the admissible levels.

Before assessing the mediating effect of the Purchase Behaviour, the direct effects of Investment, Consumption expenditure on Satisfaction was assessed. It is hypothesized that the there is a direct positive relationship between Investment and Satisfaction as well as Consumption expenditure and Satisfaction. The models developed exhibiting the relationship between the afore said factors confirmed the relationship with model fit statistics on the admissible limits and the regression weight explaining the relationship of Investment and Consumption expenditure with Satisfaction showed significant effect. Hence the hypotheses were accepted.

Purchase Behaviour as direct effect on Satisfaction was also studied. It is seen that there is a significant direct and also positive effect on Satisfaction by Purchase behaviour. The regression results showed that there is significant effect on Satisfaction. Hence the hypothesis is accepted.

It is seen that there is a mediating significant effect of Purchase Behaviour between Investment, Consumption expenditure and Satisfaction. The results further showed that there is an indirect effect on Satisfaction by Investment and Consumption espenditure dimensions. The effect of Purchase Behaviour on Satisfaction is more when compared to direct effects of Investment and Consumption expenditure on Satisfaction. The total effect of all independent and mediating variables shows Positive effect on Satisfaction. With this result the hypothesis of “Purchase Behaviour having mediating effect on Satisfaction” is also sustained.

The regression path between Investment and Purchase Behaviour and also between Consumption expenditure and Purchase Behaviour showed direct positive effect and regression coefficients were found to be significant at 1 per cent level. Hence the hypothesis that there is significant positive relationship between Consumption expenditure and Purchase Behaviour and between Investment and Purchase Behaviour is also accepted.