CHAPTER - 5

SUMMARY OF FINDINGS, SUGGESTIONS AND CONCLUSION

This chapter discusses the summary of the main findings, suggestions and conclusion made by the study. The findings about demographic profile of the investors, their level of financial literacy and mutual fund conceptual awareness, influence of personality traits of the investor and fund qualities influencing mutual fund selection by retail investors are the focal points of the study. The study on “DETERMINANTS OF MUTUAL FUND SELECTION BY RETAIL INVESTORS” is based on the following objectives:

1. To understand the investment objectives and preferred investment avenues of individual investors.
2. To assess the level of financial literacy of the respondents and their awareness regarding mutual fund.
3. To analyse the influence of personality traits and risk tolerance level in mutual fund selection.
4. To study the influence of fund-related qualities in the selection of mutual fund by investors.
5. To identify the determinants of mutual fund selection by individual investors.

The findings of the study are presented under the following heads:

- Demographic profile of the retail investors, their investment objectives and preferred investment avenues.
- Financial literacy and mutual fund conceptual awareness level of investors.
- Influence of demographic variables on the level of financial literacy and mutual fund conceptual awareness of respondents.
- Association between select independent variables and financial literacy and mutual fund conceptual awareness among the selected investors.
- Personality assessment of the selected respondents – Big Five factor method
- Association between personality traits of the investors and investment types
- Classification of investors based on cluster analysis
Opinion of investors about fund qualities in the selection of mutual fund

Influence of fund qualities in mutual fund selection by investors.

Influence of demographic variables on the level of influence of mutual fund qualities

Association between select independent variables and mutual fund qualities

Identifying the determinants of mutual fund selection- Factor analysis and SEM model.

Demographic profile of the respondents

- Out of the total 720 respondents, 56.7 per cent of them are in the age group of 30-40 years.
- The sample is made up of 73.3 per cent male and 26.7 per cent female investors.
- 91.2 per cent of the respondents are found to be married and 8.8 per cent of the investors are found to be unmarried.
- Out of the total sample 46.1 per cent of the individual investors are graduates.
- 58.5 per cent of the respondents have 4-5 members in their family.
- 64.3 per cent of the individual investors are doing business and 18.6 per cent of them are found to be employed.
- With reference to source of income, 66 per cent of the respondents have income from their business.
- 66.4 per cent of the respondents are earning an annual income between Rs.1, 00,001 and Rs.3, 00,000.
- 51.4 per cent of the sample investors have two earning members in their family.
- With respect to savings, 44.3 per cent of the investors save less than Rs.10, 000 annually.
- With reference to source of information for investment, 72.6 per cent of the respondents are aware of mutual fund schemes through brokers.
• 75.3 per cent of the investors have used less than 20 per cent of their annual savings for mutual fund investment.

• It was observed that 61.4 per cent of the respondents preferred to invest through banks/financial advisors.

• With reference to mode of investment in mutual fund, 87.3 per cent of the respondents have invested through Systematic Investment Plan (SIP) in mutual fund.

• 44.4 per cent of the respondents have invested in mutual funds for a period of 3 years.

• With reference to investment objectives, the investors prefer income and capital preservation (60.7 per cent), children’s education (63.5 per cent), wealth creation (64.6 per cent) and provision for retirement (63.7 per cent), as extremely important objectives for their investment.

• Among eight investment avenues, 74.7 per cent of the respondents considered mutual funds as highly favourable investment type.

• Tax saving is the investment objective of 58.2 per cent of the mutual fund investors. 46.5 per cent of the investors invest in mutual funds with an aim to attain growth in their investment. 53.3 per cent investors invest in mutual fund for safety purpose and 57.4 per cent of the investors invest in mutual fund for liquidity purpose.

• Regarding preferred mutual fund schemes 65.0 per cent of the respondents have invested in open-ended schemes of mutual funds, 58.1 per cent of the respondents invested in equity funds and 47.5 per cent of the respondents invested in institution-sponsored mutual funds.

• From the given ten asset management companies and their schemes, 30.6 per cent of the respondents prefer growth schemes of HDFC mutual funds followed by growth scheme of ICICI prudential mutual fund (28.9 per cent).

• 56.7 per cent of the respondents are satisfied with availability of information regarding the asset management companies and schemes of mutual funds.
Financial literacy and mutual fund conceptual awareness level of investors

- More than 70 per cent of the investors are found to be knowledgeable regarding regulatory authorities, stock exchanges, different types of investment schemes, return on investment and tax benefits arising from investment in mutual funds.

- With reference to level of financial literacy and mutual fund conceptual awareness, 70 per cent of the investors are found to have a notable level of awareness towards mutual fund investment.

Influence of demographic variables on level of financial literacy and mutual fund conceptual awareness of respondents

- Demographic variables, namely age, gender, education, marital status, family size, employment status, and annual income are found to have a significant influence on the level of financial literacy and mutual fund conceptual awareness of investor respondents.

- The pair-wise comparison of age highlights that the investors in the age groups of below 30 years and 30-40 years, below 30 years and above 50 years, 30-40 years and above 50 years, 41-50 years and above 50 years are having negative mean difference which is not significant. These four groups of investors are not having significant difference in their level of financial literacy and awareness of mutual fund investment. The group of investors namely 41-50 years and above 50 years are having positive mean difference which is not significant. The group of investors between the age group of below 30 years and 41-50 years, 30-40 years and 41-50 years are having negative mean difference with five per cent level of significance.

- The pair-wise comparison analysis explains that the highest mean difference was found between graduates and post-graduate level educated respondents with five per cent level of significance.

- The group of investors with families up to 3 members and above 5 members and 4-5 members and above 5 members are having negative mean difference with one per cent level of significance.
• A negative mean difference was found between families upto 3 members and 4-5 members. This group of investors significantly differs in their level of financial literacy and mutual fund awareness.

• The highest mean difference with five per cent level of significance was found between retail investors who do business and who are engaged in professional occupations. The lowest mean difference was found between investors who do business and are employed and employed and homemakers. These two groups of investors are having significant difference in their influence of financial literacy and mutual fund awareness level. The group of investors, namely agriculturist and retired, professional and employed, professional and home-maker, retired and employed and home-maker are having negative mean difference which is not significant.

• The pair-wise comparison analysis explains that the highest mean difference was found between the group of respondents earning an annual income between Rs.3,00,001 – Rs. 5,00,000 and above Rs. 5,00,000 and it was not significant. The income groups, namely below Rs.1,00,000 and Rs.3,00,001 –Rs.5,00,000, below Rs.1,00,000 and above Rs. 5,00, 000 and between Rs.1,00,001-3,00,000 and Rs.3,00,001-5,00,000 are having negative mean score with five per cent level of significance.

Association between select independent variables and financial literacy and mutual fund conceptual awareness among selected investors

• Correlation analysis shows the positive relationship between the selected independent variables and financial literacy level of the mutual fund investors. Whenever the investors age, family size, annual income, number of earning members in the family, annual savings, percentage of savings invested in mutual funds, period of investment in mutual fund, level of influence of fund qualities and satisfaction level of investors increase their financial literacy and awareness towards mutual fund investment also positively increases. The positive correlation values are found statistically significant at one per cent and five per cent level.
The multiple regression analysis reveals that the independent variables contribute for 91.2 per cent of the variation in the level of financial literacy and mutual fund awareness of investors. Variables, namely family size, annual savings, percentage of savings invested in mutual funds are found to be not significant at one per cent/five per cent level of significance. The remaining variables from age to satisfaction level are statistically significant at one per cent and five per cent level. It is found from the analysis that all the selected independent variables are having positive association except number of earning members in the family and annual savings.

**Personality assessment of the selected respondents – Big Five factor method**

- It is noted from the personality assessment that 74.6 per cent of the respondents have strongly agreed towards ‘preferred to invest in innovative products’.

- Big Five factor method reveals that 56.3 per cent of the respondents are conservative, that is, they prefer traditional investment method. 67.2 per cent of the respondents belong to introvert type. They are found to be shy and reserved. 63.1 per cent of the investors are ready to take risk, 66 per cent of select investors are more economic, focusing only on returns. 51 per cent of the investors are spontaneous or careless in nature and 56.7 per cent investors are independent, that is, they take decision on their own. 73.6 per cent of the investors belong to the trusting personality, that is, they trust/depend on others for information. 52.8 per cent of the investors are emotional in nature.

**Association between personality traits of the investors and investment types**

- Association between personality traits and investment types reveals that there is a significant relationship between the five personality traits, namely openness to experience, extraversion, conscientiousness, agreeableness and neuroticism and preference on various types of investment.
Discriminant analysis reveals that ‘p’ values for all the eleven variables namely agreeableness, educational qualification, period of investment in mutual fund, neuroticism, conscientiousness, openness to experience, family size, percentage of savings invested in mutual fund, number of earning members, gender and annual savings are found to be significant at 0.000, and all the variables are considered to identify the discriminating variables.

As a whole, discriminating analysis reveals a strong relationship between the personality traits of the investors and their preference towards various methods of investments. The important trait that influences the investment is conscientiousness.

Classification of investors based on the cluster analysis

With regard to final cluster, the variables with mean value greater than 3.47 were grouped under cluster 1, the variables with the mean value greater than 4.21 were grouped as cluster 2 and the variables with the mean value greater than 3.85 were grouped as cluster 3.

Out of the 720 respondents, 110 respondents are grouped as Segment 1. 530 respondents are grouped as Segment 2 and Segment 3 which include 80 respondents.

Cluster formation analysis reveals that the first cluster with 10 variables is grouped as ‘risk investors’; second cluster which includes 15 variables is grouped as ‘curious investors’ and the third cluster with 10 variables is grouped as ‘traditional investors’. Among the three clusters, the first and third clusters are found to be small in terms of number of investors.

ANOVA for personality trait variables and various clusters of mutual fund investors reveals that all the seventeen variables are significant at one per cent level. Hence, there is a significant difference in the personality traits of the investors based on three clusters.

First cluster (Risk investor) includes investors below 30 years of age and are women. It also includes respondents with professional degree, unmarried and
have the family size of 3 members. The respondents in this cluster are employed, having an annual income below Rs.1,00,000 with two earning members and the respondents having an annual savings of Rs.50,001 to Rs.1,00,000 and 30-40 percentage of savings invested in mutual fund. Direct investment is their preferred channel for investment with less than one year period of investment.

- The second cluster (Curious Investors) includes investors in the age group of 31 to 40 years who are men. They studied up to school level, married and having more than five members in their family. The cluster also includes professionals with an annual income of Rs.3-5 lakhs, having more than two earning members in their family. Their annual savings fall under Rs. 10,001-50,000 with 20-30 percentage of savings invested in mutual fund. They prefer to invest through brokers with an investment period of 2-3 years.

- The third cluster includes respondents below 30 years of age, holding diploma as education. They are all men, married and having 4-5 members in their family. They are also employed with an income of Rs.1, 00,000 to Rs.3, 00,000. They have one earning member with less than Rs.10, 000 as annual savings. They preferred investments through banks/ financial advisor with an investment time horizon of 3 years.

- Majority of the respondents ranked mutual fund as first with the highest mean score of 4.657 points.

- The mean rank indicated that the traditional investors are more likely to invest in government securities, bank deposits, provident fund / PPF, shares / debentures and commodities (gold). On the other hand, risk taker preferred to invest in insurance schemes, mutual funds and real estates.

- Discriminant analysis indicates there is a significant difference between investment personalities, namely risk taker, curious investors and traditional investor and eight types of investment namely government securities, bank deposits, provident fund / PPF, insurance schemes, mutual funds, shares / debentures, commodities (gold) and real estates.
The results of KW test reveals that the traditional investors are more likely to invest in government securities (mean score 355.05), bank deposits (mean score 669.17), provident fund / PPF (mean score 621.39), shares / debentures and commodities gold (mean score 549.06). On the other hand, risk taker preferred to invest in insurance schemes (mean score 513.64), mutual funds (mean score 524.33) and real estates (mean score 405.95).

A significant difference was found between investment personality and eight types of investment.

Opinion of investors about fund qualities in the selection of mutual fund

Opinion of investors regarding fund qualities reveals that ‘Fund reputation or brand name’ is considered as extremely important fund quality by 81.9 per cent of investors in the selection of mutual fund.

It is found that the level of influence of fund qualities on majority (54.9 per cent) of the investors was at medium level (mean score 4.32).

Influence of demographic variables on the level of influence of mutual fund qualities

The influence of demographic factors on the level of mutual fund qualities reveals that except age and gender, all the demographic variables, namely educational qualification, marital status, employment status and annual income of investors are found to have a significant influence on investors fund selection based on fund qualities.

A pair-wise comparison reveals that the highest mean difference was found between school level educated and post-graduate level educated respondents with five per cent level of significance. These two groups of investors are having significant difference in their influence on mutual fund investment. The lowest mean difference was between the respondents of school level educated and graduates with five per cent level of significance. The group of investors, namely post graduate and diploma, post-graduate and professional, diploma and professional degree are having negative mean difference which does not have a significant relationship.
• The highest mean difference with five per cent level of significance was found between respondents of agriculturist and professional. These two groups of investors are having significant difference in their level of influence on mutual fund investment.

• A pair-wise comparison reveals that the highest mean difference with five per cent level of significance was found between annual income below Rs.1,00,00 and Rs.1,00,001–Rs.3,00,000 and Rs.3,00,001-Rs. 5,00,000. These two groups of investors are having significant difference in their level of influence on mutual fund investment.

**Association between select independent variables and mutual fund qualities**

• The correlation analysis reveals the relationship between selected variables that whenever the investors family size, annual income, number of earning members in the family, percentage of savings invested in mutual fund, awareness score and satisfaction score increase, their influence level also positively increases. When period of investment increases their influence level decreases significantly. On the other hand, the variables “age and annual savings” do not have significant association with the influence level of the investors.

• The multiple linear regression co-efficient is found to be statistically fit as R² is 0.966. It shows that the independent variables contribute about 96.6 per cent of the variation in the level of influence of mutual fund qualities and statistically significant at one per cent level. It is found from the analysis that all the selected independent variables are having positive association except number of earning members in the family.

**Identifying the determinants of mutual fund selection- Factor analysis and SEM model**

**Results of factor analysis**

• The value of KMO for overall matrix is found to be good (0.948) and Bartlett’s test of Sphericity is highly significant (p < 0.001). The results thus indicate that the variables taken are appropriate to proceed with the factor analysis.
• Factor 1 is the most important factor which explains 22.284 per cent of the variation and consists of 11 variables. The variables, namely portfolio constituents, disclosure of risk aspects, ratings by rating agency, flexibility of the schemes, option of changing composition of portfolio, past performance record of sponsor, marketing strategies, announcement of NAV on every trading day, fund reputation or brand name, sponsor offers a wide range of schemes with different investment objectives and reputation of sponsoring firm shows that they are all highly inter-correlated. These variables reflect the opinion of the investors towards fund qualities. Hence the researcher coined this factor as **Mutual Fund Qualities**. The reliability of these eleven variables was found as 0.943 (Cronbach’s Alpha).

• Factor 2 explains 20.659 per cent of the variations and consists of 11 variables. The variables include advertisement by company, conducting periodical awareness programs, initial investment, disclosure of method, periodicity of schemes sales and repurchase in the offer document, providing technical advice and updatations, brand name of sponsor and agency network, infrastructure of sponsoring agencies, responsiveness to enquiries, disclosure of deviation of the investment from expected pattern, performance report of the fund and regulations made in mutual fund industry shows that they are all highly inter-correlated. These variables are identified as the reputation and technical skills of the investors. Hence the researcher named this segment as **‘Reputation and Technical skills’**. The reliability of these eleven variables was found as 0.921 (Cronbach’s Alpha).

• The variation of the factor 3 is explained as 6.679 per cent which consists of 4 major variables. Loads-exit load, reputation of fund manager, withdrawal facilities and transparency factors shows that they are all highly inter-correlated. These variables reflect the opinion of the investors towards user-friendly services offered by the mutual fund companies. Hence the researcher named this segment as ‘**Investment facilities**’. The reliability of these four variables was found to be 0.691.
• The Factor 4 explains 6.015 per cent of variance which has 3 major variables. The variables include confidentiality, SEBI guidelines and technical knowledge and it shows that they are all highly inter-correlated. These variables reflect the technologically innovative knowledge about the mutual fund operations. Hence the researcher coined this segment as ‘Investor-related services’. The reliability of these three variables was found as 0.703 (Cronbach’s Alpha)

• Factor 5 explains 5.489 per cent of variance which has 2 major variables, namely grievance redressal cell and disclosure of schemes and investment objectives in the advertisement shows that they are all highly inter-correlated. The two variables reflect the grievance handling methods when disclosure of schemes and overall mutual fund operations in the study area. Hence the researcher named this segment as ‘Grievance Redressal Procedure’

• Factor 6 explains 61.126 per cent of variance which has 3 major variables, namely expenses ratio, tax benefits and schemes concept of investment and innovativeness. The three variables reflect the benefits inhibited while investing through mutual fund schemes. Hence the researcher named this segment as ‘Benefits of the mutual fund schemes’.

The six factors extracted from factor analysis, namely mutual fund qualities, reputation and technical skills, investment facilities, investor-related services, grievance redressal procedure and benefits of the mutual fund schemes together explained 65.895 per cent of the total variance. The factors so generated have the Eigen values between 14.221 and 1.114. The values of communalities ($h^2$) range from 0.436 to 0.830. It means that the factor analysis extracted a good amount of variance in the variables. All the items are found highly loaded under these six factors, which indicate that the investors are highly influenced with the fund qualities.

• The adjusted $R^2$ of 0.792 ($p=0.000$) indicates that 79.2 per cent of variance explained by all these independent variables to the dependent variable. Further, the results also indicate that all the six factors are found to be the significant predictors ($p<0.001$) to fund selection by investors. Among the six factors, ‘investment facility’ is found to be one of the major influencing factors for mutual fund selection.
Results of SEM model – Model for mutual fund qualities

- The SEM model for mutual fund qualities clearly explains that the test factors with the values such as GFI(0.968), AGFI(0.926), CFI(0.964), NFI(0.959), TLI(0.940), RMSEA (0.048) fulfils the criteria, hence the model has good fit. Among the six factors, the factor ‘Fund quality’ highly influences the investors in the selection of mutual fund.

- The regression weights for the model for mutual fund qualities reveals that the factor ‘fund qualities’ with estimate value 1 highly influences the investors in mutual fund selection.

Results of SEM model- Model for fund selection by retail investor

- The SEM model for fund selection by retail investors reveal that the estimated value for the model is 4.943 which satisfies the required condition. Similarly, the required value of Root Mean Square Error of Approximation (RMSEA) should be less than 0.07. Against this value, the estimated model value is 0.032 which highly validates the result. Similarly, model fit indices (GFI-0.981, AGFI-0.976, CFI-0.993, NFI-0.992 and TLI-0.972) for this model indicates that the model fits well.

First level of relationship of a SEM model expresses a significant relationship between age of the respondents, educational qualification, annual income, investment in mutual fund and experience in mutual fund investment and their level of awareness on mutual fund selection.

The second level of relationship expresses a close significant association of awareness on mutual fund selection with the Big-Five personality traits, namely Openness to Experience, Extraversion, Conscientiousness, Agreeableness and Neuroticism at one per cent level of significance.

The third level of relationship expresses a close significant association of Big-Five personality traits with fund qualities, namely fund qualities, reputation and technical skills, investment facilities, investor-related services, grievance redressal and investment benefits.
The results reveal that

- There is a close significant association of openness to experience with fund qualities, reputation and technical skills, investment facilities, investor-related services and grievance redressal and there is no significant association found with investment benefits.

- There is a close significant association of extraversion with fund qualities, investment facilities, investor-related services, grievance redressal and investment benefits. Reputation and technical skills have no significant association with extraversion.

- There is a close significant association of conscientiousness with reputation and technical skills, investment facilities, grievance redressal and investment benefits relating fund qualities. No significant association was found between fund qualities and investor-related services.

- There is a close significant association of agreeableness with reputation and technical skills, investment facilities, grievance redressal and investment benefits. No significant association was found with fund qualities and investor-related services.

- There is a close significant association of neuroticism with fund qualities, reputation and technical skills, investment facilities, investor-related services and grievance redressal. No significant association was found with investment benefits.

**The fourth level of relationship** expressed relationship of fund qualities, reputation and technical skills, investment facilities, investor-related services, grievance redressal, investment benefits with satisfaction level on mutual fund. A close significant association of fund qualities, reputation and technical skills, investment facilities, investor-related services, grievance redressal, investment benefits was found with satisfaction on mutual fund.

To conclude this model all the four levels, namely demographic variables with awareness level of mutual fund, awareness level of mutual fund with Big Five
personality traits, Big Five personality traits with fund qualities and fund qualities with satisfaction level express a close association at one per cent level of significance.

- The important problems faced by mutual fund investor include poor service quality (Rank I), no performance guarantee (Rank II) and inadequate disclosure (Rank III).
- 91 per cent of the respondents are willing to recommend others to invest in mutual fund.

Conclusion

The emergence of various mutual fund products with different risk-return combination induces the investor to invest in select mutual fund products. To determine the selection of mutual fund schemes by retail investors the researcher has focused financial literacy, personality and mutual fund qualities.

With regards to financial literacy and awareness level, more than 70 per cent of the investors are found to be knowledgeable regarding regulatory authorities, stock exchanges, different types of investment schemes, return on investment and tax benefits arising from investment in mutual funds.

Among the five personality types, namely openness to experience, extraversion, conscientiousness, agreeableness and neuroticism, the personality trait ‘conscientiousness’ influences the mutual fund selection.

Six factors have been extracted from factor analysis, namely fund qualities, reputation and technical skills, investment facilities, investor-related services, grievance redressal, investment benefits and the results reveal that the factor ‘investment facilities’ influences the mutual fund selection.

Model for fund selection by retail investor identifies the following:

The first level expresses a close relationship between demographic variables and awareness level on mutual fund selection. The second level expresses a relationship between financial literacy and conceptual awareness on mutual fund selection and five factors of personality trait. The third level expresses a relationship between five factors of personality traits and six factors of fund qualities. The fourth
level expresses a relationship between six factors of fund qualities and satisfaction level on mutual funds. To conclude this model all the four levels, namely demographic variables with awareness level of mutual fund, awareness level of mutual fund with Big Five personality traits, Big Five personality traits with fund qualities and fund qualities with satisfaction level expresses a close association at one per cent level of significance.

It can be concluded that the three determinants, namely financial literacy and mutual fund conceptual awareness level, personality traits and fund qualities help the mutual fund investors to take wise investment decisions.

**Policy implications**

From the research conducted the following recommendation were made;

(i) **Implications to the retail investors**

(a) More than 60 per cent of the investors felt income and capital appreciation as extremely important investment objective for them. It may be suggested to the investors to invest in balanced schemes and equity-linked service schemes (ELSS) to attain their investment objective.

(b) Though 70 per cent of investors are having notable level of awareness towards mutual fund investment, 73.6 per cent of the investors are found to be trusting investors, that is, they depend on others’ information. It is recommended to have clear information about the operational details of the scheme before investing in a particular type of mutual funds.

(c) The investor is advised to consider all factors of the schemes before investing in a particular type of mutual fund.

(d) Mutual funds are the best tools for long-term wealth creations. They should identify the top performing mutual funds which will help in achieving their financial goals.

(e) They should identify their investment objective, time horizon of investment and risk appetite to arrive at their investment plan. Investing in best performing mutual fund through SIPs will give good returns.
(f) Besides the return and risk the investor should consider the age of the fund, expenses ratio, standard deviation and overall risk grades of the fund. Funds with a good track record for the last 5 to 10 years should be preferred. A good mutual fund will have a low Standard Deviation, high alpha and low beta.

(ii) Implications to the Asset management companies

The determinants of mutual fund selection by retail investors include level of financial literacy and their mutual fund conceptual awareness, their personality traits and the fund qualities. The asset management companies can use the results of the model developed for developing marketing strategies for all types of investors.

The gap between investor expectations and the services delivered by asset management companies can be bridged by developing new strategies such as sending updations about present mutual fund schemes through mail, assessing investor’s personality, the company may recommend the best suitable schemes for the investors in order to attract more investments.

(iii) Implications to the regulatory authorities

Conducting more awareness programme to investor in rural areas may induce more people to take part in investment activity.

Female respondents prefer to invest in insurance schemes, pension funds and debt-oriented schemes. They are not ready to participate in equity schemes or any other risky investments. Hence, the regulatory authorities should concentrate more on this aspect in order to attract more investment.
Scope for further research

1. The study concentrates on mutual fund investors of all the schemes; scheme-wise or fund-wise analysis of investor perception could be taken.

2. There may be a wider scope of conducting research on behavioural aspects.

3. The scope of the study could be widened by covering all cities of the state.

4. There may be a scope of examining the expectation of investors in relation with investment types.

5. Studies covering institutional investor and high net worth individuals could also be taken up.