1.1. Personal Financial Management

Every woman is doing cash budgeting or capital expenditure in her lifetime and every man is doing business or investment in his life. Still there is a lack of awareness about personal financial management. Even if there is some awareness, there is a lack of will to follow the personal financial management process. Because of this, people might fail to take better and efficient personal financial decisions. Financial illiteracy is impacting financial decision making.

Finance is an integral part of everyone’s life and financial principles are based on pure and simple common sense. The ability to take financially intelligent decisions is financial management. Financial management is the ability to understand the impact of every financial decision on net worth and to ensure that all those actions should be undertaken that will strengthen it and do nothing that weakens it.

Managing personal finances is essential to one’s financial wellbeing. Money management is a critical function in self-management. It aims to give the power and the knowledge to take control of the money. It provides the means to keep track of personal expenses, personal debt and subsequently helps in calculation and enhancement of personal net worth.

Personal financial management can be defined as the management of the finances of an individual, in order to achieve his/her financial goals including long-term financial security. It is concerned with procurement and utilization of funds for an individual. It is concerned with efficient planning and controlling of the financial affairs, budgeting, financial forecasting, cash management, credit administration, investment analysis, and fund management and so on. It helps individuals determine the past performance, predict future performance, and assess the capability of generating future cash flows.
1.2. **Framework of Personal Financial Management**

Personal financial management covers aspects of financing like accessing the need of capital, raising sufficient amount of funds, cost of financing, budgeting, maintaining liquidity, lending policies, borrowing policies, and dividend policy. Financial analysis is the process of evaluating the financial position and the results of operation of a business. Projection of financial statements is the last step of accounting and results in presentation of information useful to an individual. The framework of personal financial management (PFM) used in this study is shown in figure 1.1.

![Figure 1.1: Framework for Personal Financial Management](source: Khan, M. Y. & Jain, P. K. (2007))

PFM framework broadly constitutes the following three areas.

1) **Finance and related discipline**

The base of personal financial management comes from recommended practices from Economics, Accounting, and Information Technology.

(i) **Personal Finance and Economics**

![Diagram showing the relationship between different disciplines in PFM](source: Khan, M. Y. & Jain, P. K. (2007))
Basic knowledge of economics is necessary to understand both the environment and decision techniques of financial management. Economics is the knowledge about how to make best possible use of money. It deals with

- **Inflow of money:** This is the sum total of money that is coming in a household from the various sources of Income.

- **Outflow of money:** This is the sum total of money that is going out from a household in form of various expenditures.

Most people are aware of the seen costs when it comes to personal finance. We understand the direct costs for our actions. However, the unseen costs could be more important to realize. Understanding the opportunity cost is critical to making the best possible decisions with our money. This principal is quickly becoming a budgeting essential. Opportunity cost factors into any decision that involves a trade-off between two or more options.

An *opportunity cost* is defined as the value of a forgone activity or alternative when another item or activity is chosen. It is expressed as the relative cost of one alternative in terms of the next-best alternative. From choosing whether to invest in "safe" treasury bonds or share and deciding to purchase a home theatre over a family holiday, there are plenty of things to consider when making a decision in financial life. Consider the decision to buy a high-end television. The simple cost is the cash outlay of thousands of rupees. But this does not reflect the true cost. The true opportunity cost is all the things that could have done with the money instead. The same money could have been used to enjoy a holiday, or give a gift to friend, or invest in stocks or to pay off loans. When all these factors are taken into account, it is apparent that buying a television if not needed, is a very costly adventure indeed.

The other important principle of economics that is applied to financial management is marginal analysis, a cost-benefit approach which suggests that financial decisions should be made on the basis of comparison of marginal revenue and marginal cost.

*Marginal analysis* is the fundamental economic decision-making procedure. It allows an individual to measure the additional benefits of financial activity versus its costs. The theory states that whenever marginal benefit exceeds marginal cost, the financial activity
should be increased to reach highest net benefit, otherwise if the marginal cost is higher than marginal benefit, activity should be decreased. This analysis can help to understand whether an activity is profitable and thus make a decision based on that information. Consider an individual who is shopping for groceries and he has to decide whether to buy organic or conventional vegetables. Will the marginal cost (how much more the organics cost) be greater than the marginal benefit (healthier food, perhaps, and less impact on the environment) including control on lifestyle risks and challenges.

(ii) Personal Finance and Accounting

Accounting is a sub function of finance. Accounting generates info/data relating to operations or activities of finance. Accounting is the process of recording, classifying, summarizing, analyzing, interpreting and communicating results in terms of money. The financial management uses this data for financial decision making. Thus, accounting is an information system which involves identification, measurement and communication of economic information for financial decision making. It provides consistently developed and easily interpreted data on past, present and future operations.

The primary objective of financial accounting is to ascertain the financial position of an individual as on date. The end product of accounting constitutes the financial statements such as balance sheet, income statement, cash flow statement and fund flow statement. The info contained in these statements and reports assist a person in assessing past performance and predicting future directions. The angle of finance relating to the treatment of funds is based on cash flow method which recognizes revenues and expenditure with respect to actual inflows and outflows of cash.

(iii) Personal Finance and Information Technology (IT)

Information technology helps in automation of personal financial management process, and thereby acts as a tool for efficient decision making. It is related to the knowledge about how to use Information Technology to do financial calculations correctly, accurately and quickly.
a) *Usage Skills:* - A little knowledge of working on computer is required to use the desktop or pen drive operated money management tool. Knowledge of Internet is required for working on online software.

b) *Money Management Tools:* - Financial tools provide a common platform where a person can view all his accounts, banks, credit cards, insurance, fixed deposit and even public provident fund. Financial tools give a window to analyse a person’s income and expense and help to understand spending. These tools help disciplining people. Using the tools makes them aware about their spending pattern and understands their financial liability. For late payments, the reminder tools works wonder. There are several IT tools available to manage the money.

- *Excel spread sheet:* - Spread sheets are good personal productivity tools while they are not collaborative planning applications. Spread sheets are fundamentally unsuited for a complex, dynamic, shared financial for several reasons, including data distribution. Consolidation is time-consuming and error-prone. Spread sheets can be a good foundation for budgeting and planning process simply because they are inexpensive and familiar.

- *Specialty Software Packages:* - Streamlining the planning process demands technological tools capable of supporting faster, more flexible and adaptive approach. Monitoring of income, expenses and bank balances are the things that become easy with such customized tools. By using an on-demand, dedicated budgeting and planning application that is delivered over the web, individuals are able to implement the best practices. There are several categories of specialty software packages available that are designed to create and track budget, as described below.
  
  o Web based programs like *Mint* (mint.com) provides budgeting tools, alerts, and charts. It helps to manage spending with ease. *Quicken* (quicken.intuit.com) provides tools to reconcile spending by managing bank and credit card statements. *Xpenser* (xpenser.com) financial tracker provides the facility of multiport connection to e-mail, iPhone, SMS, voice and twitter. *BudgetPulse* (budgetpulse.com) is having detailed record of inflow and outflow, current and credit account transactions, assets and liabilities.
Offline Accounting like Microsoft Money (microsoft-money-2008.en.softonic.com/) can create, track and manage customized portfolios. It alerts user defined financial information to e-mail, phones or desktops. Gnu cash (gnucash.org) is easy to use, and intuitive. Home Bank (homebank.free.fr) is a feature loaded site that has detailed record of Income, liabilities and assets. AceMoneyLite (mechcad.net/products/acemoney/index_lite.shtml) is good, straight forward and user friendly. Report and graph handling is fast and easy. The tools like Vault (myvault.in) are easily customizable forms and usually involve simply checking or un-checking items from a list of possible choices.

Mobile Based Programs like Pennies lets a person to establish a monthly budget, record/track of daily expenses. Balance allows input of income and tracks the expenses. Kash Book allows credit card account also. Loot supports multiple accounts and repeated transactions in it. Budget Droid is serious mobile accounting. It has built in custom categories with regard to budget. It helps in tracking expenses. Florin Finance Tracker lets record of income and expenditures. It has graphical reporting procedure.

2) Financial Decision Making

The core of personal financial management is financial decision making. Financial management forms the basis for financial planning, analysis and decision making. Financial information is contained in financial statements and is required to aid in financial decision making. Financial management provides a framework for financial decision making which involves the following:

(i) **Financial Planning:**- It involves the process of assessing the financial situation, determining financial objectives and formulating a plan to achieve them. It is the process of meeting life's goals through proper management of one's finances. Life goals could include buying a house, saving for children's education or planning for retirement. A financial plan should include a review of net worth, goals/objectives, investment portfolio, cash flow, investments, retirement planning, tax planning and insurance needs.
(ii) **Financial Statements:-** These are collection of data organized in accordance with logical and consistent accounting procedure. They reflect an individual’s performance over a period of time and the financial position at a point of time. The analysis of financial statement is a process of evaluating the relationship between components of statement to obtain a better understanding of financial position.

- **Balance Sheet** is a quantitative summary of one’s financial condition at a specific point in time which includes assets, liabilities and net worth. It is a snapshot of the financial health.
- **Income Expense statement** provides information of the income earned and the costs and expenses incurred to earn such incomes during a given period. It is a score board of an individual performance during a period of time.
- **Fund Flow Statements** reflect the change in cash or change in working capital. Working capital is the difference between current assets and current liabilities. They determine the liquidity position of an individual. It describes the sources from which additional funds are derived and the uses to which these funds are put. Thus, Fund Flow analysis consists of two distinctively different analyses namely.
  - The output of working capital analysis is fund flow statement which is an important indicator of financial analysis and control. It is valuable aid in evaluating the future flow of fund on the basis of past data and to assess the growth. It is useful in planning intermediate and long term financing.
  - The output of cash flow analysis is cash flow statement that provides the information about cash flows associated with operating, investing and financial activities of an individual during an accounting period. It is useful in cash planning.

(iii) **Financial analysis:** - It is a process of selection, relation and evaluation of financial data. It is a mathematical classification of data. It includes

- Transforming financial data into a relational form that can be analysed
- Evaluating the financial data for achievement of financial goals

There are two methods of analysis :-

*Comparative Analysis* showing the changes in monetary terms of an individual items or group of items from balance sheet.
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*Trend Analysis* showing the direction upwards/downwards in which an individual items or group of items from balance sheet have moved over a period.

(iv) **Budgeting** is a structured process and planning activity, dealing with a family’s financial resources and context. Budget is a pro-active, focused, technical and disciplined strategy to handle the current financial situation of a family. It is a barometer of family’s fiscal condition, resources and health. *A budget* is a comprehensive and coordinated plan expressed in financial terms for operations (reflected in revenue and expenses) of an individual for some specified period in the future. As a tool of financial planning, budget serves as a guide to the conduct of operations and a basis for evaluating actual results.

(v) **Cash Management:** - It involves efficient collection, disbursement and temporary investment of cash. The first and foremost objective of cash management is to meet the payment schedules. The second main objective of cash management is optimization of liquidity through an improved flow of funds. There are three motives of holding cash:
- *Transaction motive* for day-to-day transactions.
- *Precautionary motive* for unexpected contingencies and uncontrollable situations.
- *Speculative motive* to take advantage of unexpected opportunities when arise.

(vi) **Financial Forecasting:** - It implies the technique of determining in advance the requirement and utilization of funds for a future period. It means systematic projection of the expected action of finance through financial statements. It is a sort of working plan formulated for a particular period by arranging future activities.
- It helps to work as a control device to anticipate financial needs
- It helps to use to pre-test financial feasibility and
- It helps to calculate leverages/profitability

3) **Economic Worth/Net Worth**

The basis for financial planning, analysis and decision making is the financial information which is needed to predict, compare and
evaluate one’s net worth. Financial information of an individual is contained in financial statements such as balance sheet, profit/loss account and cash flow statement. The information contained in these financial statements assists a person in assessing past performance and future directions.

Financial decisions impact net economic worth. Hence, the focus area of personal financial management is net worth generation. These statements being important planning tool have an analytical value as it helps to calculate changes in working capital position and changes in fixed assets. Understanding of financial worth/position at any point of time and changes in it on day-to-day basis, helps in financial decision making.

Net Worth: - It refers to the net value of an individual in terms of its assets and liabilities. It implies excess of assets over liabilities as disclosed by a person’s balance. Wealth creation, curtailing expenses and saving in a disciplined manner can help increase financial worth. It is very important to create wealth that is liquid and divisible, otherwise even though it may make balance sheet strong, it will not be of use when it is needed to meet financial goals.

1.3. Personal Financial Management Process

Wattles (2007) in his book ‘The Science of Getting Rich’ writes that getting rich is not the result of doing certain things; it is the result of doing things in a certain way. There is a science of getting rich, and it is an exact science, like algebra or arithmetic. There are certain laws which govern the process of acquiring riches. Once these laws are learned and obeyed by any person, he will get rich with mathematical certainty.

Personal financial management process uses a stepwise process that helps to determine where the person stands financially. The process involves gathering financial information, setting life goals, examining the current financial status and coming up with a strategy/plan for meeting the goals given the current situation and future plans. It is an on-going process. The six steps are explained in details as follows.

Good financial management starts with (i) setting financial goals, (ii) determining all sources of income and planning for all types of expenses (budgeting), (iii) ascertaining all assets and liabilities as part of managing fund flows, (iv) recording financial transactions under all the heads, (v) automating the process of calculation and generation of financial
statements using a personal financial management IT tool, (vi) finally, evaluating the financial statements for financial decision making. Periodic review of progress towards financial goal is evaluated. If financial growth is in line with financial goals, the process needs to be continued; otherwise some financial adjustments need to be made including revision of goals if necessary.

FIGURE 1.2: PERSONAL FINANCIAL MANAGEMENT PROCESS

**Step 1: Set Goals**

Setting financial goals is the most important indicator of ones being financially evolved. Knowing what is important to an individual and his family is a critical first step in a successful personal financial plan. Any major decision of life like buying a house/car, travel, retirement or higher studies that needs money for its fruition is a financial goal.

There are three categories of goals

- Short term (within one year)
- Intermediate (one to five years)
- Long term (more than five years)
A well-defined financial goal is SMART
- **Specific** - what you want to achieve.
- **Measurable** - how much money you will need.
- **Achievable** – which can be achievable
- **Reasonable** – whether it can be achieved with the time and money available.
- **Tied to a time frame** - when you want to achieve the goal.

- *Write Financial Goals* :- Worksheet 1 in Appendix 1.1 can be used to decide which financial goals are most important and how much money is needed each month to accomplish these goals. This sheet can be referred while developing spending plan. Financial goals should be given a target date and cost while writing. It helps in tracking and monitoring.

- *Prioritize Goals* :- After writing down financial goals, they should be prioritized in terms of their importance. While proper planning may fulfil all financial goals, prioritizing helps to focus on more important financial goals as they will differ in the length of time needed to achieve them. It may not be possible to start working on all goals at the same time, as, saving for retirement is more important than buying a luxury car. Both short & long term financial goals will require regular savings.

**Step 2: Determine Income/ Expenses (Budgeting)**

Keep track of actual expenses incurred during the month and group them into various categories like housing, utilities, insurance, social, recreation, entertainment, and “other”. Understand and categorize expenses in fixed, flexible, and periodic expenses.

- *Fixed expenses* are the budget items for which a certain amount of money is paid every month for a specified period of time. Some examples are rent or mortgage, car loans, and credit card payments (Worksheets 2A in Appendix 1.2).

- *Flexible expenses* vary from month to month and can be controlled and managed to some extent. They are generally more difficult to forecast than fixed expenses.
Examples of flexible expenses are food, clothing, gas, telephone, and personal care (Worksheets 2B in Appendix 1.3).

- Periodic expenses occur perhaps once or on a particular occasion such as insurance, car license tags, and Diwali gifts (Worksheets 2B in Appendix 1.3).

Using Worksheets 2A & 2B, list all the current expenses. Be sure to include all expenses as accurately as possible. Remember, small expenses add up and can be important in developing a workable spending plan.

For personal finance issues, a month is a good resolution to use. After going through each step and making the budget, one will have an idea of where his money is going and how much he has left over to work with (Matt, 2009).

**Determine your monthly Income:** Understand the total income. This will include all sources of income for all contributing members of the household. This is to know from where the money is coming and how it varies. Income can be noted down in Worksheet 3 in Appendix 1.4. Write down all the funds received during the year. Start with fixed amounts that family members get regularly, such as wages or pensions. Put down the anticipated variable income like interest from savings accounts, dividends from stocks, gifts, and money from other sources.

**Step 3: Tracking Assets /Liabilities**

In the next step, Assets and liabilities are ascertained. Assets are valuable economic recourses owned by an individual which adds on to economic worth. They can be classified as:

- **Current assets** also called liquid assets are those resources which are in the form of cash or are expected to be converted into cash within one year duration.

- **Fixed Assets** are long term in nature, are held for longer period than the accounting period. They include tangible fixed assets and intangible fixed assets. *Tangible fixed assets* include land, building, machinery, equipment, furniture etc. *Intangible fixed assets* represent patents, copyrights, franchises, trademarks, trade names and goodwill.
Liabilities refer to total amount of debts and obligations that an individual has to pay or fulfil in future. They can be classified as:

- **Current liabilities** are debt payable within one year duration. Current assets are converted into cash to pay current liabilities. e.g. creditors, bills payable, wages and salaries payable, interest payable, taxes payable, bonds, debentures, borrowing from banks and financial institutions, public deposits etc.

- **Fixed liabilities** are long term in nature, are payable for longer period than the accounting period. They include bonds, debentures, and secured long term loans.

**Step 4: Record financial transactions**

In addition to track the cash you spend, record every bill payment; debit/credit card expenditures which include the amount paid, and the date on which purchase is made. Don’t forget to record all cheque details also.

Writing expenditures down provides the unique opportunity to visualize and find out where money goes. Moreover, a written financial plan is far more effective than a mental one. It helps to check financial progress more easily. Seeing the written plan helps to remind what actions are necessary to reach financial goals.

For each spending and saving line listed on the Spending and Saving Planner, there is an “Actual” column to track the spending and saving. Fill in the “Actual” column in Worksheet 4 in Appendix 2.5 on a weekly/daily basis.

**Step 5: Automate the Process**

The next step is to look at the present situation by preparing the net worth statement (also referred to as a Balance Sheet) using a spreadsheet program, online service, or other personal finance program.

Net worth statement adds up all assets and subtracts liabilities from that. It allows tracking financial progress over time. Financial tools give a window to analyze a person’s income and expenses and help to understand spending pattern. On-line financial tools provide a common platform where a person can view all his accounts, banks, credit card, insurance, FDs and even PPF.
Step 6: Evaluate

The last step in a successful financial plan is to periodically evaluate and revise plan. Compare planned spending and saving to the amount actually spent and saved. This step will allow measuring the progress toward financial goals. At the end, if a person is not satisfied with the performance, it’s time to make some slight revisions to his plan. In fact, plan should change as the need changes and as a person progresses towards his goal.

1.4. Pilot Study/Exploratory Research

A Pilot Study was undertaken to get an initial understanding of how aware, people are towards the above cited concepts and the process of personal financial management

Objective

To get an initial basic idea of how aware the people are towards personal financial management (PFM) system in their day-to-day life.

Methodology

Open ended questions administered through face to face discussions/ meeting, attached as Annexure 2.

Sample

50 respondents (random)

Qualitative Findings

The qualitative findings of the study are as below:

- Respondents are not clear about the need to follow the personal financial management process. The general perception is linked with quantum of money i.e. they have less money so they don’t need any such system/process.
- Respondents are not clear, how they can implement the personal financial management in practice.
- Respondents are not clear about the benefits they will get by following a system/process approach to personal financial management.
The study revealed that most people are not aware of their current financial worth; further they either do not have clear cut financial goals or a clear strategy for financial planning.

1.5. **Statement of Research Problem**

Q1. What is the problem?
Ans. Financial decision making & literacy has been a focus area for ages. Financial literacy helps in better financial behavior which in turn impacts personal financial decision making. In personal financial management, the interrelation between degree of recording and evaluation of financial transactions on personal financial decision making has not been quantified till now.

Q2. How to solve the problem?
Ans. Study the interrelation between various steps of the personal financial decision making process and to develop a model (using fuzzy logic) that quantifies the degree of relationship interrelation between degree of recording and evaluation of financial transactions on personal financial decision making.

Q3. Why it is important to solve the problem?
Ans. A mathematical model, if developed, can help understand how the financial behavior impacts financial decisions. It has tremendous societal impact on creation of wealth.

Q4. Who is suffering by that problem?
Ans. Every individual who is managing his finances need to be aware of how following a disciplined approach could impact his financial health.

Q5. Will this problem prove or disprove the existing knowledge?
Ans. It will prove rather substantiate the existing knowledge in the field.

**Problem Statement**

Develop a model that points to the interrelation between various steps of the personal financial decision making process that quantifies interrelation between degree of recording and evaluation of financial transactions on effectiveness of personal financial decision making.
The research is titled as ‘A Study and Application of Fuzzy Logic in Personal Financial Management’.

The way we cognize the world is vague and multivalued and fuzziness is often encountered in real life. In a personal financial management context, effective decision making comes from knowing and understanding of the financial information. Fuzzy logic rests on the assumption that all things belong to a set at a certain degree like ‘the financial information is certain’ or ‘the financial information is simple’ or “financial decision making is poor or excellent”

Fuzzy set theory can be used in an uncertain economic decision environment to deal with the vagueness of the human thought. Fuzzy sets provide a mathematical way to represent vagueness and fuzziness in humanistic systems. Fuzzy logic allows decision making with estimated values under incomplete/uncertain information. Fuzzy logic could be used successfully to model situations in which people make decisions in an environment that is so complex that it is very hard to develop a mathematical model.

1.6. Objectives of the research

The objectives of the research are as follows:

1. To find out how meticulously people follow the personal financial management process & to understand the interrelation between the steps of the process.
2. Develop a model which reflects the degree of recording and evaluation of financial transactions on personal financial decision making.

1.7. Hypothesis of the research

The research is also undertaken to test following hypotheses.

1. Extent of recording and tracking of personal financial transactions under various heads (Income, Expenditure, Assets and Liabilities) is not meticulous (100%).
2. Evaluation of Savings is associated with evaluation of Income and Expenditure. Similarly Evaluation of Net worth is associated with evaluation of Assets and Liabilities.
3. Level of evaluation of personal financial transactions is associated with level of recording of the transactions.

4. Uncertainty and Complexity involved in financial decisions are correlated. Uncertainty could be addressed through the recording of all financial transactions i.e. income, expense, assets and liabilities. Complexity can be reduced through evaluation of financial goals, constraints, and consequences of the alternatives.

5. Pattern of recording of personal financial transactions under four major heads (Income, Expenditure, Assets and Liabilities) is associated with various demographic factors i.e. Age group, Education group, Gender, Nature of Income (Fixed/Variable) and Level of Monthly Income.

6. The end result of personal financial management is enhanced financial net worth. A model to quantify the interrelation between degree of recording and evaluation on net worth is developed. The model is validated against the results of actual survey. This hypothesis is designed to find out the correlation between decision making by fuzzy logic and actual financial decisions.

1.8. **Scope of the research**

The scope of the research in line with above stated objectives is limited to

1. Primary Research to ascertain how meticulously people follow personal financial management process & to ascertain the interrelation between different steps of the process i.e. recording, evaluation and decision making.

2. Develop a model using fuzzy logic to relate degree of recording/evaluation with the effectiveness of financial decision making.

3. Validate the model vis-à-vis results derived through primary survey using statistical techniques.