Personal financial planning involves managing all the money activities during a planner’s lifetime. Traditional personal financial planning procedures begin with the planner’s financial status, goals, and expectations for the future before future cash flows of different time periods under various scenarios can be determined. If the planning results fail to meet the planner’s expectation, the planner adjusts tunable parameters repeatedly until an acceptable financial arrangement can be obtained. Such a “trial-and-error approach” or “what-if analysis” does not promise to achieve the optimal plan while numerous outcomes burden the planner. Multiple objectives with different goals of different importance levels might be involved in this decision-making problem. Since the objectives tend to conflict with each other, this study proposes to solve the problem based on a decision model that incorporates a fuzzy multiple objective programming method to achieve better solutions than using “trial-and-error”.

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The decision variables that Mr. Chiang can control in the problem are the time to buy a house, the time to own a house, the amount of pension, and the expected down payment. The actual down payment, expected amortization payment, actual amortization payment, expected house rent, actual house rent, salary income, earning from investment, living expense, investment position, balance, annual rate of return, inflation rate, goal value for utility function, lower (upper) tolerance for utility function, and weight of utility function are also considered. These variables are used in the decision model to formulate the problem. The model is formulated to consider the multiple objectives of the financial planning problem, which are the time to buy a house, the time to own a house, the value of the house, and the pension available at retirement. The objectives conflict with each other because short-term objectives, such as buying a house, and long-term objectives, such as retirement, need to be balanced. The decision variables are controlled by the planner, and the other variables are uncontrollable environmental parameters. The decision they made directly influences the family's overall life quality. The planner wishes to achieve high living expense, house price, and pension as possible, but to own the house as early as possible. The objectives conflict with each other because shortage of cash is not allowed by Mr. Chiang when all expenses must be paid by their liquid assets. For examples, raising living expense gives a better life, but the results are very likely to be delayed house ownership, a cheaper house, or lesser pension at retirement. Consequently, Mr. Chiang is facing a typical multiple objective decision-making problem. A trial-and-error method might be helpful, but it is very exhausting. Besides, the optimal solution might never be found. Mathematical programming appears to be the only way of solving this financial planning problem. However, a model for this problem must be built before a mathematical programming method can be used to solve the problem.
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