

Islamic vis-a-vis Traditional Banking A "fuzzy-set" Approach

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1. Introduction

Commercial banks have become a vital part of the contemporary economic life of most societies. Their main function is the mobilization of the society's savings in order to channel them to economic and social uses. Through extending credits to worthy borrowers, commercial banks act to increase production, expand capital investments, and presumably achieve a higher standard of living. Other services include the convenient method of making payment through cheques and credit cards, the supply of foreign currencies and purchase and sale of securities (Reed, p.5). However, their main goal is the maximization of profit subject to a reasonable level of liquidity, safety, and soundness in performance. Their profits come from interest rates and the various fees and commissions charged by them from customers.

Islamic banking institutions, on the other hand, are based on different philosophic and economic principles. Because Islam is a complete code of life, banking and financial institutions, like other institutions in an Islamic society, ought to derive their guiding principles from Islamic teachings. Islamic banks should therefore be viewed as a particular type of banks, operating without interest rate mechanism, and seeking to maximize an objective function which has social benefit, social welfare and profit as arguments (see Al-Hawary). In addition to their banking services, Islamic banks could be looked upon basically, as investment institutions, using profit-sharing mechanism rather than interest rate mechanism.

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The objective of this paper is to conduct a comparison between Western- style commercial banking system and Islamic banking system. A multi-attribute decision analysis is used as a tool to differentiate between the advantages and disadvantages associated with the establishment and operation of each system. Twelve criteria are selected for study. These are: profitability, liquidity, protection of accounts, investment services and motivation to invest, banking services, economic developments, income distribution and social solidarity, international dependency, stabilization of prices, banking experience and staffing requirements, adoption to local laws and legislations, and finally public acceptance.

For this analysis, an interactive multi-attribute Fuzzy Decision Analysis (IFDA) * is used (see Sofrata and Abdul Fattah). This package, which was modified locally, utilizes verbal rating and weights for each attribute as input. Section II discusses the criterion used in evaluating the two systems, while Section III introduces the Fuzzy Model utilized in the analysis and explains its features. Sections IV, V and VI discuss the findings of the study under different Scenarios. Concluding remarks are presented in Section VII

2. Criteria for Comparison

2.1 Profitability

The rate of return is considered the main incentive for making an investment decision. Depositors in commercial banks receive a fixed interest rate for their deposit funds. In Islamic banks, investment depositors have the privilege to receive a share in the profits reaped by the bank, from both investments and operations. Recent experience has shown that such gains may be greater than the fixed rate of interest given by the traditional commercial banks. For example the distributed profit by Faisal Islamic Bank in Sudan for the year 1980 was 16 percent to investors and 20 percent to shareholders (Faisal Islamic Bank, p.12). These rates of return are higher than the average rate of return obtained on deposits with traditional banks.

2.2 Liquidity

A commercial bank is expected to be reasonably liquid in order to meet unexpected withdrawal on deposits. The investment nature of Islamic bank and the profit-sharing mechanism it uses, led some critics to doubt its ability in this regard.

Under normal circumstances, however, customer with drawings do not exceed 10/15 percent of total deposits, at any one time (Al-Najjar, p.133). Moreover, the Islamic bank, like any other commercial bank, holds a portion of its deposits as required reserve in the central bank. In addition, it may invest in equities and shares. Because of the popularity of placement in Islamic banks and the self imposed restrictions on investments in the international money and capital markets, some of these institutions face the problem of excess liquidity, not the contrary.

* The IFDA was developed on a HP-300 computer and HP-7221 B plotter, using Fortran language. However, the package may be used on any other computer.

2.3 Accounts Protection

In addition to a reasonable rate of return, depositors are to be assured of the safety of their deposits. An Islamic bank, as any other commercial bank, is structured to provide protection for deposits placed in current and saving accounts. With regard to investment accounts, Islamic banks are very selective with respect to both return and safety. Through diversification and carefully chosen assets, the investment risk is reduced and higher returns are attained. In addition, some Islamic banks keep a special reserve, composed of 20% of the annual profits to meet any unexpected loss (Kuwait Finance House, p.18).

2.4 Investment Services and Motivations to Invest

Islamic banking encourages the average income earner and small investor to invest their small savings. Investors are motivated by the services and special treatment they receive, as well as by the human desire toward ownership, high rewards and the satisfaction of being part of a recognizable project. Entrepreneurs on the other hand, are also encouraged to be venture partners since they are not obligated to pay a fixed rate of interest. On the other hand entrepreneurs do not welcome interference by banks in their affairs or limitation on their freedom of action.

2.5 Banking Services

Islamic banking should be able to offer as many services as any commercial bank. These services include use of cheques, purchase and sale of foreign currencies and securities, and provision of letters of credit and so on. However, the degree of complexity in managing some of these services, such as letters of credit, within the framework suggested by Islamic banking practices, may cause some anxiety to beneficiaries. Using the profit-sharing mechanism is not yet fully accepted in this sub-sector of financial services.

2.6 Economic Development

One of the main objectives of Islamic banks is to foster serious economic development. As mentioned before, these institutions seek to maximize an over all social-benefit function (Al-Gammal, p.58). Therefore, they strive to overcome local shortages and difficulties and to move the economy to a higher stage of self-sustained development. Their activities include housing and agricultural projects, imports of necessities, financing the purchase of tools and machines for small entrepreneurs and similar activities.

On the other hand, traditional commercial banks seek in their lending policy to ensure first of all a high rate of return irrespective of the wider development aspects of the project.

2.7 Income Distribution and Social Solidarity

Using interest rate mechanism leads to the accumulation of wealth in a few hands through borrowing money at a low rate of interest and then lending it at a higher rate. The borrower's obligation to pay high interest rate regardless of the outcome of the project would, in some cases, deprive him of a portion of his previously accumulated wealth.

In Islamic banking, investment depositors, who are numerous, share with the bank its overall profits, including returns from other services as well.

In order to meet their moral objectives, some Islamic banks insist on associating themselves with the establishment of a *zakah* Fund. It is to collect *zakah* from the haves and distribute it to the have-nots; that is, from the lower propensity-to-consume people to the higher ones.

In other words, Islamic banks should have a favourable effect on the socio economic solidarity.

2.8 International Dependency

In present-day world, capital flows between countries and markets in accordance with the level of interest rate. International capital also is attracted by the political and economic stability of the national markets. Hence, the flow of capital has been mostly from less developed countries (LDCs) to the industrialized countries and is denominated in the host countries currencies, a matter which has given rise to unfavorable consequences bearing on the economies of LDCs.

First, the economies of the LDCs have become subject to unfavorable changes such as fluctuation of the exchange rates and depletion of the real value of financial resources.

Second, the outflow of capital most often strengthens the economies of the receiving-countries and weakens the economies of the transferring countries.

Third, the outflow of capital limits the mother countries ability to practice in dependent fiscal and monetary policies.

Fourth, LDCs borrow back from the international money and capital markets, but at higher interest rates and with more restrictive conditions.

In short, the use of interest rate mechanism by LDCs commercial banks results in relatively restraining their economic development and exacerbating their international dependency.

Islamic banks, which have different objectives and a different mechanism, are expected to create a far more independent banking system. Establishment of a complementary chain of local, regional, and international Islamic banks ought to provide a better chance for the attainment of the objectives of the LDCs in general and Islamic countries in particular. The accumulated savings of these countries will be mostly directed to investments within the mother countries and in accordance with the announced policy of the Islamic banks. At present investment in some Islamic countries, and LDCs in general is surrounded by a high level of uncertainty, which, might in the short- run increase the level of risk for their investments.

2.9 Stabilization of Prices

A distinct feature of commercial banks is their ability to create money. However, borrowers qualify for the new created money irrespective of their ability to produce real goods and services. In other words, there is no certainty that real goods and services will be produced as a result of the increase in money supply (Siddiqi, p.13).

The Islamic banking mechanism, on the other hand, would create money when there is strong feeling that a corresponding increase in the supply of goods and services will mature. If the investment fails to meet its goal, borrowed capital will diminish by the amount of loss (Siddiqi, p.13-17). Therefore, prices would be more stable in an Islamic banking system than otherwise.

2.10 Banking Experience and Staff Requirements

Islamic banks are new institutions. Thus we would expect that they would need some time for their banking experience to mature. In this regard, traditional banks score favorably when compared with their Islamic counterparts.

Moreover, the nature of the Islamic bank makes its staff requirements harder than the traditional bank. The type of its activities, the structure of its relation with customers and venture partners require more experienced, and Islamically committed staff. However, Islamic banks are expected to overcome this shortcoming as they grow in experience and size.

2.11 Local Laws and Legislation

Islamic banking faces a serious challenge within the legal arena. Local laws and procedures have been designed to deal with the traditional banking system. For instance, according to such laws banks are very restricted in their direct investments, and are forbidden to participate in the business of trade and real estate (see SAMA). Therefore, a newly established Islamic Bank has to struggle in demanding changes in the rules of the financial game and to obtain some exemptions.

Currently operating Islamic banks have succeeded in gaining certain exemptions from local banking laws.

2.12 Public Acceptance

One of the fundamental reasons for the failure of traditional banking as an efficient mobilizer of financial resources, and a successful intermediary between savers and users of financial funds in the Muslim world, is the lack of public acceptance. Muslims consider it as a "sinful" alien institution. Therefore, a banking institution operating within Islamic teachings will be more favored by the public at large and should be able to overcome the psychological barrier from which the traditional bank in the Muslim world usually suffers.

3. The Model

Decision analysis by Fuzzy Sets may be used in the selection of the most preferable scenario for the Islamic banks. The process has four distinct steps. These are:

- Criteria Weights
- Rating

- Ranking and Preferability, and
- Scenarios Definition

3.1 Criteria Weights

Since some of the Criteria are more important than others, different weights should be assigned to different criteria to illustrate the difference and the importance of each criterion. To indicate the relative importance of differences between criteria, verbal weights are used. These weights may be represented by the membership function shown in Fig. 1, or by the fuzzy set, W_j (See Kenaranqui, et al), where

$$W_j = (W_j, U_{W_j}), j = 1, 2, \dots, n$$

- $W_j =$ very important = (0.8,0.0), (0.875,0.5), (0.95,1.0)
(0.975,0.5), (1.0,0.0)
- $W_j =$ important = (0.6,0.0), (0.7,0.0), (0.8,1.0), (0.9,0.5),
(1.0,0.0)
- $W_j =$ moderately important = (0.3,0.0), (0.4,0.5), (0.5,1.0),
(0.6,0.5), (0.7,0.0).
- $W_j =$ rather unimportant = (0.0,0.0), (0.1,0.5), (0.2,1),
(0.3,0.5), (0.4,0.0)
- $W_j =$ very unimportant = (0.0,0.0), (0.025,0.5), (0.05,1.0),
(0.125,0.5), (0.2,0.0)

3.2 Rating

Each alternative is rated verbally with respect to each criterion alone, independent of all the other alternatives. The rating may be represented by the membership function shown in Fig. II or by the fuzzy rating of an alternative R_{ij} (see Kenaranqui, et al), where

$$R_{ij} = (r_{ij}, U_{R_{ij}}(r_{ij})), i = 1, 2, \dots, m$$

$$1, 2, \dots, n$$

- $R_{ij} =$ very good = (0.8,0.0), (0.87,0.5), (0.95,1.0), (0.975,0.5)
(1.0,0.0)
- $R_{ij} =$ good = (0.6,0.0), (0.7,0.5), (0.8,1.0), (0.9,0.5), (1.0,0.0)
- $R_{ij} =$ Fair = (0.3,0.0), (0.4,0.5), (0.6,0.5), (0.5,1.0), (0.7,0.0)
- $R_{ij} =$ poor = (0.0,0.0), (0.1,0.5), (0.2,1.0), (0.3,0.5), (0.4,0.0)
- $R_{ij} =$ very poor = (0.0,0.0), (0.025,0.5), (0.05,1.0), (0.15,0.5)
(0.25,0.0)

3.3 Ranking and Preferability

The IFDA computer program is used in this analysis to find out the final ranking of each alternative, as well as the preferability of the best alternative. In order to know which alternative is the best, both of them are plotted on the same graph as illustrated in figures IV, VI, and VIII. The best alternative will have a bigger area under its curve (in the positive side of the X-axis) than the other one. Also, its maximum value corresponds to a higher positive X-value than the other alternative.

3.4 Scenarios Definition

To conduct a comparison between Islamic Banking and Traditional Banking systems let us consider only three scenarios which reflect the most expected situations to the authors. These scenarios are:

4. Scenario I

This scenario will be for banks established in a Muslim society, that is a society with a more supportive attitude towards Islamic banks. The weights given are subjective and represent the writers' view. The weights and ratings of the criteria of scenarios are shown in Table 1. The results of the final membership, final rating, and the ranking of each alternative within the framework of Scenario I are shown in Table II. Figure III and IV show the results of the membership functions of final rating for scenario 1, and the preferability of the Islamic Bank respectively.

5. Scenario II

Here, the society is assumed to be one where public acceptance of Islamic banking is not an important factor in judging the merit of the institutions. Even in such a society an Islamic Bank could be instituted if the society realizes that such an institution would be in its interest. The main distinct feature from the previous scenario is the disappearance of the last criterion, i.e. public acceptance. It is assumed that the public is neutral to the nature of banking. In addition, *zakah* would not be a determining factor in the choice between the two systems. The weights and rating of the criteria of Scenario II are shown in Table III. The results of final membership, final rating, and the ranking of each alternative within the framework of Scenario II are shown in Table IV. Figure V and VI show the results of the membership functions of final rating of Scenario II and the preferability of the Islamic Bank.

TABLE I
Criteria and weights for the Islamic and Traditional Banks

Criteria	Weights*		Alternatives*	
			Islamic Banks	Trad. Banks
1.	Profitability	VI	VG	G
2.	Liquidity	VI	G	VG
3.	Protection of Accounts	I	G	VG
4.	Investment Services and Motivations	I	VG	G
5.	Banking services	VI	F	G
6.	Economic development	VI	VG	P
7.	Income distribution and social solidarity	VI	VG	P
8.	Reducing international dependency	VI	G	P
9.	Stabilization of prices	I	G	F
10.	Banking experience and staffing requirements	MI	F	G
11.	Meeting, local laws and legislations.	MI	P	G
12.	Public acceptance	VI	VG	F

(*) These weights are subject to change.

VI, I, MI = Very important, important, and moderately important.

VG, G, F, P & VP Very good, Good, Fair, Poor and Very poor.

TABLE II
Final membership, Rating and Ranking for
Islamic and Traditional Banks for Scenario I

<i>Alternative</i>	<i>The final membership function</i>	<i>final Rating</i>	<i>final Ranking</i>
1	1.000	0.8646	1
2	0.5498	0.7097	2

TABLE III
Criteria and weights for the Islamic and Traditional Banks

<i>Criteria</i>	<i>Weights*</i>		<i>Alternatives*</i>	
			<i>Islamic Banks</i>	<i>Trad. Banks</i>
1.	Profitability	VI	VG	G
2.	Liquidity	VI	G	VG
3.	Protection of Accounts	I	G	VG
4.	Investment Services and Motivations	I	VG	G
5.	Banking services	VI	F	G
6.	Economic development	VI	VG	P
7.	Income distribution and social solidarity	VI	G	P
8.	Reducing international dependency	VI	G	P
9.	Stabilization of prices	I	G	F
10.	Banking experience and staffing requirements	MI	F	G
11.	Meeting, local laws and legislations.	MI	P	G

TABLE IV
Final membership, Rating and Ranking for Islamic and Traditional Banks for
Islamic and Traditional Banks for Scenario II

<i>Alternative</i>	<i>The final membership function</i>	<i>final Rating</i>	<i>final Ranking</i>
1	1.000	0.8441	1
2	0.6358	0.7147	2

6. Scenario III

This represents the writers' prognosis of the Islamic banking future in Muslim countries ten years from now. By that time, Islamic banking, it is assumed, will have much expanded and many of the current problems will have been solved or at least diminished. Such problems include, trustworthiness, liquidity, availability of letters of credit and so on. The weights and ratings of the criteria of Scenario III are shown in Table V. The results of the final membership, final rating, and the ranking of each alternative within the framework of Scenario III are shown in Table VI. Figures VII and VIII show the results of the membership functions of final rating for Scenario III, and the preferability of the Islamic Bank respectively.

(*) These weights are subject to change.

VI, I, MI = Very important, important, and moderately important.

VG, G, F, P & VP Very good, Good, Fair, Poor and Very poor

TABLE V
Criteria and weights for Islamic and Traditional Banks

Criteria	Weights*		Alternatives*	
			Islamic Banks	Trad. Banks
1.	Profitability	VI	VG	G
2.	Liquidity	VI	G	VG
3.	Protection of Accounts	I	VG	VG
4.	Investment Services and Motivations	I	VG	G
5.	Banking services	VI	G	G
6.	Economic development	VI	VG	P
7.	Income distribution and social solidarity	VI	VG	P
8.	Reducing international dependency	VI	G	P
9.	Stabilization of prices	I	G	F
10.	Banking experience and staffing requirements	MI	G	G
11.	Meeting local laws and legislations.	MI	F	G
12.	Public acceptance	VI	VG	P

TABLE VI
Final membership, Rating and Ranking for Islamic and Traditional Banks for Scenario III

Alternative	The final membership function	final Rating	final Ranking
1	1.000	0.8920	1
2	0.3021	0.6610	2

7. Conclusion

Fuzzy sets and IFDA computer code were used for this work to compare the Islamic and traditional banks for three different scenarios; namely: a Muslim society at the present time, a secular society at the present time, and a Muslim society ten years hence. For all scenarios, it is found that Islamic banks are preferred to traditional banks.

(*) These weights are subject to change.

VI, I, MI = Very important, important, and moderately important.

VG, G, F, P & VP= Very good, Good, Fair, Poor and Very poor.

FIGURE 1
Membership function UW versus the weighting W

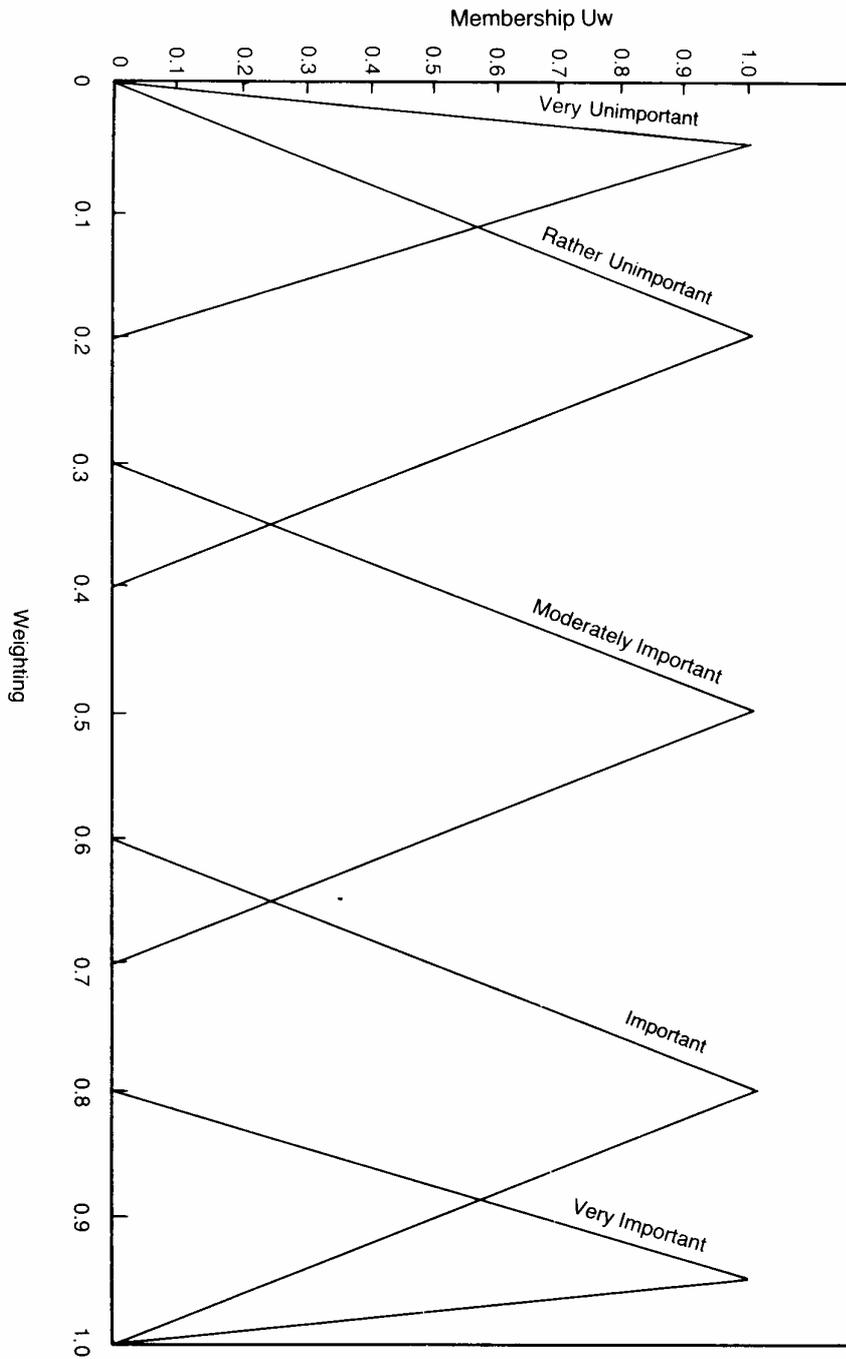


FIGURE 2
Membership function U_r versus the rating r

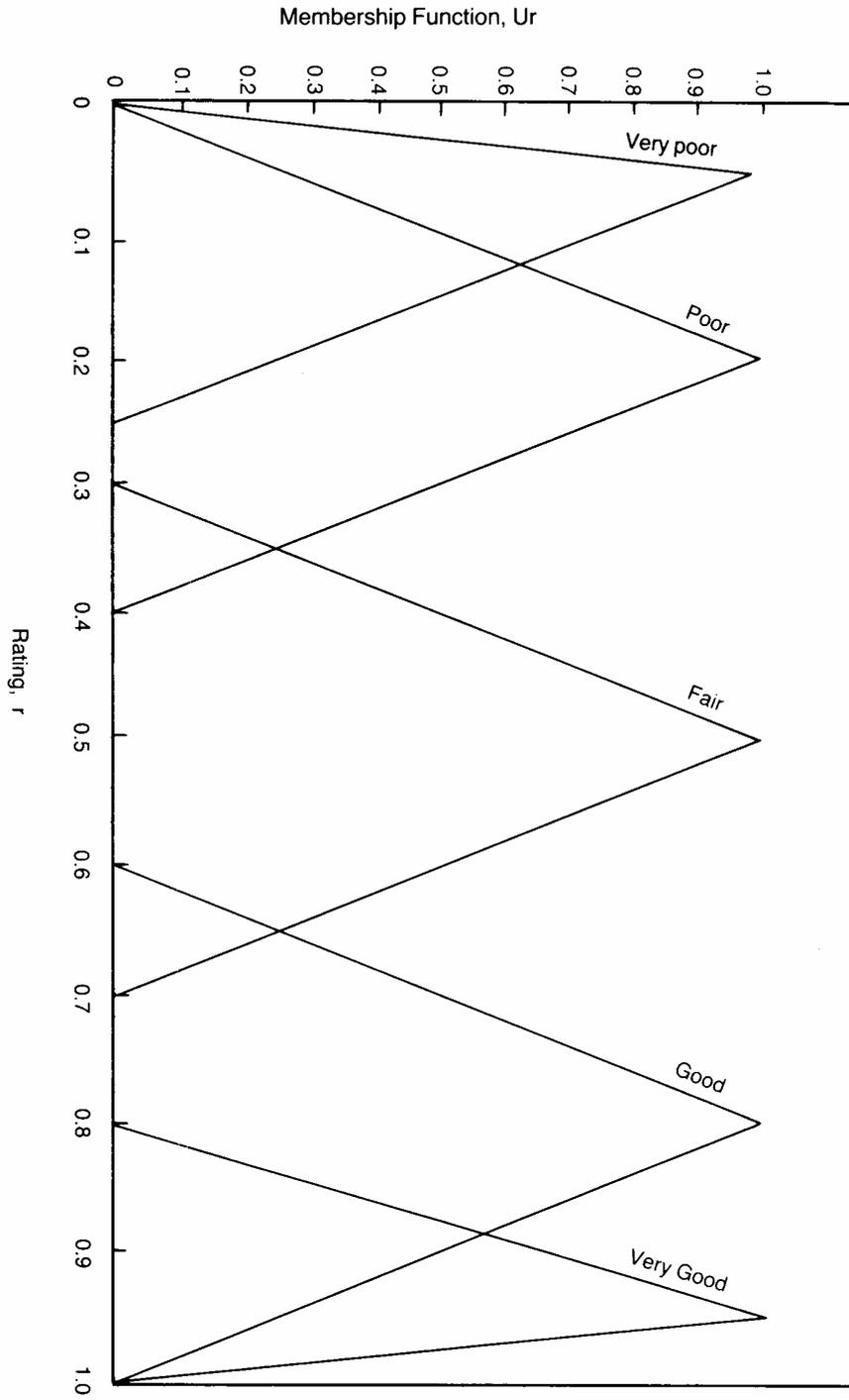


FIGURE 3
Membership functions of final rating for Islamic Bank Scenario I

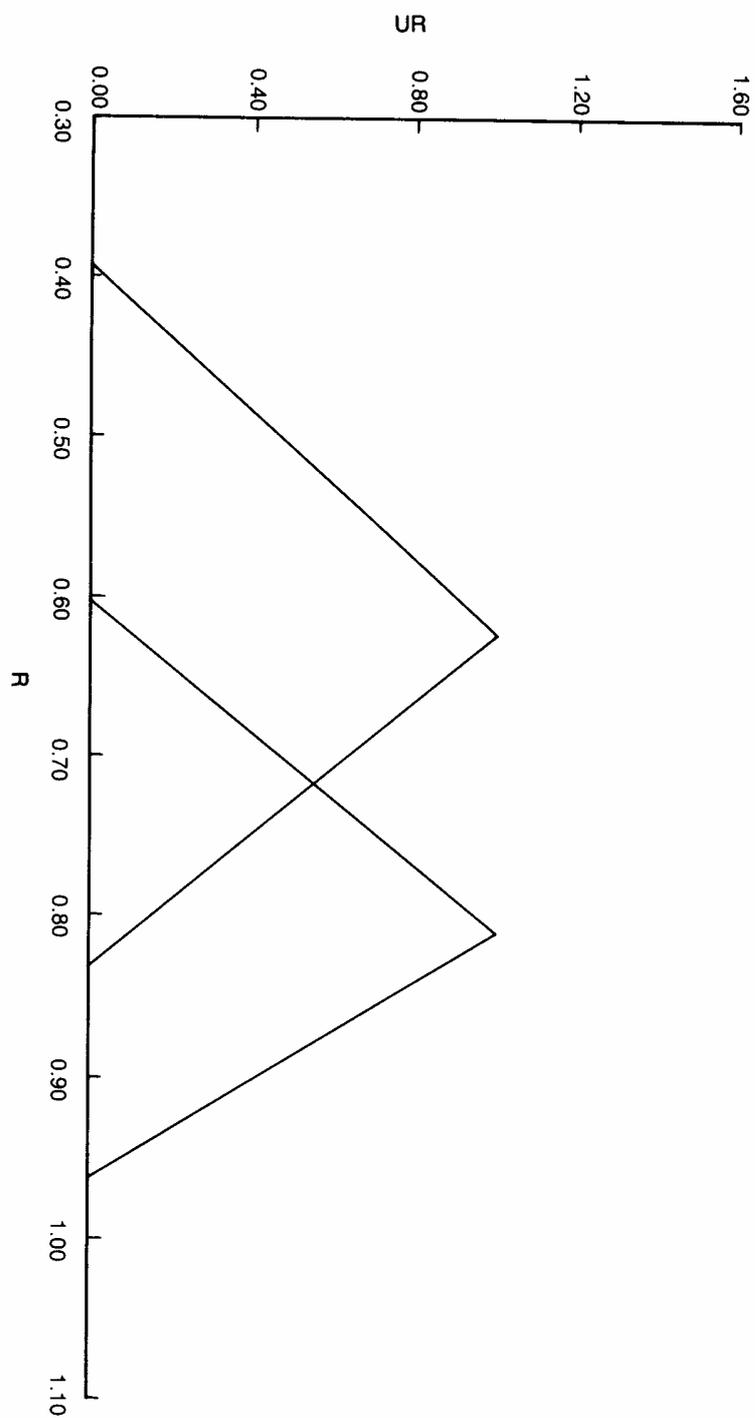


FIGURE 4
Membership functions of the preferability of Alternative I over the others

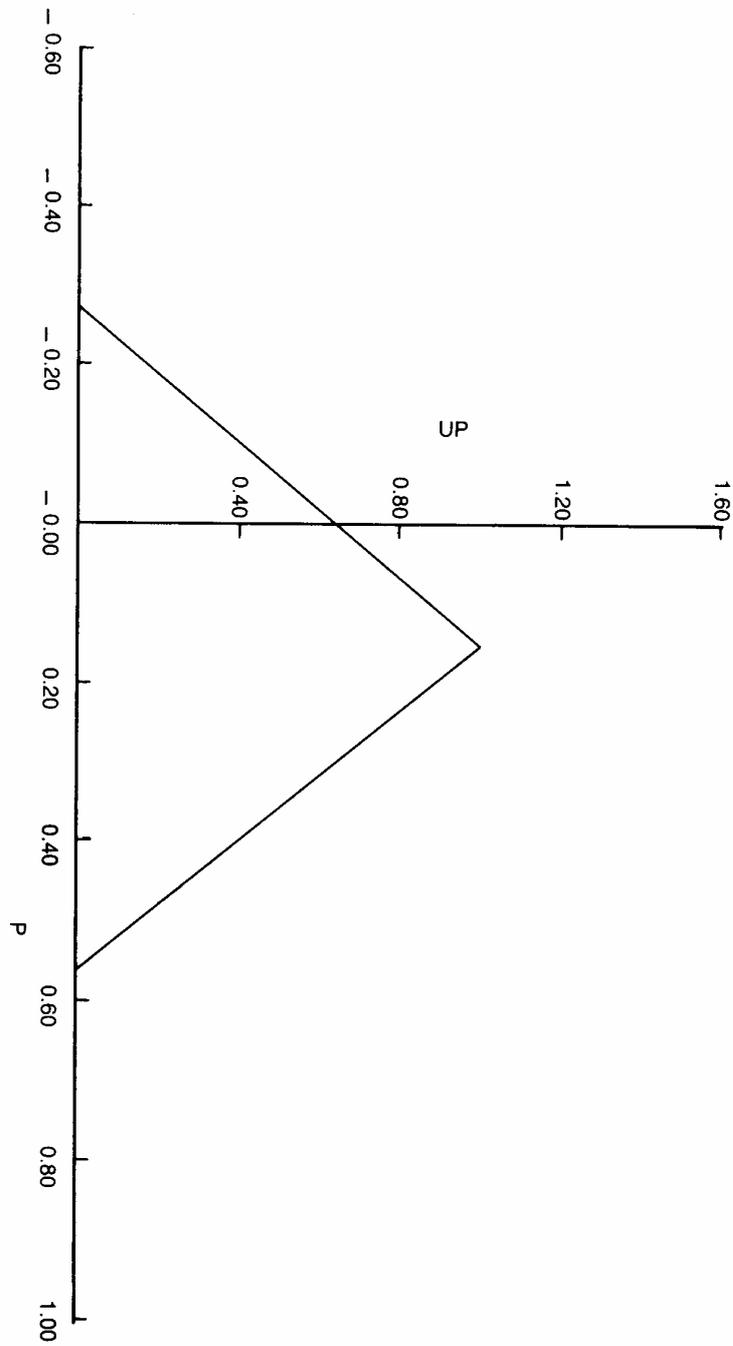


FIGURE 5
Membership functions of final rating for Islamic Bank-Scenario 2

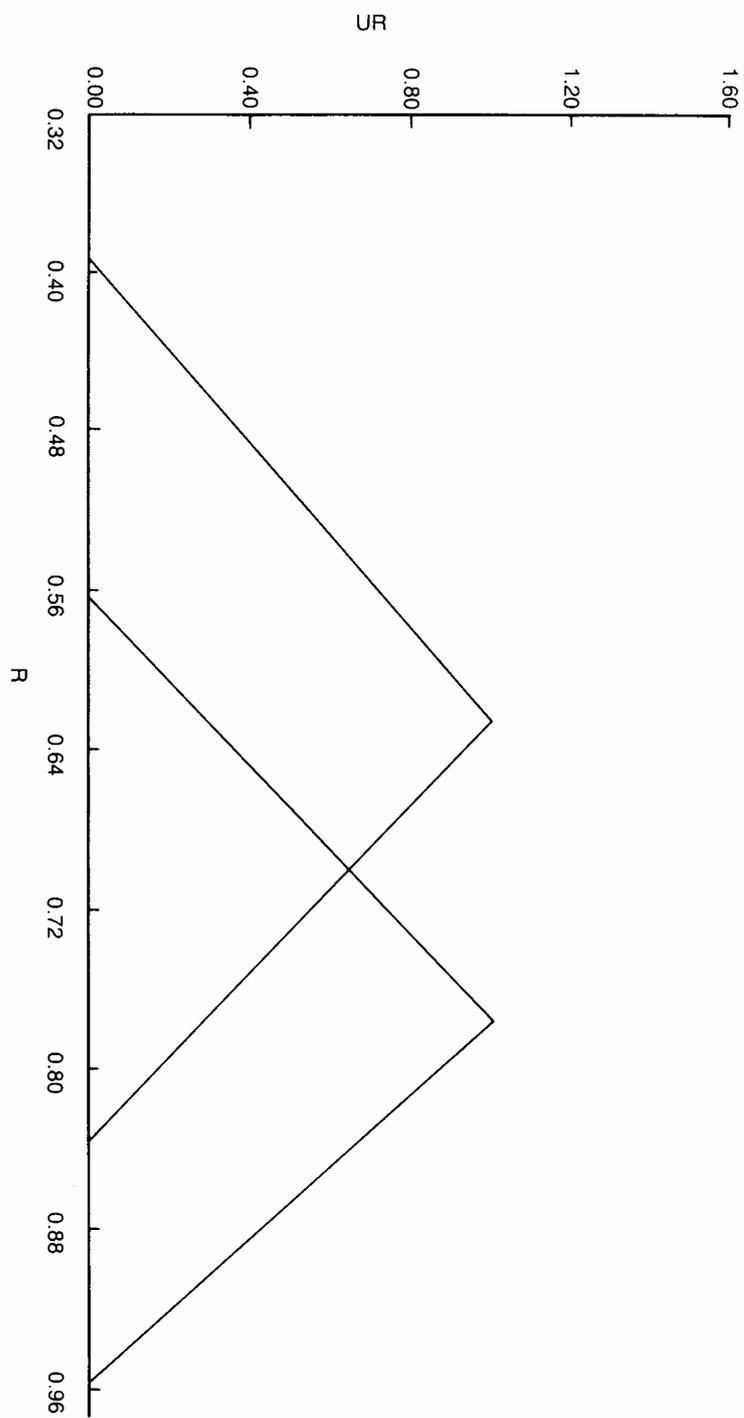
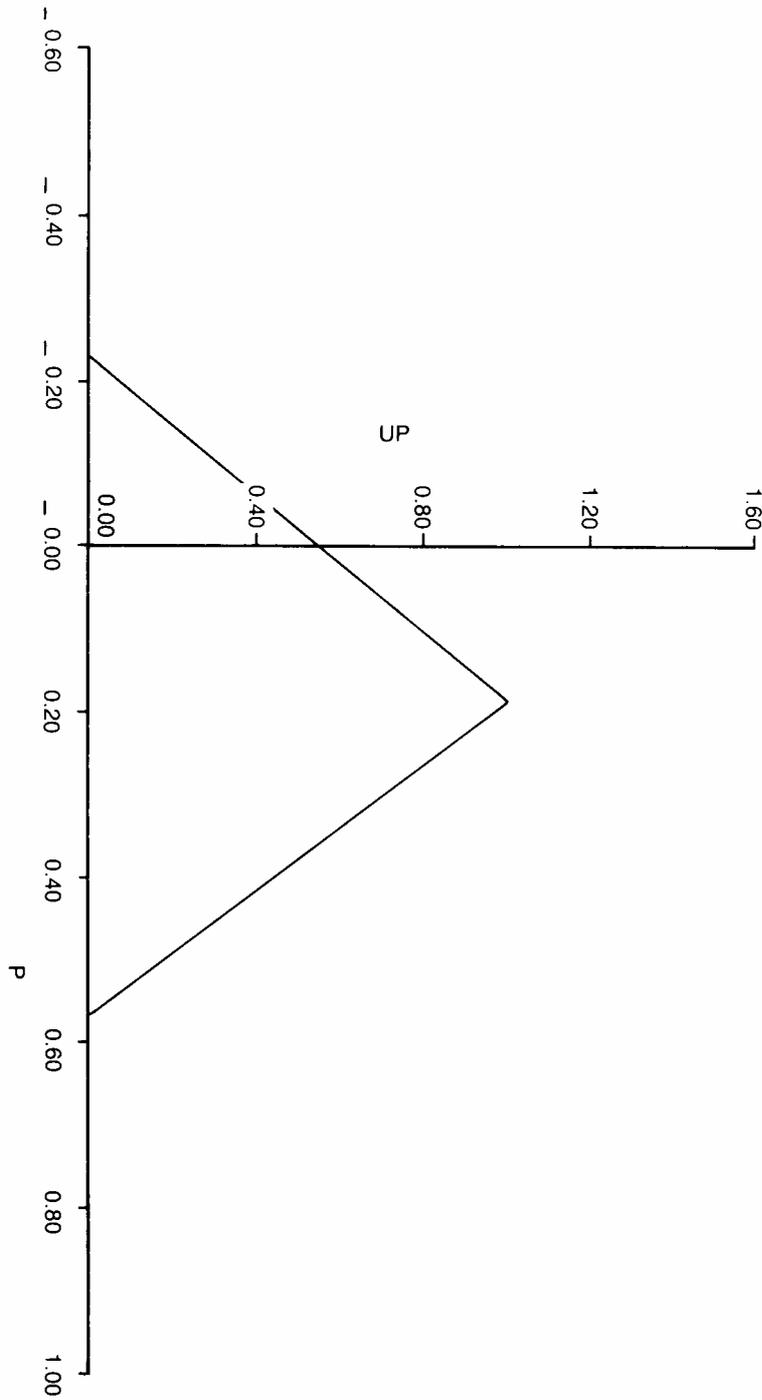


FIGURE 6
Membership functions of the preferability of Alternative I over the others



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