A NON-METRIC MULTIDIMENSIONAL SCALING ANALYSIS OF CUSTOMERS' ATTITUDES TO LIFE INSURANCE

An Empirical Investigation of Insured vs. Non-insured Attitudes Towards Life Insurance Purchasing Decision Variables in Egypt

by

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To

My Mother

The Memory of My Father

and

My Wife, Hala

My Son, Mohammed

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ABSTRACT

This study is an investigation of the variables which determine life insurance purchasing decisions in Egypt. More precisely, the interest is focused on the customers' attitudes towards purchasing life insurance, as well as on demographic/socioeconomic factors that are assumed to influence the decision to purchase. It is hypothesized that: A) Attitudes towards life insurance purchasing decision variables are similar (i.e., there is no difference) for both insured and non-insured typologies; B) the importance attached to saving through life insurance is similar to that attached to saving with the other financial institutions; and C) there is no significant relationship between the insured's demographic/socioeconomic characteristics, and the amount of life insurance purchased.

The design of the research is by facets. The faceted design permits the whole universe of content under investigation to be observed and a limited content of this universe to be systematically sampled. The data is collected by means of personally administered interview questionnaires to 300 respondents (150 insured and 150 non-insured).

Since the data collected is of two major different groups of variables (i.e., attitudinal and categorical), two different techniques of analysis are employed. The first group (attitudinal) is non-metric, i.e,, ordinal scaled, multivariate, and interdependent data, whereas the second group (categorical) is multivariate and dependent data of both nominal and interval types. Therefore, the decision was made to use the Non-metric Multidimensional Scaling (NMS) technique for the analysis of the attitudinal data, whereas the Multiple Classification Analysis (MCA) was found to be the most appropriate one for the categorical data.

The MINISSA computer program output employed in this study, investigates the similarities and dissimilarities between the two typologies' (insured and

non-insured) attitudes to life insurance purchasing decision variables. A Wilcoxon test has been employed to investigate the significance of hypotheses A and B, whereas F-ratio test is used for testing hypothesis C. A Kendall correlation analysis is also carried out on the relationship between the variables that are assumed to determine the life insurance purchasing decisions.

The research conclusions are: i) the two typologies are similar in their (average) expressed attitudes to life insurance purchasing decision variables; ii) the most important reasons for purchasing life insurance (by both typologies) are: 1) the protection of dependents; 2) saving purposes for daughters' marriage costs; and 3) retirement income/old age protection; iii) the most desirable financial facilities (offered by the insurer) are: 1) profit sharing; 2) borrowing against the cash value of the policy; and 3) the guarantee of surrender values; iv) the most important financial aspects for purchasing life insurance are: 1) a small amount of money being invested; 2) safety for money; and 3) provision against inflation.

The significantly different attitudes expressed by the two typologies are those with regard to the importance attached to having life insurance against saving with the other financial institutions. It is concluded that the most distinctive function of life insurance programmes is to cover risks (protection element), whereas saving with the other financial institutions is considered to be of more importance where the purpose(s) is to get a high return on investments and/or saving for emergency situations.

The findings on the MCA output show that the selected predictors account for a relatively high proportion of the variance in the amount of life insurance purchased (R^2 = 55%). However, the most important explanatory variable is found to be current income. The investigation finally concludes by suggesting the potential applications of these research findings for the process of decision making in the life insurance marketing management in Egypt.

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Chapter One

Introduction

1.1 Preface

The subject of this work is the customer's attitude towards purchasing life insurance and the factors that affect the decision to purchase in Egypt.

The classical economic theory, as well as the neo-classical economic theory regarded the consumer as a completely rational decision maker (Bamira, 1975). These theories assume that the consumer knows all the alternatives available to him, that he knows the consequences of each alternative, and that he can at least range in order, the utility of each consequence to himself. This means that when all this knowledge is complete, a rational person would choose the alternative that has the greatest total utility.

On the other hand, where consequences are not known with certainty, but could be assigned certain probabilities, then the rational choice is one that maximizes the expected utility. However when the probabilities cannot be assigned to some of the consequences, then what is rational is no longer very clear. Also, even without the problems of uncertainty, the assumption of 'rationality' is quite questionable.

Psychological studies indicated that a person's behaviour is governed by many factors, such as social environment, life style, personal influence, social values, communication systems, personal needs, and so on. It is these observations which lead many of those who are trying to achieve broader understanding of consumer behaviour, to try to develop theories of consumer decision making or problem solving. These approaches however try to stress man's more or less rational effort to relate means to ends within the context and limitations of his perceptions, attitudes and the social and economic frame.

A few examples of such theories (or models) are that of Katona, 1960; Nicosia, 1966; and Howard-Sheth, 1969. Hence this investigation is an attempt to explore the most important factors which determine the life insurance purchasing decisions in Egypt. This will be done through a faceted design of the research problem, and a non-metric multi-dimensional scaling analysis as well as a multiple classification analysis. The main purpose of the study is then to relate the attitudes of insured and non-insured people, as well as the socio-economic and demographic characteristics to life insurance purchasing decisions in Egypt.

1.2 Statement of the Problem

The premise on which this study is based is that life insurance is a product which the consumer has to choose to buy like any other product (or service) on which he spends his resources. The study will focus on investigating the attitudes of insured and non-insured typologies to life insurance purchasing decision variables as well as other variables (i.e. demographic and socio-economic) which are responsible for the variances in the decision among people as to the amount of life insurance purchased.

Davis, 1972, stated that in order to understand and cope with the consumer behaviour phenomenon in the field of life insurance, insurers need to know as much about this phenomenon as possible. This means that factual and attitudinal information must be gathered and analysed so that insurers will have an accurate picture of the market. Then the proper strategies can be planned and executed.

The traditional marketing philosophy of the life insurance marketers is often summarized in the statement that life insurance is not bought but is sold. In other words, the customer of life insurance does not volunteer to buy life insurance and would not be interested in the product unless convinced and sold on the idea by an agent.

Yet recent changes in the services industry in general, and particularly in the life insurance industry, provided some evidence for the contrary. Bamira, 1975, stated that in previous years the typical pattern of marketing life insurance with the almost exclusive aid of agents, has been losing some ground to direct marketing systems such as employed by banks and by direct mail selling, which do not use personal selling. This indicates that there is definitely a demand for life insurance on the part of consumers and that life insurance could be bought and not just sold.

Therefore this investigation will attempt to explore the relevant factors and variables which affect the consumer's decision to purchase and own life insurance. The understanding of the purchasing decision process should enable the marketers to better tailor the product(s) which meet the consumer needs and increase the likelihood of increased sales volume.

1.3 Objectives of the Study

The main objectives of this study are:

1) To identify the most important variables which are the main component elements of the life insurance purchasing decisions in Egypt.

2) To investigate the similarities or dissimilarities of customers' attitudes (actual and potential) towards the above-mentioned variables in making a decision to purchase life insurance.

3) To compare the two hypothesised typologies (i.e. insured and non-insured), with regard to their expressed attitudes towards the importance they attach to saving through life insurance and that attached to saving with the other financial institutions.

4) To examine the relationship (association) between the insured's age, education, occupation, family composition and income, and the amount of life insurance purchased.

Having achieved these main objectives, other ones have emerged to serve the marketing system in the life insurance companies; they are:

a) To determine whether emphasis should be placed on protection or savings contracts, and on which of the various financial facilities that are provided by the insurer.

b) To suggest the appropriate product innovations in light of customers' needs and attitudes.

c) To decide on both the life insurance agents' training courses and the kind of advertising media and messages that reach the people most effectively.

1.4 Research Hypotheses

A hypothesis is defined as an assumption which, on the basis of some experimental findings, may be rejected or allowed to stand. In the formulation of the hypotheses which guided the research, two main sources were employed; they are:

1) Previous research studies related to the problem of this investigation were thoroughly reviewed.

2) Interviews-in-depth of a small group of respondents who were virtually representative of the ultimate population of respondents.

The major hypotheses of this study are:-

A) Attitudes towards life insurance purchasing decision variables are similar (i.e., there is no difference), for the insured and non-insured typologies in Egypt.

B) The importance attached to saving through life insurance programmes is similar (i.e., there is no difference), to that attached to saving with the other financial institutions' services for both insured and non-insured people.

C) There is no significant relationship (i.e. association) between the amount of life insurance purchased and the insured's age, education, occupation, family size, family life cycle and income (taken collectively or separately).

1.5 Organisation of the Thesis

The scientific method of inquiry involves three general steps. The first of these consists of formulating a probable explanation or a hypothesis(es), which is generally an untested statement about some phenomenon. The second step requires the logical thinking out of the consequences of the hypothesis(es) assuming it is correct (this step involves the statistical test of the research hypothesis(es)). The third step consists of comparing the consequences postulated by the hypothesis(es) with the observable facts.

Hopefully, these three steps have been followed in this investigation. After opening with a preface, we continued this first chapter by presenting the research problem, the objectives of the study, and the hypotheses to be tested.

In Chapter Two we present a comprehensive short overview of the life insurance ownership, its nature, importance, and problems facing the purchase and ownership of life insurance policies. This overview includes a discussion of the types of contracts, the protection and saving elements involved in purchasing life insurance, the importance of life insurance to individuals and to the national economy in Egypt as a whole. Particular attention is given to the main problems facing the life insurance industry, e.g., inflation.

Chapter Three is devoted to a survey of the literature. This was necessary to determine if a substantial work had already been done in the area and to uncover any related work that might prove helpful in identifying our research problem. After an exhaustive search of the literature it was found that there had been much discussion about the need for such a study, but little research has been accomplished.

Chapter Four describes the complete research design of the investigation. It opens with the planning of the study, which is based on the findings of the preliminary interview-in-depth and the results of reviewing the literature discussed in the previous chapter. This enables the design of the whole universe of content of the research problem within a faceted approach. Then, after the mapping sentence of the whole universe of content under research is presented, we discuss the logic and the advantages of the design by facets, and then define and elaborate on the main sets and subsets of the variables which will later be analysed. The chapter is concluded by sampling systematically a limited content of the universe, which resulted in fifty attitudinal variables that comprise the life insurance purchasing decision process. Also, six demographic/socio-economic characteristics, which are responsible for the variances in customers' decisions regarding the amount of life insurance purchased, are included. Finally, we present the rationale of the facet design, its hypothesis and the relative methodologies of analysis.

Following the design of the research, in Chapter Five we describe the main steps in the design of the questionnaire, the process of sampling the population of respondents and the planning and performing of data gathering. The design of the questionnaire is based on the faceted design of the universe of content of attitude described in Chapter Four. The data is gathered from two random samples of respondents (i.e., insured and non-insured) by means of personally administered interviews. We conclude this chapter with some remarks and considerations on the reliability and validity of the research design.

Chapter Six is dealing with the methodology of analysis of the data collected. Since the data collected are in two different multivariate groups, in terms of their nature (i.e. interdependence or dependence) and measurement level (i.e., metric or non-metric), two different methodologies of analysis are to be utilized. With regard to the first group (i.e. attitudinal data), it is multivariate, interdependent, and non-metric (ordinal scaled), the four alternative methodologies; Factor analysis, Latent structure, Cluster analysis and Non-metric Multidimensional Scaling are reviewed and considered. The most suitable one was found to be the NMS. We employed the "MINISSA" computer program, of which we briefly reviewed the algorithms. This is a developed version of the Lingoes-Guttman Smallest Space Analysis (SSA-I) by Roskam, 1969.

The second group of data is the categorical information, which includes multivariate, dependence, nominal scaled, and intercorrelated variables. It was found that the Multiple Classification Analysis (MCA) is the most appropriate technique to handle this set of data.

Chapter Seven comprises the research findings based on the analysis and interpretation of both the MINISSA and the MCA programs output. In this chapter we test three statistical hypotheses, accepting the first hypothesis and rejecting both the second and third hypotheses. Both the analysis and interpretation of the two configurations (i.e. insured and non-insured) are by facets.

Chapter Eight is the conclusion of the study with some implications of the research results, mentioning the theoretical contribution of this research and the practical applications of the findings in life insurance marketing. The limitations of the research, both in design and methodology, are discussed. The chapter and the study conclude with an evaluation of areas for further research.

Chapter Two

Life Insurance Ownership, Nature, Importance and Problem

2.1 Introduction

Past research has indicated that most consumers view life insurance as a necessity; however, consumers are generally not so confident about their ability to comprehend various alternatives, and make reasoned decisions concerning life insurance (Ferrel, 1972). A part of this problem, is due to two main points; the complex characteristic of the life insurance product and the surrounding problems facing the decision maker in taking a decision to purchase life insurance. For example, the economic conditions (i.e., inflation), and the competition from the other financial institutions have been the major problems facing the life insurance industry.

In this chapter we are discussing briefly the nature and the importance of life insurance contracts and, also, throwing some light on the problems which the life insurance industry encounters as a whole with particular reference to inflation.

2.2 Nature of the Life Insurance Product

The function of the life insurance product is to provide scientific loss sharing to protect the unfortunate few by the contribution of the many who are exposed to the same risk (Huebner and Black, 1982). In other words, life insurance, as a social and economic device, is a method by which a group of people may cooperate to ameliorate the loss resulting from the premature death of members of the group. To do this, the insuring organization collects contributions (i.e., premiums) from each member, invests the contributions, guarantees both their safety and a minimum interest return, and distributes benefits to the beneficiaries of those members who die.

However, Greene and Trieschamann (1981) stated that few industries have equalled the consistent record of the long-term growth of life insurance. Yet, when measured against the potential market for life insurance, the sales have fallen far short of that market. Largely responsible for this is the failure of the consuming public to understand what life insurance really is, what it will do, why it is needed, and how it may be arranged. Part of the difficulty lies in the traditional methods of distribution, which have been justified on the grounds that life insurance is not bought, but is sold.

In fact, conclusions reached by many observers in the field of life insurance, highlighted the lack of consumer satisfaction. One of these views was summarized by Kingsley, 1971. He stated that a large majority of the public believe they are poorly informed about life insurance and generally lack confidence about their ability to fully comprehend various alternatives and to make a reasoned and sensible decision on their own. This lack of confidence in one's own knowledge, ability and the absence of rational criteria, for deciding on the type and amount of life insurance, is symptomatic of the fact that the life insurance purchase situation is, by and large, a complex undertaking one.

Skelly, 1969, stated that anxiety or dissatisfaction, on the part of the life insurance customer, is the result of buyer-seller interaction in the purchase situation. Possibly the life insurance agent represents one of the major symbols of the industry which arouse feelings of discontent within the public. The anxiety and uneasiness, in life insurance purchasing decisions, manifested itself in Skelly's survey findings which revealed that:

1) Six out of ten adults said they feel uneasy when they are purchasing life insurance because they are not sure they are purchasing the

right kind of policy; they do not feel well-informed.

2) Seven out of ten stated that the high pressure tactics used by some life insurance agents annoyed them.

3) Almost two-thirds of consumers said they were unhappy that most life insurance agents could take advantages of their concern about their families. They said life insurance agents know how to make you feel guilty if you do not purchase life insurance.

4) A substantial proportion said they feel that life insurance companies are guided too much by fine print in the contract and that they often avoid claims on the basis of a technicality.

In 1962, a survey conducted by the Life Insurance Agency Management Association in the U.S., indicated that 25 percent of all respondents who purchased life insurance for protection, had only purchased either an endowment or a limited-pay whole life policy. These policies, however, are considered to be cash value policies, i.e., they involve a saving element plus a protection element. Only 3 percent who mentioned protection as the only reason for purchasing life insurance had purchased term insurance (i.e., the right policy for the aimed purpose).

A problem related to purchases of life insurance was illustrated in the voluntary termination of life insurance policies. Among household heads who purchased life insurance in a survey conducted by Harford (1963), 45 percent terminated one policy and one in six reported terminating more than one policy. Most life insurance companies consider voluntary termination of life insurance policies a serious problem and a high termination rate can seriously affect the operation of the company.

Briefly, an abundance of literature delineated the problems facing the consumer in the purchase and ownership of life insurance. The following factors have been suggested as sources of anxiety which surround the consideration of the life insurance product:

1) The product itself is complex and associated with death and with the deep anxiety that this very subject evokes.

2) Life insurance purchasing appears to be intimately related to a man's financial responsibilities and involves the expenditure of what some people believe is a very large sum of money.

3) Life insurance is not a single one-time purchase that ends when the initial premium is paid but rather it is a long term commitment.

In much of the critical life insurance literature, pricing methods, attitudes towards the life insurance agent, and product costs have been examined. Most of these studies indicated that there was no perfect knowledge on the part of the life insurance purchaser, in the sense that not everyone knows the various types of policies, the prevailing market price for the product, or which and how much life insurance should be purchased.

2.2.1 Types of Contracts

Life insurance policies could be classified under four major groups; Ordinary life insurance; Group life insurance; Credit life insurance and Industrial life insurance.

i) Ordinary Life Insurance

Ordinary life insurance is defined as any form of life insurance issued in amounts of at least £1,000 to individuals with premiums payable on an annual, semi-annual, quarterly or monthly basis. There are four basic types of ordinary life insurance contracts: term, whole life, endowment, and annuity. The function of the first three is to create a principal sum or estate, either through the death of the insured or through the accumulation of funds set aside for investment purposes.

The function of annuity, on the other hand, is to liquidate a principal sum in a scientific manner according to the insured's desire. The annuity is an attractive savings medium for the person who has not yet accumulated an estate but is desirous of achieving financial independence in old age (McGill, 1967). Professional people (e.g., athletes and entertainers) and others who enjoy a very large income but for a limited period of time, find annuities especially attractive for that purpose (i.e., retirement income).

A term life insurance policy is defined as a contract which provides a pure life insurance protection for a limited number of years. This means that the face value of the policy is payable only if death of the insured occurs during the stipulated term, and nothing being paid in case of survival. Gregg and Lucas, 1973, indicated that the greatest advantage of term insurance is the smallest possible annual outlay which could purchase the needed amount of insurance. In other words, whatever the sum of money that is available for life insurance, it will always purchase a larger amount of term insurance than of any other kind. The result is that many young families find themselves with a greater amount of protection than would be possible otherwise, simply because of the availability of low premium term insurance. However, the premium outlay aspect of term insurance is low in cost only if the insured dies during the term of the policy protection. If the insured survives, then the term insurance will prove to have been the most expensive form (in regard to total net outlay) of life insurance that could have been purchased (Gregg and Lucas, 1973).

However, we do not completely agree with Gregg and Lucas in this explanation. This is because if the insured does not die during the term of the policy protection, this period has been free from anxiety which would indirectly reflect in offsetting the payments of premiums by devoting more attention and concentration which could result in more earnings.

The whole-life insurance policy, sometimes referred to as a cash value, is based on the assumption that the payment of the face value is due in the case of the death of the insured, regardless of when it may occur.

The endowment life insurance provides not only for the payment of the face value of the policy upon the death of the insured during a fixed term of years, but also the payment of the full amount at the end of the term if the insured is still living.

Ordinary life insurance (term, whole-life or endowment) could be issued either as participating (par) or non-participating (non-par). Par life insurance is a coverage under which the policyholder receives a policy dividend reflecting some of the insurer's experience gains. In turn, the insurer charges more for a par plan than necessary to offset anticipated costs and provide for contingencies, in order, to build in a margin for payment of annual policy dividends. Thus, when the insurer experiences a lower death rate, earns a higher interest rate, and incurs less expenses than assumed in premium calculations, the effect is to increase the insurer's surplus. Part of this increase is then allocated for policy dividends (par policyholders).

In addition to the regular life insurance and annuity contracts described above, life insurance companies offer a wide range of policies that can only be characterized as special or combination policies. For example, family income policy, multiple protection policy, return premium policy, and so on.

(ii) Group Life Insurance

The main characteristic of group life insurance is, it is not issued on an individual basis but rather to a group of people through a master contract. The insured group could typically be an employee group, debtor group or members of various associations. The distinguishing feature of group life insurance is the absence of individual underwriting* and rating**. In other words, individual underwriting is not necessary in the case of small groups because the experience of group members with lower than the average expected mortality is anticipated to offset the experience of those with higher than average expected mortality. Thus life insurers are only interested in the group's insurability***. The premium is based on the group's expected mortality although it may be adjusted periodically to reflect the group's actual mortality.

The group life insurance has become the predominant plan in most of the countries. For example, in the U.S. the total amount of group life insurance in force has experienced phenomenal expansion, increasing from about $176 billion in 1960 to about $2.1 trillion at the year-end 1982 (Mehr and Gustavson, 1984). This also increased in Egypt, from about £E315.9[1] million in 1979 to £E591.1 million at the year-end 1982/1983

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* Underwriting is the process by which an insurer determines whether or not it will accept an exposure and on what basis. The process involves several medical examinations and the insured's life style characteristics, habits, and so on.

** Rating is the process by which an insurer determines the amount of premium to charge for insuring an exposure. The process involves the use of mortality tables and interest rates.

*** Not all risks are insurable. There are five major criteria of insurability: 1) the rate of loss must be predictable; 2) a catastrophic loss must be unlikely; 3) the loss must be definite; 4) the specific loss must be fortuitous; and 5) the insurance must be economically feasible.

1 £E = Egyptian Pound; the figures are from the Year Book, the Egyptian insurance market, issued by the Egyptian Insurance Supervisory Authority 1982/83.

(i.e., 87% rate of increase). The primary cause of this growth has been the expansion of private employee benefit plans.

iii) Credit Life Insurance

Credit life insurance is designed to pay the balance of a loan should the debtor die prior to its repayment. It serves an important function in the modern market economy by facilitating the purchase of consumer durables and housing. It also helps to facilitate loans to individuals who may be experiencing temporary financial difficulties.

Credit life insurance is usually written with the policy face amount equal to the amount of the loan. The face amount then decreases periodically as the loan is repaid. Thus the contract is between the lender and the insurer. However, borrowers pay the lender for the insurance costs necessary to cover their loans.

iv) Industrial Life Insurance

Industrial life insurance may be defined as the life insurance sold on an individual basis, usually in amounts less than £1,000 with premiums payable on a weekly or monthly basis. There is usually no need for a medical examination for such contracts. It is sold to low income people and is distinguished by its small amounts of coverage, the frequency of premium payments and its marketing system whereby agents collect the premiums from the policyholder's home.

The relative importance of industrial life insurance, however, has declined steadily during the past two decades, primarily because of increases in the real income of workers, the expansion of group life insurance coverage and the increase in the benefits offered under the government's social security programmes (Mehr and Gustavson, 1984).

The decreasing trend of industrial life insurance has been experienced in the Egyptian insurance market during the last ten years. For example, the amount of industrial life insurance in force at the year-end 1979 was £E34.3 million, which decreased to £E 28.2 million at the year end 1982/83.

2.2.2 How Much Life Insurance Should be Owned?

In determining how much life insurance a person should carry, there are two main approaches: "Human Life Value"* approach and "Needs" approach. The human life value approach is based on the proposition that a person should carry life insurance in an amount equal to the capitalized value of his future net earnings (McGill, 1967). The other approach to the problem of how much life insurance to have is to analyse the various needs that would be experienced by the family in the event that the income producer should die.

2.2.2.1 The Human Life Value Approach

This approach was developed by Huebner in 1924 (see Heubner and Black, 1982). The technique involves the capitalization of that part of an individual's earning capacity that is devoted to the maintenance of dependents, through the medium of life insurance. Logically, the amount of life insurance to be purchased follows from the extent to which the individual wishes to capitalize his life value and to protect his potential earning power.

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* Human Life Value is, most commonly an agreement, measured as the present value of projected net earnings for the work life expectancy with net earnings defined as gross earnings minus personal maintenance expenses and income tax liability (see Mehr and Gustavson, 1984).

From the standpoint of indemnifying for the lost earning power that would benefit dependents, considerations should be given to the amount of income produced through personal efforts which will be lost to the family in the event that personal earnings are terminated by death or disability (Huebner and Black, 1982). To illustrate this, assume the following information about a 25 year old male:

Annual income	£13,000
Expected annual income tax liability	£3,000
Expected annual personal maintenance expenses	£2,000
Estimated working life	36.9 years*

Suppose also that his future income, income taxes and personal maintenance expenses will remain at their current levels. These unrealistic assumptions are made to keep the illustration simple. Since one's future income will depend upon inflation, growth and career development and a person's future tax liability and maintenance expenses would depend on future income, the number of dependents and deductions, changes in income tax rates and so on. Based on these assumptions, therefore, this man's family would expect to receive £8,000 a year for 36.9 years from his continued life (£13,000 - £3,000 - £2,000). The value of his life would then be that amount which at the appropriate interest rate (say 8%) would provide £5,000 annually, paid in 12 monthly instalments, for 36.9 years. The formula for calculating the present value of one per annum payable in 12 monthly instalments is called the Present Value of Annuity of 1 Per Period (Simpson

* This figure is the work of life expectance for a 25 year old male (see Fullerton and Byrne, "Length of Working Life for Men and Women, 1970", Monthly Labor Review 99, No. 2, February 1976). Work life expectancy reflects separations from the labor force due to all causes including death, disability, and retirement. Work life expectancy, i.e., the average number of remaining years of labour force participation, would obviously be less than life expectance (i.e., the average number of remaining years of life).

et al., 1969).

$$\text{Present Value of Annuity} = \frac{1 - (1 + i)^{-n}}{p[(1 + i)^{1/p} - 1]}$$

where i = the interest rate;

n = the number of years over which payments are to be made; and

p = the number of Payments per year

Therefore:

Present Value of Annuity of 1 per annum payable in 12 monthly instalments for 36.9 years

$$= \frac{1 - (1 + .08)^{-36.9}}{12[(1 + .08)^{1/12} - 1]} = \frac{.9416}{.0772} = 12.20$$

The present value of £8,000 per year would be £97,600 (12.20 x 8,000), which is considered to be the man's human life value in this example.

2.2.2.2 The Needs Approach

A second approach to the problem of determining how much life insurance a person should purchase, is to analyse the various needs that would be experienced by the family in the event of the premature death (or disability) of the family breadwinner. This technique (i.e. needs approach) has been considered more practical than the "human life value" approach. To determine the amount of life insurance through the use of the "needs approach" it is first necessary to determine the financial objectives of the family in the case of the death or disability of the breadwinner. Of course, the "needs" or financial objectives will differ from family to family, and within a family group over a period of time. Nevertheless, certain general categories of needs can be established that will generally be applicable to the average family.

Huebner and Black, 1982, suggested six main categories of financial needs for a family in the event of the death of the head of the family. Among these needs would normally be 1) the clearance fund, e.g., last illness or burial expenses, outstanding notes and loans, estate and inheritance taxes ... and so on; 2) the readjustment income (i.e., an income sufficient to permit any required adjustment in the standard of living, to be made gradually; 3) income for the family until children become self-supporting; 4) life income for the surviving spouse after the children have become self-supporting; 5) special needs (e.g., mortgates, emergency fund, educational fund and other specific needs depending upon the individual family; and 6) retirement financial needs.

Having determined the financial objectives and needs of the individual family and their order of priority, it is necessary next to determine what income or other benefits are available from other sources (e.g., social security, investment income, anticipated inheritance, etc.) to meet these needs. The difference between the funds needed to meet the financial objectives of the family and those available from other sources, represents the amount of life insurance needed. In all cases, however, the ability to purchase (i.e., to pay the premiums required), must be considered. As a result, it may be that only part of the needed life insurance programme will be purchased immediately, with the supposition that the remainder will be purchased as soon as it becomes affordable.

2.2.3 Life Insurance as a Saving Medium

In addition to providing protection against financial loss in the event of death, life insurance serves as a means by which policyholders may accumulate assets to finance; for example, their children's education and/or to build retirement programmes for themselves. It is of interest to discuss the significance of saving through life insurance contracts to consider the way in which the emphasis shapes the structure of the life insurance product. However, there is some difficulty in deciding exactly where the insurance (i.e., protection element) ends and investment (i.e., saving element) begins. The difficulty is increased when we realize that with a life insurance policy the insurance and saving elements vary from one policy to another.

The interesting discussion point here is due to two reasons: firstly, the function of the life insurance company has been diverted more towards investment purposes (as a competitive device). Secondly, there is the influence of certain economic factors, such as inflation and the attempts by the life insurance companies to mitigate the bad effect of inflation upon life insurance benefits. Next we are discussing, in more detail, the source of savings accumulations through life insurance contracts and the relative importance (advantages) of these savings.

2.2.3.1 Source of Savings Accumulations in Life Insurance

Savings accumulated through traditional cash value life insurance (e.g., Whole-life and Endowment) are due to the method of financing policy premiums. To illustrate, whole-life insurance, for example, may be purchased on either a natural, single, or instalment premium basis (i.e. level premium). Under the yearly renewable term (YRT) premium basis, (or natural premium), the policyholder pays a yearly premium which is just sufficient to pay the policyholder's share of death claims for that year. The YRT premium increases each year because of the natural increase of the mortality rate for the same group as the group members grow older. In this case, therefore, there is no savings accumulations under the yearly renewable term payments.

Under the single premium payment method, the policyholder pays the full cost of whole life insurance protection in a lump sum. The amount collected by the insurer from all single premium whole-life purchasers of the same age, will be exactly the funds needed when accumulated at an assumed interest rate, to pay the face amount of the policy for each beneficiary when death occurs. However, there is an opportunity for savings accumulations under the single premium payments, particularly in the case of the high interest rates experienced by the insurer.

The level premium method (or instalment payments) is a plan of insurance under which premiums do not increase from year to year; instead they remain constant throughout the premium-paying period. It must be apparent that if premiums, which have a natural tendency to increase with each passing year, are levelled, then the premiums paid in the early years of the contract will be more than sufficient to meet current death claims, whereas those paid in the later years will be less than adequate to meet current claims. The redundant premiums in the early years of the contract, create a fund which is held in trust by the insurer for the benefit and to the credit of the policyholders.

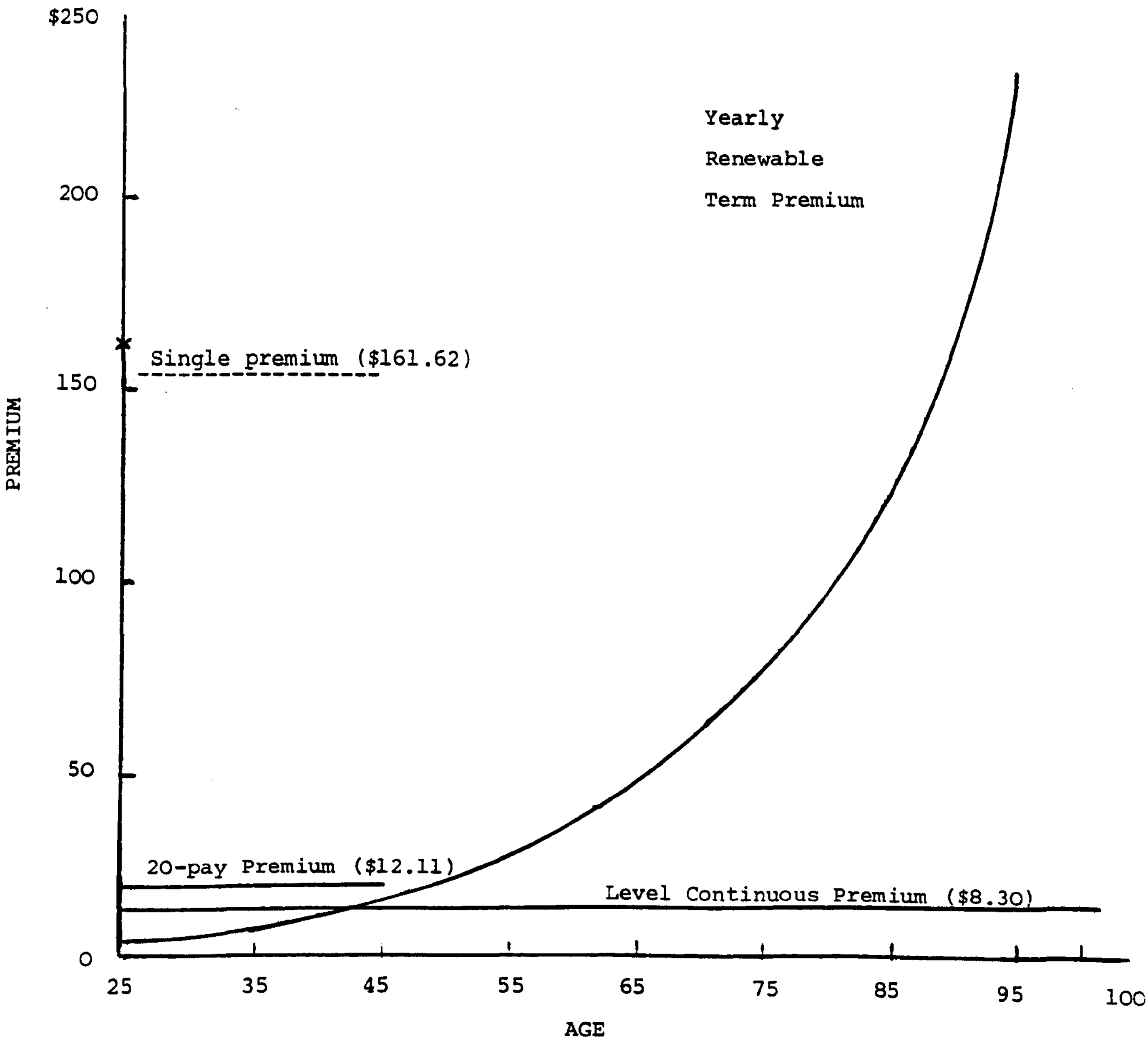
This fund is called a reserve which is not merely a restriction on surplus, as in the ordinary accounting sense, but is a fund which must be accumulated and maintained by the insurance company in order to meet definite future obligations. Since the manner in which the fund is to be accumulated and invested is strictly regulated by the law, it is usually referred to in official literature as the legal reserve.

There are two popular level premiums plans for purchasing; for example, a whole life insurance policy: 1) the 20-pay life plan, and 2) the continuous premium plan. Under the first plan, the insured agrees to pay

20 equal premiums while alive, at the end of that time no more payments are required (if the insured dies, no more premiums are due). In the second plan (i.e., continuous premiums), the insured agrees to pay level annual premiums until death (or until aged 100, if sooner), at which time the policy's face amount will be paid.

Figure 2.1 shows the pure premiums (i.e., premiums which contain no loading for insurer expenses and profits) for $1,000 of whole life

Figure 2.1.1* : Net Premiums (single, 20-pay, YRT and level) for a $1,000 of Whole Life Insurance at Age 25, 1958 CSO, and 4.5 Percent



* Source: Mehr and Gustavson, 1984

insurance under the YRT, single, 20-pay and continuous premium methods. The premiums are calculated on the basis of the 1958 Commissioners Standard Ordinary (CSO) mortality table and 4.5 percent interest rate.

Of the four premium payment plans shown in Figure 2.1, the YRT plan is the only method which does not provide the policyholder savings accumulations. This is because, as previously indicated, each year's premium is sufficient to pay only the policyholder's proportionate share of death claims within the year. However, the single premium payment plan and any of the level premium payment plans for the whole life insurance and endowment policies do provide the policyholder with savings accumulations. Moreover, the saving element in an endowment policy is much greater than the case of a whole-life insurance policy. This is not only because of the level premium method, but also because the endowment policy originally involved a savings plan.

2.2.3.2 The Relative Importance of Savings Through Life Insurance Policies

Life insurance contracts with cash values (i.e., whole-life and endowment) are considered as instruments through which one may develop plans for the accumulation of long-term savings (Greene and Trieschmann, 1981). However, success in long-term savings, in general, is usually more difficult to achieve than in short-term savings because of the existence of many problems. Moreover, the solution to these problems is often beyond the capability of an average individual without special guidance. These problems include:

1) Providing a certain amount, even though it is small, for regular savings and investing these savings in such a manner as to achieve reasonable safety. In judging safety, however, we should consider

the fact that we are dealing with long periods of time, and hence investments that appear safe today may not be so in, say, five years. Thus there is a need for constant review and careful investment management in case of such long-term outlays.

2) Investing savings so as to achieve reasonable liquidity. Again, since long time periods are involved, it is not necessary that all accumulated savings be made in investments that may be turned into cash at a moment's notice. Such a high degree of liquidity is usually (but not always) associated with a relatively low interest rate. Of course, a certain portion of savings should be put into a highly liquid form so as to provide emergency funds when needed.

3) Making investments so as to achieve as large a return as is consistent with safety and liquidity. It is usually agreed that safety and liquidity should not be sacrificed to any great extent for the sake of a high promised return.

4) Developing sound plans for the use of the savings so as to achieve the desired objectives, such as making provisions for dependents and/or for one's old age.

5) Securing protection against inflation. The steady deterioration of the money over long periods, because of inflation, has become a universal problem. Long-term saving programmes should be, therefore, protected against this deterioration insofar as possible. Unfortunately, there is no universally accepted way to achieve this protection, and even those methods thought to be the best (e.g., purchasing common stocks on a regular basis) have not always worked satisfactorily.

In the light of the above mentioned problems concerning saving in general, life insurance as a vehicle for long-term savings has the following advantages and disadvantages:

1) The purchase of life insurance is considered to be a regular, consistent savings plan, since it may be purchased in any denomination to fit the savings budget of individuals with varying incomes. The plan fits the psychological needs of most savers for a regular savings plan with a semi-compulsory basis.

2) Safety of the value of principal is an important requirement in the saving plans of most people. In fact, no financial institution has shown a better safety record than the life insurance industry during the past 60 years (Mehr and Gustavson, 1984). The safety record of the life insurance investment has been above suspicion. The probability of loss to policyholders from life insurance company failures is said to be close to zero as to enable an evaluation of the risk as negligible. Indeed, life insurance companies have a reputation for dependable solvency. Both the basic nature of the life insurance product and its merchandising method contribute to the industry's financial stability.

3) The liquidity of the life insurance investment is guaranteed by contract. The only qualification is that the policy contains a delay clause which gives the insurer a period of six months or less, if necessary, in which to make a cash loan for a purpose other than payment of the premium.

4) The interest return on the life insurance investment is rather conservative. The policy generally guarantees a minimum rate,

such as 3 percent, but the policyholder may receive a greater return through dividends (profit sharing). However, unless the life insurance policy is held for relatively long periods, such as 20 years or longer, the return is usually less than what can be obtained on other investments of comparable safety.

5) Unfortunately, life insurance generally provides no inflation protection when all obligations (i.e. premiums) and benefits are expressed in a fixed amount of money. This amount of money tends to decline in its purchasing power over a period of time. Recently, however, life insurers have introduced various types of policies designed to help offset inflation impact (e.g., variable life insurance and equity-linked policies). More details on this point can be found later in this chapter and in Chapter Eight.

2.3 The Importance of Life Insurance

2.3.1 The Importance to Individuals

Individuals are always exposed to many serious perils, such as property losses from, for example, fire or burglary and personal losses due to disability or premature death. If a major source of income for a family unit is eliminated due to death, disability or other impairment of one or more family members, it will be necessary for the family to make economic and social adjustments. Sometimes these adjustments can result in serious physical or psychological harm. For example, a spouse might have to seek new or additional employment at the expense of other family reponsibilities; the children might have to find work at the expense of formal education; and the family's living standards might be reduced to a level below that essential for health and happiness.

Illness, death, unemployment, and old age are four basic threats to the continuation of earned income. The first three can occur at any time during a person's life; and when they do, a replacement for the lost income is essential if the hardships of unsatisfactory economic adjustment are to be avoided.

Although it is impossible for the individual to foretell or completely prevent the occurrence of these risks, it is possible and also highly important to provide against their financial effects (i.e., the loss of earnings). Hence, the fundamental function of life insurance is to safeguard against such misfortunes by having the losses of the few unfortunate paid by the contribution of the many who are exposed to the same risk (Huebner and Black, 1982). This is the essence of insurance, i.e., the sharing of losses and the substitution of certainty for uncertainty.

Therefore, the individual tends to purchase life insurance in order to achieve two main objectives: firstly, to provide protection for dependents against the financial consequences of the breadwinner's premature death; and, secondly, to make use of the long-term saving benefits and the provision for retirement/old age. The purchase of life insurance thus provides the individual with a method of securing the future well-being of himself and his family (Diacon, 1980).

2.3.2 The Importance of Life Insurance to the National Economy in Egypt

A life insurance company has a dual function; to insure and to invest. The insurance function is mainly concerned with the coverage of risks, i.e., to insure policyholders and their dependents against the financial shortages which they are likely to encounter in the event of the insured's death. The indirect function of life insurance companies is to invest its capital, surplus and the primary reserves. They enable people to save a significant proportion of their current income and to make these savings available for investment in the production tools which can facilitate the expansion of the national production and economic growth.

Clayton and Osborn (1965), stated that the importance of life insurance companies as investors has been attributed to their function as financial intermediaries in the capital market, as they collect and administer savings on behalf of a large body of policyholders. As far as the life insurance industry in Egypt is concerned, we shall trace the latest growth of life insurance business in order to throw the light on the significant role it plays in participating in and financing of the social and economic development plans. At the end of the year 1982-83, life insurance business continued to develop favourably as a whole with regard to premium income and sums insured. New life insurance sums amounted to £E860[†] million in 1982-83 showing an increase of 18% over the year 1981-82*. Premiums income amounted to about £E16 million, compared with £E13 million in the year 1981-82 with an increase of 25.3%.

Sums insured in force which stood at about £E1159 million at the close of the year 1981-82, increased by £E256 million (or 22%) to become £E1415 million at the end of the year 1982-83. On the other hand, office premiums reached £E44 million showing an increase of 26.5% over the year 1981-82.

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* All figures in this section are based on The Year Book, the Egyptian Insurance Market, issued by the Egyptian Insurance Supervisory Authority, 1982-83 (in English).

† £E = Egyptian Pound.

The following tables show new business, business in force, and the technical provisions (i.e. reserves) for the life insurance industry in Egypt.

Table 2.1 : New Life Insurance in 1982-83 Compared With 1981-82

Title	£E (Sums in Thousands)		
	1981-82 (1)	1982-83 (2)	2/1 %
Number of Policies			
Ordinary	111321	112465	101.0
Industrial	865	75	8.7
Total	112186	112540	100.3
Sums Insured			
Ordinary	217537	263642	121.2
Industrial	178	11	6.2
Group	511109	596059	116.6
Total	728824	859712	112.9
Premiums Income			
Ordinary	9381	11405	121.6
Industrial	9	2	22.2
Group	3531	4786	135.5
Total	12921	16193	125.3

The Table 2.1 shows the significant increase in group life insurance both in sums insured (16.6%) and premiums income (35.5%). On the contrary there is a sharp decrease in industrial life insurance in the number of policies, sums insured and premiums income (91.3%, 93.8% and 77.8% respectively). Also, the ordinary life insurance increased in both sums insured and premiums income of about 21%.

Table 2.2 : Life Insurance in Force in 1982-83 Compared With 1981-82

Title	£E (Sums in Thousands)		
	1981-82 (1)	1982-83 (2)	2/1 %
Number of Policies			
Ordinary	558768	603887	108.1
Annuities	129	124	96.1
Industrial	239906	226889	64.6
Total	798803	830900	104.0
Sums Insured			
Ordinary	634979	795134	125.2
Annuities	22	-	-
Industrial	30107	28203	93.7
Group	493575	591114	119.8
Total	1158683	1414451	122.1
Premiums Income			
Ordinary	27805	35351	127.1
Annuities	1	1	100.0
Industrial	1516	1422	93.8
Group	5127	6795	132.5
Total	34449	43569	126.5

The Table 2.2 shows again the continuous increase in both ordinary and group life insurance in force, and the decrease in both annuity contracts and industrial life insurance.

Table 2.3 : Technical Provisions for Both Individual (Ordinary and Industrial) and Group Life Insurance

Technical Provision	£E (Sums in Thousands) 1981-82 (1)	1982-83 (2)	2/1 %
1) Mathematical Reserve:			
a) Individual insurances	104222	125181	120.1
b) Group insurances	13952	15549	111.4
Total (1)	118174	140730	119.1
2) Provision for Outstanding Claims:			
a) Individual insurances	4240	4748	111.9
b) Group insurance	700	754	107.7
Total (2)	4940	5502	111.4
Total (1) and (2)	123114	146232	118.8

The Table 2.3 shows the significant increase in the total amount of life insurance provisions in 1982-83 over that in the year 1981-82 of about 19%. Also the amount of these provisions which amount to about £E146 million represents an important source in financing the social and economic development plans undertaken in Egypt.

2.4 Inflation and Life Insurance

Inflation in recent years has become a worldwide phenomenon. In other words it has generally become thought of as an international problem (Hinshow, 1972). Moreover, inflation is widely regarded as a great social evil, particularly if it is the kind called hyper-inflation (Liesner and King, 1975).

The definition of inflation, however, is likely to vary according to the angle of the problem that is being emphasized (Bomhoff, 1980). For example, if one is concerned with the extent to which consumers are being put under pressure, then the specific set of prices which seem to be the most relevant is, the level of prices (as a kind of average) which goes to make up the cost of living. If one is concerned about the interrelation of the price level and full employment, inflation should more logically be defined in terms of the movement of the average price of the total national product of goods and services (Bomhoff, 1980). However, the simplest definition of inflation, which can serve only in understanding the relevant discussion without going too far, is that inflation means a continuous rise in the general price level but not sufficiently rapid enough to destroy confidence in the currency (Neumann, 1967).

The phenomenon of inflation carries with it two main implications which have distinctly different impacts on financial choices, higher price levels and lower real rates of return on financial assets (Fortune, 1972). The effect of a higher price level in any future period is to reduce the real value in terms of present consumer's goods, of a given amount of future income. This effect, in its turn, operates to reduce the real rate of return on all financial assets which present specified expected income streams, such as bonds, deposits or insurance.

Concerning the effect of inflation on insurance, particularly on life insurance, Hofflander and Duvall (1967), stated that inflation would have two separate effects on the demand for life insurance. The first is an "income effect", which causes the total purchases of insurance to decrease because real income has decreased as a result of the decline in the purchasing power of money due to inflation. Secondly, there might be a "substitution effect" where term insurance (i.e., protection-based) may increasingly be substituted for the cash-value life insurance (i.e., savings-based).

In other words, the life insurance industry is very much aware of the effects of inflation upon the real value of the cash benefits which it pays to the policyholders and beneficiaries. The industry has also realized that the fears of the general public in anticipating future inflation may change their pattern of insurance purchases, with more term insurance (i.e., protection element) being purchased and less permanent insurance (i.e., saving element). The consequence will then be a small volume of premiums to the industry.

We are discussing, in more detail, the effect of inflation on life insurance sales, the effect on savings through life insurance contracts, and proposals suggested to cope with the problem of inflation.

2.4.1 The Effect of Inflation on Life Insurance Sales

The impact of inflation upon life insurance contracts and sales has been of increasing concern to both consumers and the insurance industry. One implied proposition in most literature on inflation and life insurance is that the increase in price levels would cause the amount of term insurance sold to increase, since term could be substituted for permanent insurance. However, this may not be the case; at a given level of income, employment, population, etc., for the economy, the higher the rate of inflation the more expensive a given level of protection (Hofflander et al., 1957).

In 1967, Hofflander examined the relationship between inflation and sales of both permanent and term insurance. His assumption was that sales are a linear function of anticipated price level, population, number of births, and per capita income. He used two models for estimating anticipated inflation. The only difference between the two models was that anticipations concerning future price levels were estimated differently.

In the first model the assumption used was that people expect an upward trend in price level, they then revised their opinions as to how fast prices would increase by observing the difference between the trend and the actual value at the particular time. In the second model, however, anticipations concerning the Consumer Price Index (CPI) were assumed to be a weighted average of past values.

The results of Hofflander's study indicated, in both the two different models, that increases in inflation had been accompanied by decreases in the sale of both term and permanent life insurance.

On the other hand, the life insurance industry in a growing number of countries (e.g., U.S., Brazil and Israel) are experimenting with indexed life insurance policies. This means that the nominal values of these indexed policies are linked to a price index. These steps have been taken in an effort to mitigate the value erosion engendered by inflation. However, there have been increasing arguments that anticipated inflation coupled with constraining regulations, can lead to higher perceived real costs of life insurance, even when policies are index-linked. Accordingly, life insurance sales can be expected to decline in inflationary periods. Indeed, it was concluded that inflation (expected and/or realized) had been negatively related to net real per capita life insurance in force in Brazil (Babbel, 1981).

2.4.2 The Effect of Inflation on Savings Through Life Insurance

Arguments claimed that the share of savings through life insurance has declined considerably during the past quarter century and inflation was one of the main factors used to explain the declining growth rate of life insurance savings. It is self-evident, however, that inflation erodes the purchasing power of life insurance benefits, since these benefits are payable in fixed amount of money and, typically, require a long period to mature. Consequently, some scholars and life insurance industry spokesmen have, generally, inferred that inflation has an adverse effect on savings through life insurance.

On the other hand, there have been certain views put forward in the life insurance industry that anticipation of inflation may actually increase sales of life insurance. This means that families would think that during inflation periods, they should purchase more life insurance in order to bring their life insurance protection up to the level necessary to offset the effects of inflation. However, of the two conflicting opinions regarding the effect of inflation, the one asserting the inverse relationship between inflation and life insurance is the more widespread. It is often mentioned as the main reason for the declining rate of growth in saving through life insurance.

Neumann, 1969, tested the hypothesis that there was no significant effect of postwar inflation on saving through life insurance by the American public. The question was not whether inflation erodes life insurance values, but whether people were sensitive to such erosion. The period covered in the study was 1946-1964, a period which was described as being of a sustained mild increase in the general price level.

Neumann viewed saving through life insurance as being accumulated by purchasing cash-value plans. Therefore, he used the total annual purchases of individual ordinary life insurance and industrial life insurance as the dependent variables. The independent variables were the price variable (which was the foremost concern in Neumann's study) and other explanatory variables such as: disposable personal income, the amount of liquid asset holdings, and so on. Several multiple regressions were then carried out, and the main conclusion that emerged, was that price expectations had no significant effect on saving through life insurance in the postwar years in the U.S.

Fortune, 1972, criticised Neumann's interpretation of the phenomenon of inflation, the way it should affect savings through life insurance, and the method used in testing Neumann's hypothesis. In his study, Fortune introduced an alternative model to that of Neumann's, in which he presented an explicit definition of inflation. His definition was, that given a constant expected rate of inflation, then the level of the time path of expected future prices would be equal to the current price level times unity plus the expected rate of inflation, or,

$$p_t^* = p_0(1 + r)^t$$

where:

p_t^* = the expected price level at time t

p_0 = the current price level

r = the expected rate of inflation.

Also, he treated "saving through life insurance" as a problem of financial choice, in contrast to Neumann's heavy reliance on income and socio-demographic factors.

The main conclusions of Fortune's study were: firstly, the amount of policy reserves per dollar of insurance (as a measure of wealth in the form of insurance) was positively related to the level of expected future prices. This was in contrast to Neumann's conclusion that there was no relationship. Secondly, Fortune did agree with Neumann as to the existence of inflation was not adverse to flows-of-funds into life insurance companies. Also, he went further and found that inflation actually increased the flows of funds to the life insurance sector. However, Fortune stated that there was no evidence on the impact of inflation upon the flows into the life insurance sector relative to flows into other financial institutions.

2.4.3 Proposed Solutions to the Problem of Inflation

Many suggestions have been made as to how the purchaser and insurance company can cope with the problem of inflation. With regard to the purchaser, some suggested that the customer can purchase only term insurance and invest the difference (i.e., between term premiums and permanent or endowment premiums) in common stocks, for example, as a hedge against inflation. Some, on the other hand, suggested that life insurance companies should invest a larger proportion of their assets in common stocks and increase part of the benefits depending upon the results obtained from the equity investments. This would, as it is argued, help keep some of the permanent insurance business which, the industry feels, it is losing because of anticipated inflation.

Other proposals to offer life insurance protection which vary according to inflation are relatively new. These proposals appear to take two general forms: policies that specify changeable protection levels according to some cost-of-living index, and policies that specify protection levels and which vary according to changes in certain designated stock market indexes. The latter policies only have been offered in the United States by a few insurers since 1972 (Greene and Trieschmann, 1981).

Policies using the first method (i.e., the cost of living index), may be further sub-divided into two categories, according to who bears the inflation risk. In the first category, there are arrangements in which the inflation risk is assumed by the policyholder and paid under one of several methods. For example, the insurer may offer the policyholder the right to purchase additional-one-year term insurance as the cost of living index rises. The additional coverage is usually offered without medical examination and without heavy first year acquisition costs. The premiums to be charged and the maximum amount of coverage which may be purchased are specified in the contract.

Policies in the second category are issued under contracts in which the insurer, not the insured, assumes the inflation risk. The policy has a level premium but contains benefits which escalate according to a cost of living index specified in the policy.

Variable life insurance policies using the stock market index may also be classified under two headings: those with a premium which changes periodically according to the stock market index, and those with a fixed premium. The first design operates as follows. The whole reserve of the policy is held in a separate account and invested primarily in equities. The face amount of the policy varies according to the changes in the value of these equities.

In the second design the reserve is also held in a separate account in the same manner as that of the first design. The assets are invested in equities, and the face amount of the life insurance protection varies with the value of these equities, but not in a direct proportion. Furthermore, it is expected that there will be a minimum death benefit guarantee of an amount not less than the initial face amount of the policy. The cash and non-forfeiture values fluctuate in accordance with the changes in the equity account.

Unfortunately, variable life insurance based on stock market values, offers no guarantee that the face value or savings element will actually offset inflation, since the stock market and the consumer price index do not corespond one-to-one by any means, particularly in the short run (Greene and Trieschmann, 1981). However, variable life insurance is an imaginative approach to the problem for which new solutions are badly needed.

2.5 Summary

In this chapter we present an overview on life insurance ownership, its nature, importance and the encountered problem (i.e. inflation). In the first part we discussed the various types of life insurance contracts, and how much life insurance a person should carry. Particular attention was devoted to the significant role of life insurance as a saving medium. It was pointed out that, unlike term insurance, whole life insurance and endowment insurance policies are considered as cash-value policies. This means that these policies provide both insurance protection and a method of forced savings. The build-up in a cash-value policy (e.g., whole life) occurs because of the means of payment in which the level premium exceeds the insurance costs during the early years of the policy. It is this overcharge amount in the early years which permits the insurance company to charge the same premium (i.e., level premium) during the entire life of the insured. Most of the overcharge premium goes into the cash-value (or savings element) of the whole life policy.

The second part was concerned with the importance of life insurance to both individuals and the national economy in Egypt. Generally speaking, insurance from the economic viewpoint is important in maintaining a family's economic welfare as well as in participating in the financing process in order to achieve the objectives of the social and economic development plans. Without insurance, families may suffer devastating financial losses, particularly in the case of the premature death of the breadwinner which could impose severe financial hardship to the family.

Finally, we introduced briefly a comprehensive overview on the most pressing problem facing the life insurance industry as a whole, i.e., inflation. Indeed, inflation's impact upon life insurance contracts and sales has been of increasing concern to both consumers and the life insurance industry. It is self-evident that inflation erodes the purchasing power of life insurance benefits, since these benefits are payable in a fixed amount and require a long period to mature (sometimes reaching to more than 20 years). It is this which has led to most of the writers concerned with life insurance, to claim that inflation has been negatively associated with life insurance purchases, with particular reference to the saving-based policies. We discussed, supported by the relevant literature, the way in which inflation could affect both life insurance sales and savings through life insurance policies. We ended the chapter with some proposed suggestions of the way in which both the insured and the insurer can cope with inflation.

Chapter Three

Review of the Literature

3.1 Introduction

Ownership of and attitudes towards life insurance have always been topics of investigation. Such studies, generally in survey form, have been directed at the general public or selected groups (segments), for example, students, newly marrieds and so on. Almost all of these studies have concentrated on obtaining factual information about life insurance ownership and attitudes towards the life insurance purchasing decision variables.

The purpose of this chapter is to review literature that describes consumer models related to the purchase and ownership of life insurance. The chapter is presented in two parts. The first part is a survey of the life insurance purchasing related literature. The second part is the approach to be adopted to this investigation, in light of one of the consumer behaviour models which is related to this study.

3.2 Historical Review of Models of the Demand for Life Insurance

The demand for the life insurance product, from the consumer point of view, appears as a very complex phenomenon. The complicating factor seems to be accounted for by the fact that the purchase of various kinds of life insurance policies satisfy two basic utility functions. One utility function measures the consumer's value of protection against the uncertainty of mortality (i.e. protection element). The other measures the consumer's value of savings when the life insurance product includes a saving aspect (i.e. saving element). Multiple utility function is, however, typical for any consumer (i.e., protection and saving).

Life insurance purchasing decisions have been investigated over a very large area in terms of subject matter as well as approach. All prior investigations regarding life insurance ownership, aimed at understanding the process of purchasing in the field of life insurance.

Attitudinal studies, socioeconomic/demographic analysis, utility function/portfolio selection, prediction studies (e.g., time series analysis), and psychological studies were the major interests in the following life insurance purchasing behaviour.

3.2.1 Attitudinal Data Analysis

Life insurance companies and independent researchers have come to realize that there is a rather profound lack of knowledge of who the life insurance customer is, what he thinks (wants), what is his attitude, and what are his demographic characteristics. This is because they have realized that such a knowledge is vital for improved marketing programmes and for designing better policies. As a consequence, a rather concentrated effort has been devoted to collecting data about the consumer, his attitudes and demographics.

An example of such an organized effort was started and is still in progress by the Institute of Life Insurance Research Services in the US. Most life insurance companies in the US belong to this association which sponsors an annual survey under the name of Monitoring Attitudes of the Public (MAP). This survey asks the public a multitude of questions which are geared to finding out what the public thinks about life insurance in general, about the different types of life insurance, their attitudes, other financial services, and general thinking trends. The results are usually cross tabulated by demographic characteristics such as age, income, education, etc.

The apparent conclusion of such a study is, therefore, that a knowledge of what the public thinks (wants) will enable the marketer to tailor a product to meet these attitudes in conjunction with the knowledge of the demographic characteristics of the owners of the attitudes. However, there was no attempt to test whether a particular attitude relates in any fashion to a possible action of the potential consumer in the field of life insurance. The survey also did not answer the question as to whether the attitudes expressed lead to the purchase of life insurance or in what amounts. In addition, the tabulated attitudes and opinions were not tested by any statistical means in order to explore their possible relationship to the purchase and ownership of life insurance.

In 1970, the Institute of Life Insurance in the US, conducted a survey of the nation's youth. A sample of 3,000 young people aged 14-24 years, was asked questions about four major areas: (1) life style preferences, (2) attitudes towards money and saving, (3) financing for the future, and (4) attitudes towards life insurance.

The study found that almost half of the young people interviewed had life insurance. A majority of the respondents felt that life insurance is a great thing; a large majority of the respondents accepted the role of the life insurance agent, and slightly more than half agreed that life insurance companies are more concerned about the welfare of the public than most people give them credit for. The study did provide useful information about the youth market. Nevertheless, it did not probe this group's attitudes towards life insurance in depth.

A similar study was also undertaken by Wheately, 1971. He tested the hypothesis that both positive and negative appeals were effective in terms of causing favourable attitude changes to take place. The experiment was conducted on a single class of the University of Washington. Two messages on the subject of life insurance were utilized; one was positive and the other was negative.

It was found that the two types of appeal did have an effect on student's attitudes towards life insurance. The students with higher anxiety levels responded better to the positive reassuring copy and less favourably to the negative anxiety-arousing copy. The student with lower anxiety levels responded better to the negative anxiety-arousing message and less favourably to the possitive reassuring copy. However, no conclusions could be drawn from the study due to the artificial nature of the experiment and the non-random basis of the sample. Nevertheless, the inference was then made that life insurers should probably use several types of messages in their advertising campaigns.

Ferrel, 1972, focused his research on the delineation of factors to measure attitudes towards the life insurance product, price and promotion, and to determine the socioeconomic influences of attitudes toward life insurance. Three multivariate statistical methods were utilized to analyse the survey results.

Factor analysis was used to delineate distinct clusters of inter-related attitudes toward product, price and promotion. Canonical analysis was also utilized to determine the correlation index between two factors or clusters of socioeconomic variables, and, finally, stepwise multiple regression was applied to determine the relationship between independent socioeconomic variables and a dependent variable such as life insurance coverage (i.e. amount of insurance purchased).

The major hypothesis of Ferrel's study was that no significant relationship exists between attitudes toward product, price and promotion of life insurance and selected socioeconomic variables. The conclusion of this study was that as respondents increase in education, occupational status, and age, they tend to own more life insurance. Also, the delineation of factors related to price, promotion and product, indicated that respondents were very positively oriented toward ownership of life insurance and desired more information on the price of life insurance products.

Davis III, 1972, investigated the attitudes of students (at the University of Alabama, US) with concern to life insurance. The objectives of the study were to determine factual and attitudinal information about life insurance ownership, the life insurance product, and the operations of life insurers. The hypothesis tested was that there was no significant relationship between the students' attitudes concerning life insurance (i.e., ownership, product and insurers) and the demographic variables.

The conclusion of the study concerning life insurance ownership was that married respondents were more likely to have life insurance than the single respondents. Also, concerning students' attitudes towards the life insurance product, it was concluded that the primary benefit of life insurance ownership was to provide protection against premature death. Concerning the students' attitudes towards the life insurance agent, the results were that the life insurance agent was seen to provide several vital services (e.g., providing more detailed information about life insurance).

Finally it was found that a majority of the students would buy more life insurance to protect against inflation. However, most respondents would like to see an inflation clause in the life insurance policy. Although no significant relationships were found between the responses to the question concerning the effect of inflation on the purchase of life insurance and the demographic variables, several trends were evident. For example, female respondents felt stronger about buying more life insurance when the cost of living is going up. Older respondents were more inclined to feel that the cost of living had little effect on the purchase of life insurance. Married respondents indicated that one should buy more life insurance as the cost of living goes up, but respondents who had children were more inclined to feel that it made no difference. The majority of respondents in each school year and in each income grouping felt that more life insurance should be bought when the cost of living is going up. Those respondents who had at least one parent with a college degree also felt more life insurance should be bought when the cost of living increases.

In conclusion we can see that most surveys taken to date about the life insurance consumer have basically been conducted along lines emphasizing different opinions, attitudes and, in some cases, specific markets (e.g. students). However, none of these surveys has tried to construct a marketing framework which would relate the findings to the consumer process to own life insurance.

3.2.2 Socioeconomic/Demographic Variables Studies

The second type of life insurance purchasing decision studies has concentrated on explaining and predicting the demand for life insurance. Most of these studies, while defining the dependent variable "demand for life insurance" somewhat differently in each case, used socioeconomic/ demographic variables as the explanatory variables.

In 1953, Survey Research Center, Institute for Social Research at the University of Michigan, conducted a survey on life insurance ownership among American families. Three different analyses were carried out with regard to life insurance coverage: 1) life insurance and premium payments, 2) life insurance by geographic region, and 3) characteristics of policyholders.

With regard to life insurance coverage and premium payments, it was found that 3 or 4 percent of insured spending units which paid premiums of $500 or more, accounted for 26 to 28 percent of all life insurance premiums paid by individuals. This means that such a relatively small group of people, by changing their insurance holdings, could have a relatively large effect on the premium income of life insurance companies, and, because paying premiums is a way of saving, the allocation of national income could also be affected.

With respect to income, it was apparent that the higher income groups accounted for a much higher proportion of total premiums than they did of the total number of spending units. However, they also received a relatively large proportion of the total income, and the share of the various income groups in the total premiums paid, corresponded fairly closely to the distribution of income among these groups. For example, 20 percent of spending units received incomes of less than $2,000 in 1951. The income they received represented 7 percent of total income, and insured in these groups paid 6 percent of all premiums paid in 1951. Again 21 percent of spending units received incomes of $5,000 or over, accounted for 48 percent of total income, and paid 54 percent of total premiums. However, it was found that the lowest income group, which put 7.2 percent of income into life insurance, against an average of 3.5 percent for all insureds who paid premiums. There are various reasons why one might expect to find the lowest income group putting a higher proportion of income into premiums. Life insurance premiums represent a relatively fixed claim on people's incomes, tending to be met even in the case of income decreases. The proportion of spending units experiencing income declines is greater in the lowest income group than in any other. This group also contains a relatively high proportion of older (retired) people. Some of these older people may be attempting to carry payments on insurance bought at a time when their income was higher. Again, self-employed businessmen, normally heavily insured, are able to meet large fixed commitments such as premium payments out of previous savings even when they have had temporary reverses and income declines which put them in the lowest income group.

On the whole, spending units headed by professional and managerial and self-employed persons accounted for a relatively large proportion of total premiums (26%). This group, though comprising only 13 percent of all spending units and receiving 20 percent of the total income in 1951, paid 26 percent of all premiums. Skilled and semi-skilled workers, on the other hand, comprised 30 percent of all spending units and received 31 percent of all income. Nevertheless, out of its greater share of total income this group accounted for about the same proportion of total premiums paid as did the much smaller managerial and self-employed group, out of its smaller share of total income.

With regard to age group, it was found that people in the middle age groups tended to pay a somewhat larger proportion of total premiums than was accounted for by the proportion of total income received by these groups. In spending units, the head of which was between the ages of 35 and 54, accounted for 53 percent of all premiums while receiving only 48 percent of total income. These are the age groups which contain a high proportion of spending units with dependent children.

The importance of married spending units, particularly those with children, was apparent since married couples comprised 73 percent of the population and received 84 percent of all personal income both in 1950 and 1951, and in both years they accounted for $9 of every $10 paid in premiums. Moreover, within the married group, couples with dependent children accounted for a relatively larger proportion of total premiums paid than childless couples. The results showed also a slight tendency for people in cities with populations of 50,000 to 600,000 to pay a larger proportion of total premiums than was accounted for by the proportion of total income they received.

A similar study was conducted by Miner, 1957, using cross-sectional data. The dependent variables were the amount of premiums and the amount of life insurance the individual owned. The explanatory variables were: income, life cycle, urban-rural living status, and veteran status. In a second analysis, veteran status was replaced by occupation. The author used a multiple regression technique in order to determine the amount of variance in premium expenditures and ownership of life insurance (i.e. amount of insurance), which was explained by these variables as well as the relative importance of the explanatory variables.

The results showed an $R^2 = .35$ (i.e., the coefficient of determination) which is often regarded as satisfactory for cross-sectional analysis. However, not surprisingly, income proved to be the most important variable in explaining the variance in the dependent variable (i.e. amount of insurance). The other variables contributed relatively little proportion in terms of explanation.

Katona et al., in a 1964 survey of consumer finances, investigated life insurance ownership as a function of demographic/socioeconomic variables. The major reasons for carrying life insurance were asked in early 1964 of families who had life insurance in the US. It was found that protection of dependents and security were important to seven out of ten respondents, while about three out of ten people mentioned their desire for "clean-up funds" and burial expenses. Fewer than one out of ten referred to the savings or investment aspects of life insurance. Several other specific reasons were mentioned even less frequently; such as education of children and retirement and old age protection. Some reasons tended to be reported more frequently by families with moderate and high incomes than by families with low incomes: protection of dependents, retirement income and education of children. Carrying life insurance to provide funds for burial expenses was much more frequently mentioned by low income families than by medium and high income families.

A multivariate analysis of life insurance ownership was conducted by Katona (1964). The results showed that the adjusted deviations for family income groups ranged from -30 percent for the lowest to 14 percent for the highest, tending to be larger (less negative) for successively higher income groups. In other words, even when the effects of all the other variables in the analysis were simultaneously considered, income remained a powerful determinant of which families carried life insurance.

Among occupational groups, families whose heads were managers and officials, craftsmen and foremen, or were in the miscellaneous group (including members of the armed services) had life insurance more frequently than the population average when income and the other factors were held constant. Membership in these groups increased the likelihood of having insurance by 7 to 11 percentage points. Retired families were less likely (-10 percent) to have life insurance.

With the effect of other variables taken into account, neither the education, sex, and race of the family head nor the number of major earners had much influence on the probability that a family would have life insurance. Other things being equal, young single families and young married families with no children, were less likely to have life insurance than families in other life cycle stages. Insurance ownership was also found to be slightly more frequent in suburban areas than in central cities.

Families with a modest level of reserve funds (under $5,000) were found to be more likely to have insurance than families with larger financial reserves. When all variables were considered jointly, income again remained the most important variable in distinguishing which families were likely to carry life insurance. Financial reserves, occupation, and family life cycle were also important, and region and place of residence had small importance. The other variables included, for example, sex of head of the family, race, and number of major earners made no significant contribution to the variance explained in the dependent variable (i.e. the amount of life insurance owned).

Kreinin, Lansing and Morgan (1957) examined factors associated with the amount of money which consumer units spend on life insurance premiums. They used data from the survey of consumer finance conducted by the Survey Research Center of the University of Michigan in 1954. The independent variables were income, veteran status (because of opportunities for government insurance), life cycle (includes age, presence of children, and marital status), number of income receivers (because of its effect on the meaning of income and the earning possibilities of the dependents), and city size (because of empirical findings indicating that fewer people were insured in small towns and because of an assumed difference in exposure to salesmen).

Variance analyses were carried out to test for interactions as well as main effects. It was found that the significant variance in life insurance buying behaviour was due to the effects of income, family status, city size and number of income receivers. Also, there were interaction effects between income and family status, city size and number of income receivers. They concluded by recommending the use of dynamic and attitudinal variables which may prove to have an effect on life insurance purchases.

Hammond, Houston and Melander (1967) also utilized cross-sectional data to study the relationship between life insurance premium expenditures and the various demographic and socioeconomic characteristics of the household.

Premiums were regressed on income, net worth, education, occupation, and stage of life cycle. The R^2 was 36 percent (i.e. the proportion of variance in the dependent variable explained by all the explanatory variables taken together). However, at 0.05% level of significance, income again was the best single explanatory variable.

The authors of the study also went further and ran the same demographics on a dependent variable which was defined as the premium expenditures relative to income. The authors based the relationship of premium to income on three income categories, low, medium and upper class income. They argued that such broad categories would neutralize some, but not all, income effects.

In 1968, Mantis and Farmer conducted a forecasting study for predicting the demand for life insurance. Utilizing the available published data, they regressed total sales of life insurance per year (as the dependent variable) on price of life insurance relative to other consumer prices, number of marriages, number of births, personal income, population and employment (as the independent variables). In their regression equation they concluded that the large positive coefficient showed that this variable is more important, while a smaller negative coefficient does likewise. Thus the rank order of importance of the six independent variables was as follows: marriages, births, personal income, population, relative price index, and employment. This means that relatively small changes in either births or marriages will make a considerable difference in the life insurance sales, whereas relatively lower prices or increased employment will have less effect.

Duker, 1969, investigated expenditures for life insurance among working-wife families using published data from the Survey Research Center of the University of Michigan (Survey of Consumer Finances for 1959). Duker then treated the data in tabular comparisons of life insurance premium expenditures between two types of families: (1) housewife families and (2) working wife families.

A linear multiple regression analysis was performed using premium expenditures as the dependent variable and a series of demographic and other variables as the independent variables. Among the independent variables was one representing the proportion of the family income earned by the wife. The regression analysis suggested that income, occupation, education, total assets, age and some transgenerations of these variables, had significant partial regression coefficients.

Anderson and Nevin, 1975, examined the relationship (association) between the amount and type of life insurance purchased and certain socioeconomic/demographic variables. A multiple classification analysis technique was used. The authors concluded that the purchase of a larger than average amount of life insurance was found to be much more likely in households where: (1) the husband did not attend college, (2) current income levels were in the low and high ranges, (3) net worth was greater, (4) the husband had purchased no life insurance before marriage, and (5) the wife had purchased term insurance before marriage.

However, the independent variables, taken collectively, explained only 10.3 percent of the variance in the amount of life insurance purchased. The authors stated that their results showed the weakness of the socio-economic/demographic and the other variables included as predictors of household life insurance purchasing behaviour. The variables simply did not account for a high proportion of the variance in the dependent variable (i.e. the amount of insurance purchased). Part of the problem of low R^2s (10.3%) was due, as the authors suggested, to the exclusion of the life cycle as an explanatory variable.

In 1980, a similar study to that of Anderson and Nevin was conducted by Ferber and Lee. The study examined the acquisition and accumulation of life insurance by couples in their first eight years of marriage. The study findings were that the primary determinants of life insurance purchases were found to be in some measure the financial status (e.g. total asset, net worth and so on). Also, certain behaviour and attitudinal variables were found to be of importance, particularly the existence of systematic spending and saving practices, participation of the wife in the labour market and attitudes toward saving. It was found that the presence of children is an important determinant of insurance purchase. The responsibility of children is likely to motivate the couple to acquire more insurance because of the greater perceived need for financial protection.

The predominant influences in the acquisition of the life insurance policies were found to be: (i) friends and (ii) one's job. Among the attitudinal variables investigated, it was found that people who were concerned with saving were more likely to purchase life insurance, partly for savings and partly for protection.

In a recent study by Skinner and Dubinsky (1984), the authors investigated the predictors of family decision-making responsibility in the purchase of life insurance. The objective of the data analysed was to differentiate (using demographic characteristics) between families in which the life insurance purchasing decision was made solely by the husband or, entailed wife involvement. A discriminant analysis was performed using ten demographic characteristics as predictor variables, and family decision-making responsibility as the criterion variable. Of the ten demographic characteristics examined in the investigation, seven entered the statistically significant discriminant function. Thus, the results suggested that when purchasing life insurance, family decision-making responsibility can be differentiated based upon the husband's education level, the wife's education level and employment status, family income, husband's occupation, years of marriage, and wife's age.

A similar study in 1984 by Burnett and Palmer, also examined various demographic and psychographic characteristics in terms of how well they related to differing levels of life insurance ownership. The data analysed was generated from a consumer panel. A Multiple Classification Analysis was used in order to test for the significant relationship between the amount of insurance purchased (as the dependent variable), and selected demographic/psychographic variables (as the independent variables).

The result of the study suggested that belief in the traditional work ethic, fatalism, socialization preference, religion salience, and assertiveness were the most important psychographic variables. Education, number of children, and income were the best demographic and socioeconomic predictors. However, the study suffered from some limitations; most notably, the problem of using data from panel members, since,these people may tend to be better educated, more interested in social topics, and so forth.

3.2.3 Time Series Demand Analysis

A study of the demand for life insurance using longitudinal data (i.e., time series) was performed by Mantis and Farmer, 1968. In this work a multiple regression technique was used with the quantity of life insurance sold being a function of variables such as personal income, number of births, population, price of life insurance, number of marriages, and employment.

The results of this study were not particularly satisfying. For instance, the signs of the coefficients obtained were not always consistent with what could be expected. Also, no goodness of fit statistic was presented.

Neumann, 1967, in his study tried to relate the amount of saving through life insurance primarily, to expectations of prices. This was done by lagging the dependent variable and relating it to the consumer price index, births, marriages, urban household and personal disposable income.

This type of analysis may be of value in estimating and predicting the potential of sales for the industry as a whole. However, its value as a marketing tool is limited since it provides little understanding of consumer behaviour. It is confined to describing reactions to price changes and the influence of a few demographic variables. As a matter of interest, the results did not indicate that the consumer reacts in any particular fashion to expected changes in prices with regard to his decision to purchase life insurance.

Ralls III, 1971, examined the applicability of time series analysis as a forecasting technique in predicting changes in the demand for various kinds of life insurance policies. Ralls concluded that there was evidence which supported the hypothesis that life insurance products were purchased on the basis of the combination of the product's protection and saving features. Also the prediction of life insurance sales was found to be feasible when monthly data was available at the company level.

Again, more important from our point of view, is the fact that this approach (i.e. time series analysis) at best can be used successfully only in predicting the life insurance sales for the life insurance industry as a whole. Therefore, it can hardly be used for marketing purposes by any individual company, except for market potential calculations, since it does not tell us who the customer is or what makes him take the decision to purchase life insurance.

On the other hand, Diacon, 1980, stated that time series studies are not entirely successful because they cannot observe data pertaining only to those purchasers of life insurance. For example, household income must be approximated by aggregate personal disposable income per capita: this figure, of course, includes the income of those households not purchasing life insurance and so is not entirely appropriate. This aggregation problem is common to many time series studies.

3.2.4 Portfolio Selection and Utility Function Approaches

In this section we review a sample of works which approached the life insurance purchase decision process from specific points of view. Studies which concerned the maximization of one's expected utility and the rationality in the problem of portfolio selection. The common element which differentiates these studies from the studies described above, is that their starting point is an established theoretical framework.

William and Dickerson (1966) set up the problem of purchasing life insurance as a choice between degrees of loss and non-loss situations. The choice is based on the loss of utility that damage occurs or the loss of utility the insured can afford (i.e. premiums payment). Also, a person may suffer a loss of utility if he is not insured in terms of the worry factor. This is set up against the loss of utility of the premiums one pays for being insured, thus minimizing the worry factor.

A person who makes his decision to purchase life insurance, obviously will try to minimize the amount of utility loss. The authors of this article recognized that each person has some subjective reason for purchasing life insurance. However, they are implied in shaping his utility function but do not affect his basically rational procedure in making his decision.

Fortune, 1973, in his study considered the use of a theoretical framework as one of his major contributions. His approach was to use the expected utility theory where the consumer has to make his choices under conditions of uncertainty.

The purpose of the study was to explain the variances in the quantity of life insurance purchased (demanded). The factors considered as influencing this demand were, the rate of discount, the amount of non-property income (i.e., wages and salaries) over the period of the analysis, and the amount of non-human wealth held at the time of the decision to purchase life insurance.

The author discovered, as one of the most interesting results, that the optimal amount of life insurance coverage was sensitive to changes in the real interest rates and the amount of personal wealth.

Headen and Lee (1974), in their study, criticized most of the demand studies performed. The main criticism was the use of primarily aggregate economic and demographic variables, as the structural determinants of the demand for life insurance. In their opinion, some relatively good results were achieved due to multicolinearities in the data.

To them, the demand determinants can be grouped into three major categories: (1) variables which stimulate demand due to the selling efforts of the companies (e.g., advertising, promotion, and the role of the life insurance agent); (2) variables that affect the potential market and the ability to purchase (e.g., needs and wants for life insurance, age, education, income, and so on); and (3) variables that affect the household's decision to save along with certain economic conditions (e.g., inflation expectations and the competitive situation).

In their study, Headen and Lee concentrated on exploring only the variables mentioned in the third category. This means, in fact, that the demand for life insurance is a problem involving a portfolio selection decision by the household. The results they achieved were, therefore, not very conclusive although they found some indications to support their approach. For instance, they found that low asset holders, view life insurance as an alternative investment and that high saving rates stimulate demand for life insurance.

Diacon, 1980, conducted a study to analyse the demand for life insurance. The analysis was both theoretical and practical; the latter aspect used data on the UK ordinary life insurance policyholders over the years 1946 to 1968. Special attention was devoted to the effects of inflation, mainly in the form of inflationary expectations on the various aspects of demand. The conclusions of the study were:

1) Life insurance was purchased for three main motives; life time saving (endowment contracts); non-life time saving (whole life policies); and provision of protection (term insurance).
2) The premium expenditures demanded on new renewable life insurance, did not seem to depend on price but was mainly affected by income.
3) The analysis of the data indicated that new financial savings via life insurance was adversely affected by inflation expectations over the period under study.
4) Surrenders of existing contractual savings-based life insurance did seem, however, to have been caused mainly by either a lack of need for insurance or by competitive pressures.

In a recent study conducted by Goldsmith, 1983, the author investigated whether households substitute the wife's human capital (i.e., labour income) for the purchase of life insurance on the husband. In particular, a highly educated wife possesses valuable and marketable skills which may fulfill the primary roles of insurance. The relationship between a wife's human capital and the household's decision to purchase term insurance was investigated.

The results suggested that households with a more educated wife had a lower likelihood of purchasing term insurance on the husband. Also, it was concluded that uncertainty, household wealth, current income, existing coverage, household characteristics, and the decision making environment, were important determinants of a household's life insurance purchasing behaviour.

As one can see, the common element in all the studies cited in this section, besides using a theoretical framework for assessing the variables that may affect the demand for life insurance, is the presumption of the conscious rational behaviour of the potential customer. In other words, personal attributes, attitudes, predispositions and other such subjective factors are only implied as an input via the utilities. Once these factors help in shaping the utility functions, the potential customer is using a rational decision process to maximize his utilities or minimize the disutilities involved in his/her decision.

One can, however, question the notion that a person really employs some rational utility maximization process consciously. If such a process is not conscious or only partially conscious, then it will be of rather limited use to the marketer who wants to try and tailor the relevant product to the potential customer's needs and his personal psychological, sociological, and cultural characteristics.

On the other hand, the knowledge of economic factors alone, such as interest rates, level of income, etc., will not suffice for the marketer. This is because such knowledge may not be of help in understanding the consumer's behaviour unless the elements implicit in the utility function can be made explicit.

3.2.5 Psychological Studies

Some studies attempted to explore the underlying psychological factors which play a part in the life insurance purchasing decision. A study which looked into the effect of the attitudes towards risk taking on the purchase of life insurance was conducted by Greene (1963; 1964). Greene utilized some previously conducted tests which showed some relationship between attitudes towards risk and actual behaviour in real life (e.g., a gambling situation). However, Greene was unable to show a significant relationship between the scores on the attitude towards risk and past insurance behaviour.

Additional work in this direction was also undertaken by Williams, 1966. In his study he distinguished between two types of risks. One type of risk is the speculative risk situation in which the person may gain as a result of the situation he faces. The second type of risk is the pure risk, in which a person may not gain anything but merely seeks to maintain the same status. The gambling-financial situations are of the speculative kind, whereas the relevant risk to life insurance (i.e. death risk), should be the pure risk.

However, in the experiment the author conducted, he too was unable to product satisfactory correlation between pure risk aversion behaviour and the amount of life insurance purchased.

Berkson, 1972, viewed life insurance as a risk reduction vehicle. He therefore tried to explore the psychological factors which influence one's attitude toward risk taking and how they may reveal themselves in the purchase decision of life insurance. In particular, he examined the "birth order" of a person which was documented as having an effect on a person's anxiety formation under risk situations.

This study by Berkson was, in part, a result of criticism of the studies which used demographic and socioeconomic variables as the primary explanatory variables. In his study he therefore added the "birth order" to some of the other demographic variables such as age, marital status, number of children, income and the divorce of the subject's parents. The hypothesis was that first-born or only children would form more anxieties under risk situations and therefore would purchase more life insurance.

The results were inconclusive. Birth order was significant in some groups and not in others (the justification was then that only a few samples were studied). The author's opinion was, however, that some other factors may offset or negate the anxiety factor as revealed by the birth order. Nevertheless it renders the birth order measure as a weak indicator for the marketer of the potential demand by a person for life insurance.

The work of Bamira, 1975, was an attempt to explain the variance in decisions made by potential purchasers of life insurance as to how much life insurance they should own, with the aid of psychological and behavioural variables. He defined the dependent variable as the amount of face value a person owned relative to his income group. In other words, the dependent variable was viewed as a person being a "heavy" or "light" owner of life insurance, where heavy means owning a larger amount of life insurance relative to one's income group and light means owning a smaller amount of life insurance relative to one's income group.

The independent variables were attention (awareness), motive, overt search, attitude, comprehension, and general sophistication in the field of financial products. Attention was measured as how attentive the respondent was to the product and to the sources of information available (e.g. advertising, insurance agent and so on). Awareness was measured by the recollection of the customer of the different attributes of life insurance product other than its primary mission of financially protecting the family in case of the breadwinner's death. The variable motive measured how strongly the respondent felt about life insurance and the necessity to satisfy the need for financial security of the family. The overt search variable measured the respondent's conscious effort to seek information about the type of life insurance he needs. This variable, also measured the advice the customer sought before the purchase, and the desire to be informed by the life insurance agent.

The attitude variable was measured by how positively the respondent felt about life insurance in general and its performance in fulfilling his need for financial protection. The comprehension variable measured the respondent's understanding of the life insurance policy. Since life insurance is a financial instrument, general financial sophistication may have a bearing on its purchase. The financial sophistication of a person was, therefore, measured by his knowledge of other financial products (e.g. mutual funds, common stocks, and saving accounts), and his activity in purchasing and owning them.

Also, variables such as the respondent's overall confidence in his ability to make judgements in financial matters and the respondent's declared intention to buy additional life insurance were included.

The results of Bamira's study supported his basic hypothesis that the variables, defined above, related significantly to the amount of life insurance owned relative to one's income. The X^2 test showed that a large proportion, 50% or more, of all questions which measured each variable, related significantly (at .05 level) to the heavy-light ownership behaviour. For example, 10 questions were considered as potentially measuring the variable "attention". The hypothesis was, then, that there was a positive relationship between attention and being a heavy owner of life insurance. It was found that seven out of the ten questions proved to be significantly related to the heavy-light ownership of life insurance.

The second part of the analysis, examined the relationships between the defined independent variables and the dependent variable on a multivariate basis. The statistical test used was the discriminant analysis model. The results of the analysis indicated that the set of the defined (i.e. independent) variables effectively discriminated between the heavy and light ownership of life insurance. To the marketer the results indicated that there was an identifiable segment in the market of heavy owners of life insurance relative to their income.

However, the limitation of Bamira's investigation was that the portion of the variance he did not succeed in accounting for; in this particular case, he had approximately 30% misclassifications. This result, from Bamira's point of view, was due to the absence of some variables which could have an impact on the amount of life insurance a person is likely to own. For example, environmental factors such as a person's social, cultural or ethnic background. Also, another possible influencing factor is the customer evaluation of life insurance product as being a necessity for the purpose of protection in case of premature death of the family breadwinner.

3.3 The Approach Suggested for this Investigation

The review of past studies in the field of life insurance leads to some conclusions. One of the main conclusions can be put in the words of Headen and Lee (1974) who stated that: "The demand for life insurance is a subject that apparently has received little systematic study and analysis both from the standpoint of estimation of structural determinants and from the standpoint of prediction".

The state of the research seems to suffer from a lack of consistency and agreement as to what is being measured, who is being measured, and for what purposes. We saw that surveys which collected data on the public's opinions and attitudes rarely tried to relate the amassed data to particular actions in purchasing and owning of life insurance. Besides, the study of attitude in the field of life insurance purchasing behaviour has been recognized recently (at the beginning of the 1970s) relative to other studies (see Table 3.1). However in those instances where such attempts were made, it usually was done on a bi-variate basis. No attempt was made to use the opinions and attitudes collected in the surveys for a structural description of a person's decision to purchase and own life insurance.

The second type of study which tried to explain demand for life insurance, used only demographic and economic factors as the principle explanatory variables. The third category of studies (i.e. time series studies), were subject to the lack of a goodness of fit statistic measure. Also such studies cannot be used for marketing purposes by any individual company since they were only used in predicting the life insurance sales for the life insurance industry as a whole.

The fourth group of studies used some of the theoretical framework as a starting point. We saw that most of the theoretical frameworks assumed rational behaviour.

Some of the work in the fifth category (e.g. Bamir's), indeed tried to explore a few of the personal and psychological characteristics which could affect personal action in purchasing and owning life insurance.

Table 3.1 : Historical Review of Life Insurance Purchasing Decision Studies

Method	Objective	Advantages	Limitations	References
Attitudinal and Opinion Survey	To identify who the life insurance customer is, what he thinks, and his attitude towards life insurance.	Knowledge of what the public thinks (wants) will enable the marketer to tailor the product which meets these attitudes.	The survey did not answer the question as to whether the expressed attitudes led to the purchase of life insurance or in what amount. In addition, the tabulated attitudes and opinions were not tested by any statistical means in order to explore their possible relationships to the purchase and ownership of life insurance.	The Institute of Life Insurance, U.S., 1970; Wheately, 1971; Ferrel, 1972; Davis, 1972.
Demographic and Socio-economic Studies	To explain and predict the demand for life insurance, through investigating customers' demographic and economic characteristics, associated with purchase of life insurance	Some studies succeeded in relating, significantly, the purchase decision to certain demographic and socio-economic variables, e.g. Hammond et al., 1967, Anderson and Nevin, 1975, and Ferber, 1980.	Most of these studies were based on aggregate figures using data from panel members. The problem with panel studies is, however, that those people may tend to be better educated, more interested in social topics, and so forth. Therefore no general statistical inference could be obtained from such studies.	Survey Research Center, 1953; Miner, 1957; Kreinin et al., 1957; Katona, 1964; Hammond et al., 1967; Mantis and Farmer, 1968; Duker, 1969; Anderson and Nevin, 1975; Ferber Lee, 1980; Skinner and Dubinsky, 1984; Burnet and Palmer, 1984.

Table 3.1 (continued)

Method	Objective	Advantages	Limitations	References
Time Series Analysis	Studying the general trends of the demand for life insurance.	The successful prediction of the potential sales for the life insurance industry as a whole.	Its value as a marketing tool is limited, since it provides little understanding of the life insurance purchaser behaviour. Also, no goodness of fit statistic is presented, and the aggregation problem is, again, common to time series studies.	Neumann, 1967; Mantis and Farmer, 1968; Ralls, 1971; Diacon, 1980.
Portfolio Selection Utility Function Approach	Maximization of one's expected utility and the rationality in the problem of portfolio selection with purchasing life insurance.	Some studies discovered that the optimal amount of life insurance coverage was sensitive to changes in some financial and economic factors, such as changes in the real interest rates and the amount of personal wealth.	The common element in all studies cited under this method, besides using a theoretical framework for defining the variables that may affect the demand for life insurance, was the presumption of the conscious rational behaviour of the potential customer. This rational utility maximization process is, however, questionable.	William and Dickerson, 1966; Fortune, 1973; Headen and Lee, 1974; Diacon, 1980.

Table 3.1 (continued)

Method	Objective	Advantages	Limitations	References
Psychological Studies	To explore the underlying psychological factors which play a part in the life insurance purchasing decisions.	Some work tried successfully to explore the personal and psychological characteristics which could affect personal action in purchasing life insurance.	The studies concerning the anxiety and risk taking factors did not produce satisfactory results. Besides, the study of psychological variables alone proved to be not sufficient to explain the purchasing decision process in the field of life insurance.	Greene, 1963;1964; Williams, 1966; Berkson, 1972; Bamira, 1975.

The table shows the following points:

(1) The major studies which have been undertaken so far were that using Demographic and Socioeconomic Characteristics in explaining life insurance purchasing decisions. The importance of these studies is not only in terms of its quantity, but also in terms of the time starting point (the first study, as far as we know, was conducted in 1953).

(2) The attitudinal studies, besides having certain limitations in terms of the methodology employed and/or the results achieved, they started recently (at the beginning of the 1970s), relative to the other studies.

(3) The other studies (i.e., time series, portfolio selection and psychological studies) had also their limitations in either the framework of defining the variables that may affect the purchasing decision of life insurance or in the potential applications of their results as a marketing tool.

The other studies concentrated on the anxiety and risk taking factors but did not produce, however, satisfactory results.

On the other hand, most marketing scholars agree that satisfying the consumer is a meaningful goal. In consumer-oriented firms, however, all planning is done with selected target markets in mind. A logical implementation of the marketing concept has led to the development of a systematic approach managing the marketing system. The marketing concept is a company philosophy that places the customer's needs and wants first and emphasizes marketing strategies to satisfy the consumer needs (Kotler, 1980).

In other words, the marketer's interest in consumer behaviour lies in the fact that a successful sale effort is very much a function of the marketer's ability to tailor the product to the potential customer's needs and his general perception of how these needs can be satisfied.

Hence the understanding of the mechanics which make the potential customer judge a particular product or service as best satisfying his/her needs is of prime importance. What we are suggesting, therefore, is an approach which attempts to explain the purchase and ownership decision of life insurance with the aid of both attitudinal and demographic/socio-economic variables. In this approach, demographic/socioeconomic variables play their part but cannot be regarded as the sole determinants of a purchase decision. Attitudes, predispositions, culture, the search for information, marketing efforts and the like, are assumed to be significant and important elements in the choice and purchase decision process.

In doing so, this study will use the <u>general principle</u> of the established consumer behaviour model of Howard and Sheth (1969) for defining the variables to be employed in this investigation.

We did find in the literature that people refer to purchasing and owning of life insurance as a means of satisfying the need for protection that also often contains the saving element. In satisfying these needs, however, the potential customer faces a variety of financial vehicles to choose from.

Therefore, in using the Howard-Sheth model, this work follows conceptually the proposition that the consumer is involved in a choice situation when he faces the decision of how to best satisfy his need for financial security for the future of himself and his family (i.e., the choice between saving through purchasing life insurance or saving with the other financial institutions).

The intent of the Howard-Sheth model is to present the choice process for a brand out of a set of brands in a product class. The problem solving process the model describes should provide an understanding of why a person chooses a particular brand, when he faces a multitude of brands of the same product to satisfy a particular set of needs. One can see that the authors of the model did not attempt to describe a choice model for a product. However, the authors in defining a product class chose a rather loose boundary to define what it was. They defined a "product class" as a "set of brands that the purchaser views as closely substitutable in meeting his needs". Thus, it is conceivable that in given circumstances what may be regarded as closely substitutable in meeting a set of needs may cross the border lines between products.

Life insurance is an example of a case where thereotically and practically there could also be other products satisfying the same set of needs (e.g., saving with other financial institutions). The Howard-Sheth model could therefore be used in this investigation as a framework for describing the choice process to own life insurance.

All the variables comprising the life insurance purchasing decision process are described in detail in the next chapter, based on the literature survey and in light of the Howard-Sheth model within a faceted approach.

3.4 Summary

This chapter was mainly devoted to two major points. Firstly, the historical review of the related literature and, secondly, the suggestion of the relevant approach for this investigation. Concerning life insurance ownership literature, one can see that most of the past research in this field had some limitations in either the approach used in defining the problem or in the statistical analysis of the data investigated. Attitudinal studies, for example, were basically conducted along lines emphasizing different opinions, attitudes and, in some cases, specific markets. However, none of the surveys tried to construct a comprehensive framework which would relate the findings to the consumer decision process to own life insurance.

The demographic/socioeconomic variables analysis also suffered from the problems of using data from panel members and examining aggregate figures on life insurance premium expenditures and/or amount of insurance purchased. These figures, however, as well as not entirely representing those people who purchase life insurance, could also be biased to certain types of people (e.g., panel members may tend to be better educated, more interested in social topics and so forth).

The limit of a time series analysis study is that it cannot be used for marketing purposes, since it does not tell us who the customer is or what makes him take the decision to purchase life insurance. However, it can be used successfully in predicting the life insurance sales for the life insurance industry as a whole.

The common element in all the studies in section four (i.e., portfolio selection and utility function studies), as well as using a theoretical framework for assessing the variables that may affect the demand for life insurance, is the presumption of the conscious rational behaviour of the potential customer. This means that there is an assumption that a customer uses a rational decision process in order to maximize his/her utilities or minimize the disutilities involved in his/her decision.

However, one can question the notion that a person really employs the rational utility maximization process consciously. If such a process is not conscious or only partially conscious, then it will be of rather limited use to the marketer who wants to try and tailor his product to the potential customer's needs. Also the psychological factors seemed to be weak measures of the demand for life insurance from the marketer's point of view.

Finally, we presented the suggested approach which makes use of both the attitudinal and demographic/socioeconomic factors in light of the Howard-Sheth purchasing behaviour model. This approach aims at better understanding of the consumer purchasing decisions phenomenon in the field of life insurance. However, it must be emphasized that our interest in using the general principle of the Howard-Sheth model is in two main points: (1) the variables that should be included in investigating the purchasing decision process and (2) the general concept of the model (i.e. the choice aspect).

With regard to the first point, we investigate both internal variables to the consumer (i.e., the consumer formulates his goals and then makes the decision to purchase in order to satisfy his needs), and the external variables (e.g., education, occupation, income, and marketing activities such as advertising/promotion and the role of the life insurance agent).

In the second point, our main concern is in the choice concept, when we consider life insurance as a saving intermediary and the customer has to choose between all available saving intermediaries (including the other financial institution savings).

Finally, it must be emphasized here, that the literature survey presented in this chapter is that only related to the life insurance purchasing decision studies. A literature review concerning life insurance ownership and inflation was presented in Chapter Two. Also, the related literature to the methodology of analysis can be found in Chapter Six.

Chapter Four

Research Design

4.1 Introduction

This research is a study of life insurance purchasing decisions in Egypt. It seeks to establish the main characteristics of these decisions in their various dimensions. In other words, to identify the most important (determinants) variables which determine the life insurance purchasing decision.

Since the main purpose of any research design is to impose controlled restrictions on the observations investigated, the first task in designing a research should be to enable the visualization of all, or almost all, the universe of content the research may pertain to. Research design, in this sense, sets up the framework for adequate tests of the relationship among variables (Kerlinger, 1973).

It also enables the researcher to answer his research questions as scientifically as possible (i.e. validly, objectively, accurately, and economically).

In this investigation of behaviour, in the context of life insurance purchasing, if a systematic and scientific approach is to be adopted, one should specify which aspect of behaviour is to be investigated. In addition, the various components of the problem under investigation should also be taken into consideration. The faceted design was found to be central in the present research and it has proved that it provides an effective approach for a fruitful design of content, leading to appropriate data analysis techniques (Meidan, 1975).

In the following sections of this chapter we are discussing how we came to formulate the research problem (i.e. planning the study), and we present the facets and their elements which compose the universe of content of this research problem.

4.2 Planning the Study

To do a scientific research it is not sufficient just to describe certain phenomena; it is necessary to explain them or to present a better explanation where possible (Phillips, 1976). Hence, the scientific research may be defined, as the effort extended for certified knowledge by developing concepts and testing hypotheses, as to the gathering and analysing of meaningful data, and critical evaluation of the original concepts and ideas.

Much of social research is dedicated to showing the worth of certain theories by testing the explanatory value of that theory in new ways or in new settings. Often the result of such research is to specify, amend, or significantly qualify the existing theory. In some cases, however, the result of such work may cause us to thoroughly reject an existing theory and to generate in its place a new theory of our own.

Therefore, the conventional idea of scientific research is that the researcher begins his research, defines the problem, and formulates one or more hypotheses to be tested. This is often done on the base of empirical findings of previous studies and the theories which have been proposed to account for these findings. The research process, then, may follow these steps:

(1) Specification of the problem;

(2) Formulation of the problem hypotheses to be tested;

(3) Identification of the major variables in these hypotheses (i.e. the content of the research problem);

(4) To define the data gathering sources (historical and/or experimental);

(5) To define population, sample(s), and data gathering technique(s);

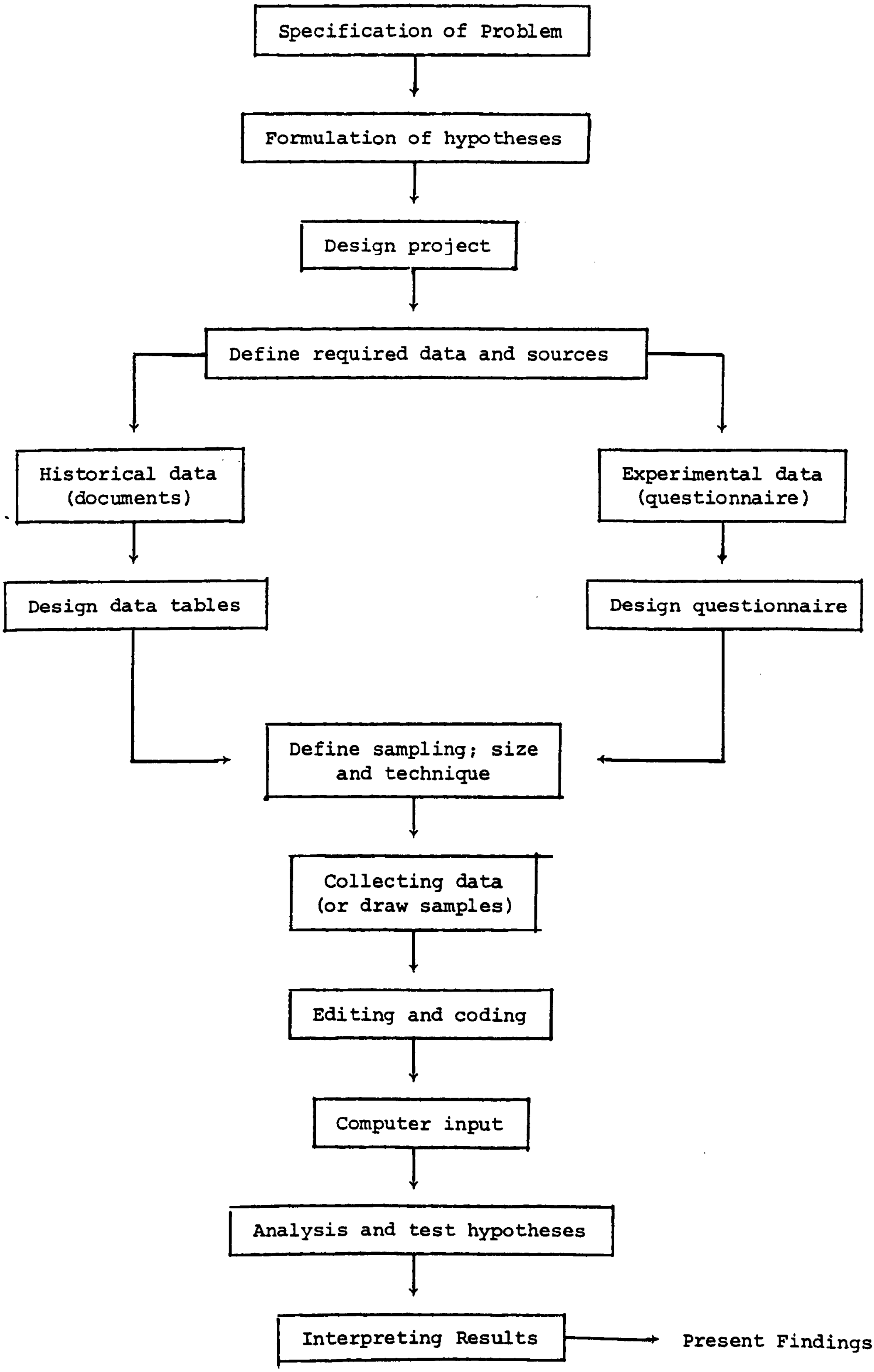
(6) Collecting the data required;

(7) Editing and analysing;

(8) Present findings.

These steps can be illustrated in the following diagram:

Figure 4.1 : The Research Process



In order to be able to plan the study according to the scientific research process, (i.e. problem definition, hypothesis(es), and analysis technique(s)), a faceted approach was used. Facet theory offers formal methods for the definition of the universe of content of a research problem, based on the principles of set theory (Meidan, 1975).

4.3 The Facet Theory and Research Design

Facet theory is a coherent approach to the design of research projects, measuring instruments, and data anlysis. It was developed out of the work of Guttman (1954) and his colleagues, who were concerned with the selection of items for test construction and with the weaknesses in factor analytic procedures (Guttman, 1958). By drawing on Fisher's approach to the factorial design of experiments, the facet theory has evolved into a research orientation with the explicit aim of revealing "laws" (Shye, 1978).

Canter, 1982, stated that Facet Theory utilizes three major consitutents of scientific activity: 1) formal definition of the variables being studied; 2) hypothesis(es) of some specified relationships between the definition and an aspect of empirical observations; and (3) a rationale for the correspondence between 1 and 2. The definition of variables is provided by the specification of the facets from which these variables are derived and the conceptual relationships they bear to each other. A facet may be, in essence, any way of categorizing observations as long as the elements of the category scheme are mutually exclusive.

At least two classes of facets are specified when providing a faceted definition: the common range facet is one, domain and/or background facet the other. The common range facet is the range of values that any one of the observations might take. Typically, this consists of the different types of answers available in a forced choice question, e.g. very satisfied/ moderately satisfied/dissatisfied/very dissatisfied or the presence/absence of a categorical variable e.g. correct/incorrect (Canter, 1984). The "domain" or "background" facets describe the content domain of the question being asked. For example, in their study of well-being, Levy and Guttman (1975) categorized their questions in terms of: (1) "areas of life", e.g. education/work/recreation/etc.; (2) "whether they deal with primary or secondary aspects of well-being; (3) with reference to which group, e.g. "self/government/new immigrants/etc.", and a number of other facets. Thus a question dealing with "education", a primary aspect, and "self" would be: "are you satisfied with your level of education?". Answers were classified in the range "very satisfied ...... very unsatisfied". The definition was presented by stating how the domain and/or background facets relate to one another when mapped into the common range, thus producing a summary framework for all possible observations and referred to as a "mapping sentence".

The background facets provide descriptions of the respondents or, in a general case, ways of categorizing the contexts within which the observations are collected. Age and social class would typically form background facets in studies, say, of attitudes.

Briefly, Facet Design tries to systematise the construction of a semantic structure which identifies the different elements and variables of which the phenomenon to be studied is composed, and by which it is shaped (Meidan, 1975). In other words, facet design is a way of laying out a domain for research, specifying the limits of the domain and the presumed ordering of its sub-parts.

Based on the above definition of Facet Design, the universe of content, in this investigation, is the life insurance purchasing decisions

In Egypt, as expressed by the attitudes of insured and non-insured typologies. The main objectives of the study are: 1) to identify the various factors (variables) which are the main component elements (determinants) of life insurance purchasing behaviour; 2) to investigate the similarities (or dissimilarities) between the two hypothesised typologies; and 3) to examine the relationship (association) between the background facet variables (i.e. age, education, occupation and so on), and the amount of life insurance purchased.

In order to obtain the facets which comprise the universe of content of this investigation, two preliminary steps were undertaken: to begin with the relevant literature was surveyed; next, short, open and informal in-depth interviews were undertaken with a small group of 20 Egyptian postgraduate students at Sheffield University. Unfortunately, this group is not completely well-representative of the type of respondents to be used in the ultimate research project. Therefore, further interviews had been undertaken in Egypt before gathering the final data.

Based on the preliminary interviews and a review of the literature, the demand determinants for the life insurance product, from the consumer viewpoint, may be separated into three basic groups: 1) variables that stimulate demand as a result of the life insurance company's selling effort; this in turn is related to the industry's marketing system (i.e. advertising, promotion, size and efficiency of the company's sales force and so on); 2) variables that affect the size of the potential market and the ability to purchase, such as disposable permanent income, consumer needs or wants (e.g. protection and/or saving elements), as well as population related factors (demographic variables) such as family size and family life cycle; and 3) variables that affect the household's decisions to save in light of the alternative investment intermediaries as well as expectations concerning future economic conditions (e.g. inflation).

In terms of the facet design theory, we reformed the above groups into four main facets as follows:

1) FACET 1: Reasons for Purchasing Life Insurance; which include three subfacets: family benefits, financial aspects in purchasing life insurance and financial benefits and facilities offered by the insurer.

2) FACET 2: Life Insurance Purchasing Decision Variables; which include four subfacets: sources of information, the life insurance purchasing decision-making process, the role of the life insurance agent, and life insurance advertising.

3) FACET 3: Environmental Variables; which include: inflation expectations and the competition of the other financial institutions to the life insurance industry.

4) FACET 4: Background Information; (i.e. age, education, occupation, family size, family life cycle, and income).

We then formulated the following hypotheses to be tested:

A) Attitudes towards life insurance purchasing behaviour variables are similar (i.e. there is no difference) for insured and non-insured typologies in Egypt.

B) The importance attached to saving through life insurance is similar (i.e. there is no difference) to that attached to saving with the other financial institutions for both insured and non-insured.

C) There is no significant relationship (association) between the amount of life insurance purchased and the insured's age, education, occupation, family size, family life cycle, and income (taken collectively or separately).

4.3.1 The Mapping Sentence of the Research Problem

One way of summarising the complete set of all the universe of content of a research study, is by means of a mapping sentence. Shye, 1978, defines a mapping sentence as "a verbal statement of the domain and of the range of a mapping including connectives between facets as in ordinary language". This set of verbally connected facets mapped into a common range is also called, by Borg, 1977, a mapping sentence. It provides the principal mechanism for specifying the formal definitional system for which a correspondence with empirical observations will be sought (Canter, 1982).

In the present study, the domain is the set of variables of the life insurance purchasing decisions in Egypt. In other words, the universe of content of this investigation is the life insurance purchasing behaviour as expressed by the attitudes of insureds and non-insureds typologies. The main objective of the study is to identify the most important variables (determinants) which are the main component elements of life insurance purchasing behaviour decisions.

Based on the above definition, the mapping sentence (Figure 4.1) is the portraying of facets in a relatively simple form, which is easy to comprehend. The mapping sentence enabled us to obtain almost all the possible attributes of the universe of content, by different combinations of the various elements of each of the facets.

The mapping sentence for the facet design of this research could be summarised as follows: The <u>Attitude</u> (A) of the <u>Referent</u> (B) at <u>Time</u> (C) towards aspects of <u>Context</u> (D) for the <u>Object</u> of (E) of the respondent - insured and non-insured - (P) → <u>Range</u> (R). If we intended to analyse all the elements of content included in the facets, the number of content questions to be asked would be equal to the number of combinations of all

Figure 4.2 : A Mapping Sentence for the Definition by Facet of a Research Study in Life Insurance Purchasing Behaviour

	A Attitude (Behaviour)		B Referent		C Time	
A study of	a_1 cognition (belief) a_2 emotion (feeling) a_3 connation (intention) a_4 action (overt action)	of the	b_1 customers (actual and potential) b_2 particular customers segment b_3 firms' management b_4 sales force	as perceived by the referent at	c_1 past c_2 present c_3 future	with regard to the aspects of content

D Context of Life Insurance Purchasing Behaviour		E Objective		
D_1 Reasons for purchasing D_{1a} family benefits D_{1b} financial aspects in purchasing life insurance D_{1c} financial facilities offered by the insurer D_2 Life Insurance Purchasing Decision Variables D_{2d} sources of information D_{2e} factors influencing the decision to purchase D_{2f} life insurance agent's role (functions) D_{2g} life insurance advertising D_3 Environmental Variables D_{3h} inflation expectations D_{3i} objective for saving in general D_{3j} financial benefits in saving in general D_4 Background Information age, education, occupation, family size, family life cycle, and income	Towards the	e_1 life insurance purchasing decision making process in Egypt	is	High (very important) | Low (not important at all)

the elements in all the five facets (A,B,C,D and E).

This means that it would be A_i B_i C_i D_i E_i (where i=1,2, ... n different elements). Therefore, we can decide on which elements should or should not be included in the research analysis. In this study, the mapping sentence for the definition by facets of the research problem enabled the systematic limitation of the universe of content to be researched to a_1 b_1 c_2 D e_2 .

As well as enabling us to comprehend the whole universe of content of the research problem, the mapping sentence enabled us to confine the area of our research, to formulate our questionnaire accordingly, and to point out areas for further research in the same universe of content.

Two sources for designing the mapping sentence and for defining the observations were 1) utilization of previous ideas and materials, mainly from literature, and 2) formulation of hypotheses. The set of variables whose interrelationship is hypothesized should be and were, specified to be elements of at least one facet.

A facet is thus different from a "variable" in that it is one way of categorising the observations. In some studies, however, a number of variables may be so similar that they are all derived from the same facet elements, or predefined facets may not be represented by any of the variables being measured. Technically, a facet is "any set of variables (elements) play a role of a component set of a Cartesian space, this set being called a facet of that space" (Canter, 1977).

A "Cartesian" space is one for which the co-ordinates are simply distances, not angles or specific dimensions. The reference to Cartesian space indicates that no assumptions are being made about dimensionality of the facets. It further implies that the observations are being classified on all the facets. A facet applicable to any observations is applicable to all (Runkel and McGrath, 1972).

4.3.2 Advantages of Facet Design

The logic and scientific concept beyond using the facet theory in designing a research, lies in its ability to define all the component elements of a research problem in a systematic and comprehensive way.

Facet theory, as a coherent approach to the design of research projects, measuring instruments, and data analysis, utilizes three major constituents of scientific activity. The proceedings follow from the definition of a set of variables to hypotheses of some structures to empirical testing of the relationship between the variable being studied. It is, therefore, a tool available to any designer of research, no matter how unconventional may be the domain he wishes to investigate.

The major limitation of a faceted design is, however, that the choice of facets is entirely subjective and depends largely on the researcher and his main research interests. Nevertheless. Meidan. 1975. stated six major advantages of utilising facet theory in designing a research: they are:

1) The systematic way in which the whole possible universe of content of a research problem is presented.
2) The logical selection of the sample of items included into the chosen research project.
3) Based on 2) above, the other items and areas left out and subject for further investigation are defined and specified.
4) The limitations of a research in both the area and subject, which are due to self delimitations, are supposed to be known in advance.
5) The questionnaire is much easier to structure with the use of the facet design by putting each item (or element) of the facets into a question.
6) The analysis of the data collected by the questionnaire is more systematic and comprehensible.

Applications of facet design and analysis are especially useful in the field of sociology, psychology, other research on social sciences and in designing the structure of books and dissertations. Among the most important applications of facet design are Elizur's (1969) reactions to the installations of computers in organizations; McGrath's (1967) classification of individual groups and organizational concepts; and Guttman (1959) who used facet design and facet analysis on a set of data that was previously designed by an ordinary approach and analysed by a factor analysis method.

Recent reviews of facet theory, such as those of Borg (1978) and Shye (1978), emphasized the wide range of modes of use. For example, Payne et al. (1976) used it as a basis for classifying and ordering job satisfaction variables. It was used by Elizur and Guttman (1976) to formulate and then test hypotheses concerning relationships between attitudes towards work and technological change. A study on the actions taken by British universities when attempting to increase energy conservation was undertaken by Miles and Canter (1976). Above all, facet theory is a set of related ideas about how to do research and why it should be done in that particular way (Runkel and McGrath, 1972).

In business studies, however, applications of facet design have been rather limited. There were, as far as we know, two studies which used facet theory in the design and analysis of business problems. Meidan, 1974, employed a facet design in studying Export Marketing, and Moutinho, 1982, also used a facet design to investigate tourist behaviour in Portugal. However, there is an increase in the potential applications of the faceted approach, as was evident in the 1st international conference and workshops on Facet Theory in Action: held at the University of Surrey, Guildford, 12th and 13th December 1984 (the researcher had the opportunity to participate at this workshop).

4.4 The Main Facets of Life Insurance Purchasing Decisions

In the present investigation we are making use of two main sets of elements: The attitude and the context of life insurance purchasing decisions.

4.4.1 The Facet of Attitude

There is a common agreement that the attitude phenomenon includes three main components: Cognitive, Behavioural and Affective, A cognitive component refers to information, knowledge or beliefs on the part of a subject about an attitude object. The behavioural component refers to the acts which an individual performs, advocates, or facilitates with regard to an issue. The third component is affective and refers to the individual's valuation and feeling.

Blalock, 1968, distinguished between three types on each of the cognitive, behavioural and affective scales. The basis of this distinction is the designation of the class of observations to which numerical assignments are to be made. For example, there are three components of any cognitive attitude (belief): the subject who holds it (cognitive subject), its content (cognitive content), and the object to which it is directed (cognitive object).

Robertson et al., 1984, stated that attitudes can be seen from two points of view. From the points of view of marketers, attitudes are defined as learned predispositions which respond to an object or a class of objects in a consistently favourable or unfavourable way. When discussing attitudes, however, it is important to differentiate between attitudes and beliefs.

Beliefs are the organized pattern of cognitions, the knowledge the individual holds to be true about certain aspects of his or her world. In other words, it is what a person knows about a certain object. An attitude, however, is by definition not neutral, but rather, has strong affective components (Robertson et al., 1984).

Attitudes often act as a triggering mechanism to behaviour. Although it is quite possible to hold a belief without an accompanying attitude, an attitude naturally includes and incorporates relevant beliefs. Beliefs then are a component of attitudes.

When social psychologists discuss consumer's attitudes, on the other hand, they emphasize that attitudes are hypothetical constructs, that is, internal psychological orientations. An attitude is a hypothetical intervening variable that acts to organize environmental stimuli. Therefore the consumer perceives a stimulus (product), uses an attitude (learned predisposition) to categorize that stimulus favourably or unfavourably, and then behaves towards that stimulus (i.e. purchase or not purchase) on the basis of evaluation.

Attitudes then are orientations which exist within the consumer's mind. And the manager's interest in attitudes stems from the desire to predict and/or influence purchase behaviour (Robertson et al., 1984).

In studying customer's attitudes, however, a number of schools of thought exist on attitudes and attitude change; for example, the structural approach and multiattribute models.

The structural approach to the study of attitudes can be conceptualized as consisting of three separate components. First is the cognitive component, which refers to the beliefs an individual holds about an object. Included in the cognitive component are evaluative beliefs and knowledge, that give an object a positive or negative valence and that provide the information upon which the consumer makes judgements. This is, in fact, our main concern for studying the attitudes (cognitive component) of the insured and non-insured towards life insurance purchasing decision variables. The second component of attitudes is the affective (emotional) component, which deals with the person's overall feelings of like or dislike toward an object. Finally, there is the connative component, which refers to the tendency to act and the readiness of an individual to behave overtly toward an attitude object.

Managerial interest in attitude theory stems from the attempts of numerous institutions (Business and Government) to confirm existing positive attitudes. Attitudes are defined from the marketer's point of view as learned predispositions to respond to objects in consistently favourable or unfavourable ways.

Although the structural approach has received much attention from the theoretical point of view, there has been little empirical research on its three proposed components. Most studies of attitudes fail to measure all three of the suggested components, concentrating instead on the measurement of affect. The measure of the affective element is then taken as a summary measure of the overall attitude.

Somewhat similar to the structural approach is the expectancy value approach, a multiattribute model that assumes that an attitude toward a particular object is composed of a combination of beliefs about, and evaluations of, various attributes of that object (Robertson et al., 1984). The best known expectancy value model is that developed by Martin Fishbein (1972), who considers only the affective nature of attitudes, claiming that an individual's attitudes toward any object can be predicted from a knowledge of his or her beliefs about what attributes an object possesses and the evaluations of those attributes. Fishbein's attitude model may be expressed as follows:

$$A_o = \sum_{i=1}^{n} B_i \, a_i,$$

where:

A_o = the overall attitude toward an object "o";

B_i = the belief of whether or not object "o" has some particular attributes or achieves some particular goal;

a_i = the evaluative aspect, that is, the importance to the consumer that "o" has the attribute or achieves the goal; and

n = the number of beliefs.

4.4.2 The Context of Life Insurance Purchasing Decisions

Based on the preliminary interviews and the review of the literature, and in light of the Howard-Sheth model of consumer buying behaviour, the content of life insurance purchasing decision variables has been formulated (see table 4.1 for the details of the first three facets).

FACET D_1 - Reasons for Purchasing Life Insurance which include three subfacets, they are: family benefits, financial aspects in purchasing life insurance and financial benefits (facilities offered by the insurer).

FACET D_2 - Life Insurance Purchasing Decision Variables, which comprise four main subfacets, namely, sources of information available, the life insurance purchasing decision making process variable, the role (functions) of the life insurance agent and life insurance advertising.

FACET D_3 - Environmental Variables. This facet comprises the surrounding economic conditions (e.g. inflation) and the competition from other financial institutions to the life insurance industry.

FACET D_4 - The Background Information, which includes age, education, occupation, family size, family life cycle, and income. This facet pertains only to the insured person, in order to determine the most important factors associated with the amount of life insurance purchased.

Table 4.1 : The Context of Life Insurance Purchasing Decisions

No.	Title of Facets, Subfacets and Elements	
FACET D1	Reasons for Purchasing Life Insurance	
D_{1a}	Subfacet (i)	Family benefits:
		Protection of dependents Retirement income/old age protection Children's education Daughters' marriage costs Beginning a new business after retirement Saving for emergencies Return on investment.
D_{1b}	Subfacet (ii)	Financial aspects in purchasing life insurance
		A good method of saving Safety for money High return on investment Un-fixed return (i.e. according to the investment results) * Provision for inflation Policy prizes (bonuses)
D_{1c}	Subfacet (iii)	Financial facilities offered by the insurer
		Profit sharing Tax allowances Borrowing against the cash value of the policy Surrender values
FACET D2	Life Insurance Purchasing Decision Variables	
D_{2d}	Subfacet (i)	Sources of information
		Life insurance agent Advertising - TV Magazine/newspaper ads Friends/relatives Points of sales (company offices) Workplace
D_{2e}	Subfacet (ii)	Factors influencing the decision to purchase
		Husband/wife Children Insurance agent Friends/relatives Own decision
D_{2f}	Subfacet (iii)	The life insurance agent's role (function)
		Providing more detailed information Helping to recognize the future financial problems Helping to evaluate life insurance needs Keeping in touch with the customers

* This is a religious principle in the Moslem countries.

Table 4.1 (continued)

No.	Title of Facets, Subfacets and Elements	
D_{2g}	Subfacet (iv)	The life insurance advertising Attractive/exciting Understandable/clear Sufficient/interesting
FACET D3	Environmental Variables	
D_{3h}	Subfacet (i)	Economic conditions Inflation expectations
D_{3i}	Subfacet (ii)	Objectives in saving with other financial institutions Protection of dependents Retirement income Children's education saving Daughters' marriage costs Beginning a new business after retirement Return on investment
D_{3j}	Subfacet (iii)	Financial benefits in saving with other financial institutions A good method of saving Safety for money High return on investment Un-fixed return Provision for inflation Investment prizes

4.4.3 Other Facets

The other facets of the complete research design of this research are B - the referent (or the actor), which refers to those who might be the possible alternative actors or referents, for which attitudes towards the object (i.e. life insurance purchasing) could be measured, C - which indicates the time at which the attitudes are investigated, and E -

regarding the object (i.e. life insurance purchasing decisions in Egypt).

The main possible referents or actors are:

b_1 - individual customers (purchasers and non-purchasers)

b_2 - particular customer segments (by ages, occupation, etc.)

b_3 - firms management (for the group life insurance)

b_4 - sales force

Since we were limited on the size of the present research and questionnaire, we limited accordingly the number of elements in this facet, and actually we made use of one element only: b_1 - individual customers as buyers and non-buyers.

Facet C - the time at which the referent's attitudes were referred, these can be of course only c_1 - past; c_2 - present; and c_3 - future. We investigated the attitudes at present - c_2.

Facet E - the object, we mention only the element which is of interest to us, e_1 - life insurance purchasing decisions in Egypt.

It should be mentioned, however, that the number of facets can be increased if we wish to be more precise and to explore more fully the universe of content examined.

4.5 Sampling the Universe of Content

The main aim of this investigation is to make a comparative study of the attitudes of insured and non-insured people to the life insurance purchasing decision variables in Egypt. In practice it is almost impossible to observe all the universe of content of the attitudes for the entire population of respondents. Therefore sampling both the universe of content of attitude and the population of respondents is the practical way to handle these problems. While the problem of sampling the population of respondents is relatively simple (as indicated in the next chapter), sampling the universe of content is more complex and difficult.

Since, if we intended to analyse all the elements of content included within those facets, we would have to ask the respondents at least 2400 questions (the number of content questions is equal to the number of combination of elements in all the four facets A,B,C,D, i.e. 4 x 4 x 3 x 50 = 2400). Accordingly, we decided to limit our investigation to only one element from each of the three first facets, namely, a_1, b_1, c_1 and all the elements in facet D.

"A COMPARATIVE STUDY OF THE COGNITION (a_1) AS PERCEIVED BY THE RESPONDENT (insured and non-insured) AT PRESENT (c_1) WITH REGARD TO THE CONTENT OF LIFE INSURANCE PURCHASING DECISION VARIABLES (all of facet D) FOR THE OBJECT (e_1) OF LIFE INSURANCE PURCHASING DECISIONS IN EGYPT".

The above sentence is a delimitation of the universe of content of the attitudes of this investigation. It includes a set of three sub-universes of the attitudinal variables and a set of background information as follows:

1) Cognition (evaluation) of the subject as perceived at present with regard to the variables which comprise reasons for purchasing life insurance (a_1, b_1, c_1, D_1).
2) Cognition (evaluation) of the subject as perceived at present with regard to the life insurance purchasing decision variables (a_1, b_1, c_1, D_2).
3) Cognition (evaluation) of the subject as perceived at present with regard to the environmental variables affecting life insurance purchasing decisions (a_1, b_1, c_1, D_3).
4) The background information includes age, education, occupation, family size, family life cycle, and income. Following this delimitation (or sampling) of the universe of content of

attitudes to be studied, each respondent in both samples (insured and non-insured) was observed as to his/her evaluation of the variants V (the variants V represent facet D - the content of the life insurance purchasing decisions) of the other facets A, B, C. Since our observations were responses to questions, we had to have at least one question on each element of the universe of content under investigation in the questionnaire which is presented in Chapter 5.

4.6 Facet Design, Hypotheses and Methodologies of Analysis

The Facet approach was developed by Guttman (1965), and described in detail by Borg (1977) and Shy (1978), and reviewed in relation to its application to applied psychology by Canter (1982, 1982a). Within this approach, mentioned earlier, it is a theory which consists of three component parts. The first is a formal, detailed definition of the domain of concern. The second is empirical evidence that observations within the domain of concern have a structure in accordance with the definition. The third is a rationale for the correspondence between the definition and the observations.

One fundamental principle used in applying a facet design to a research problem is the proximity principle. This means that the more similar observations are (in terms of how they are defined) the more closely they will be related empirically. This requires that the research problem be stated in such a way that it will lead to direct predictions of the degree of similarity between observations (Canter, 1984). These predictions of relationships between observations are not derived independently of other aspects of the research problem. Rather they are a result of the definitional system applied to the entire domain under investigation. Therefore, the formal definition should include precise specifications of both the facets, which specify the problem, and the proposed relationships between these facets.

The modes of analysis favoured by users of the facet approach are drawn from the package of Non-metric Multidimensional Scaling (NMS) statistical procedures developed by Guttman and Lingoes (Lingoes, 1973). These procedures represent either variables or respondents as points in a multi-dimensional space in such a way that the closer together the points, the more similar are the entities represented. One group of procedures, notably versions of Smallest Space Analysis (SSA), has been the most utilized for examining domain facets; another group, the Multidimensional Scalogram Analysis (MSA), has been frequently used in the exploration of background facets (Lingoes et al., 1979).

A hypothesis of a correspondence between the properties of the faceted definition of the variables, and other aspects of the empirical structure (revealed through SSA or MSA procedures), is tested by applying the principle of contiguity. This principle assumes that the more similar the facet elements of any two entities (variables or respondents), the closer together they will be in the multidimensional representation of their interrelationships.

Thus, if two points are not found to be close together there is no support for the hypothesis that the variables they represent are derived from similar facets. And, as a consequence, there is no support for the validity of those facets as fruitful ways of categorizing the variables. It follows from this that support for a facet is provided by the existence in the spatial configuration of identifiable regions of points, corresponding to the elements of the facet. For this reason, the hypotheses tested in a facet approach are referred to as "regional hypotheses" (Canter, 1982).

In other words, the relationships between the facet elements lead to predictions of the locations of the regions in the space. Using the principle of proximity, items which have the same elements will be found in the same region of the space, and the elements which are most similar will have regions that are adjacent.

4.7 Summary

In this chapter we described the complete research design of the investigation, proceeding from identifying the research problem to formulating the hypotheses to be tested and the relative methodologies of analysis.

Based on the preliminary unstructured interviews, and on the findings of the literature survey (Chapter 3), the design by facets of the whole universe of content of this research was possible. This is the first study to use facet theory in the field of insurance in general, and in particular in the field of life insurance purchasing decisions.

Facet theory, as a coherent approach to the design of research projects, measuring instruments, and data analysis, utilizes three major constituents of scientific activity. Proceeding from the definition of a set of variables to hypothesis(es) of some structures, to empirical testing of the relationship between the variables being investigated.

The major limitation of a faceted design is, however, that the choice of facets is entirely subjective and depends largely on the researcher and his main research interests. Nevertheless, the major advantages of facet design could be summarized as follows:

1) The systematic presentation of the whole possible universe of content of research area.

2) The logic selection and specification of items included into the present research and the other items, and area, left out and subject for further investigation.

3) The questionnaire is much more easy to structure by putting each item (or element) of the facets into a question.

After the logic and the various advantages of the design by facets was introduced, the mapping sentence of the whole universe of content under investigation was presented. The various facets of the mapping sentence were systematically investigated and explained. Out of the mapping sentence and its facets, a limited content of universe to be analysed was sampled. The sampling of the universe of content was not on a random basis, but reflected our interests, the chosen title of the research and the limitations of resources and time. Finally, we presented the logical relationships between the facet design, its hypothesis and the relative methodologies of analysis (SSA and/or MSA).

Chapter Five

Questionnaire Development and Data Collection

5.1 Introduction

5.2 The Questionnaire Design

- 5.2.1 The Problem of Measuring Attitude
- 5.2.2 Question-Wording and Sequence
- 5.2.3 The Questionnaire Instructions

5.3 Data Collection

- 5.3.1 Planning the Field-Work Stage
- 5.3.2 Sampling the Population of Respondents
- 5.3.3 Deciding on the Method of Data Collection

5.4 Reliability and Validity

- 5.4.1 Reliability
- 5.4.2 Validity

5.5 Preparing for the Quantification of the Data Collected

5.6 Summary

5.1 Introduction

A survey in a social research study is a form of Planned Collection of data for the purpose of analysing the relationship between certain variables in order to describe and predict and also as a guide to an action. In brief, survey design attempts to answer such questions as: which variables should be measured? What kind of scales may have to be built or adopted? What kind of sample will be drawn? and so on (Oppenheim, 1966).

The questionnaire technique was used in this investigation as an instrument for the purpose of collecting the relevant data for this investigation. One of the most important advantages of using the faceted design in this research (see Chapter 4), is that the questionnaire is much easier to structure by putting each item (or element) of the facets into a question.

In this chapter we are reviewing the main steps and elements involved in the methods of questionnaire design and data gathering.

5.2 The Questionnaire Design

In designing a questionnaire, consideration must be given to many factors such as the wording, sequence and simplicity of the questions. But the most important factors requiring more attention are those regarding (1) the type of information needed (i.e. what and how is it to be measured) and (2) the easiest way to analyse the data collected in light of research hypotheses and objectives. This study included 50 attitudinal questions and 6 regarding respondent's background information (according to the mapping sentence. See Chapter 4).

5.2.1 The problem of attitude measurement

The term "scaling" in general, is applied to the procedures for attempting to determine quantitative measures of subjective abstract concepts. Scaling is defined therefore as a procedure for the assignment of numericals (numbers) to a property of objects in order to import some of the characteristics of numbers to the properties of objects (Emory, 1976).

The empirical basis for attitude scale however consists of a respondent's indicating to the investigator what he believes, feels, or would do, about a certain subject (Blalock, 1968). However, in consumer attitudinal research one should ask what attitudes mean in terms of decision making and especially in purchasing action, which is the central issue in this investigation. Myers and Alpert, 1968, discussed what they called "determinant attitudes". This means that attitudes toward features which are more closely related to preference or to actual purchase decisions are said to be determinants, the remaining features or attitudes are not determinants. Marketers obviously need to know which attitudes or features lead to (or determine) the purchasing action.

For every product (or service) Myers and Alpert (1968) suggested that there are at least two levels of evaluation by consumers: (1) overall attitude towards the item, in terms of its suitability or desirability and (2) attitudes towards each of the item's component features or characteristics. In other words, what the most important features or characteristics are, and how they combine to affect both the overall evaluation of an item and the actual purchasing decision. This is the main concern of this study, since we are investigating the most important (determinant) variables (items) affecting the life insurance purchasing decisions in Egypt.

In order to identify which attitudes are determinant and to discern their relative degree of determinance, it is necessary to go beyond the more scaling of respondent's attitudes. The most obvious way to approach determinant attitudes is, of course, to ask consumers directly what factors they consider important in a purchasing decision.

In scaling attitudes, however, there are four main principal components, they are:

(1) Content of attitude, i.e. what the attitude is about.

(2) Intensity of attitudes towards the content, i.e. the degree of favourability or unfavourability that person holds towards the content of attitude.

(3) Closure, which can be estimated by asking the respondent a series of scalable questions about his degree of ability to make decisions on conflicting issues (Guttman, 1954).

(4) Involution, which can be estimated by asking scalable questions on the degree to which the respondent is actively turning the issue over in his mind.

For qualitative data, the first complete example of a structural theory was that of the perfect scale, as developed by Guttman (1947). Guttman (1954) stated that one of the most profound properties of a perfect scale is that it reveals a whole series of underlying components of attitudes, i.e. the content, intensity, closure and involution. However, the intensity component has been found to provide a good practical solution to the problem of question bias (Guttman, 1954). Therefore, the principal component of scale, applied to this investigation, is the intensity towards the content of attitudes. An ordinal scale (the rate of importance) ranks from "very important" to "not important at all", (see questions 1-33 and 37-50 in the questionnaire, Appendix 2a), was used.

The respondent's task was to select for each variable (question) one of the five response categories running from: very important, important, of average importance, not important, and not important at all. These categories were attached to numbers from 1 to 5 in order to make the scale answers much clearer. A multiple choice question type (in terms of a nominal scale) as well as a semantic differential one was used for the demographic/socioeconomic variables and advertising aspects (description) respectively.

A test for scalability was carried out by calculating the coefficient of reproducibility; this coefficient measures the degree of accuracy with which the items (questions) selected can be scaled. It was calculated as follows:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. of errors}}{\text{No. of responses}} \geqslant .90$$

where: No. of errors = number of deviations from the perfect scale pattern, No. of responses = number of questions x number of respondents; 150 in each sample.

The results* found for both samples of respondents were the following:

<u>Insured respondents</u>

<u>Question 3 (items 2-7)</u>

Number of questions = 6,

Number of errors = 50

Therefore:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. of errors}}{\text{No. of responses}} \geqslant .90$$

$$= 1 - \frac{50}{6 \times 150} = 0.94$$

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* These results are based on the output from the SPSS computer programs (Guttman Scale).

<u>Question 4 (items 8-14)</u>

Number of questions = 7,

Number of errors = 74

Therefore:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. of errors}}{\text{No. of responses}} \succ .90$$

$$= 1 - \frac{74}{7 \times 150} = 0.93$$

<u>Question 5 (items 15-20)</u>

Number of questions = 6,

Number of errors = 76

Therefore:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. of errors}}{\text{No. of responses}} \succ .90$$

$$= 1 - \frac{76}{6 \times 150} = 0.92$$

<u>Question 6 (items 21-24)</u>

Number of questions = 4,

Number of errors = 22

Therefore:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. of errors}}{\text{No. of responses}} \succcurlyeq .90$$

$$= 1 - \frac{22}{4 \times 150} = 0.96$$

<u>Question 7 (items 25-29)</u>

Number of questions = 5,

Number of errors = 46

Therefore:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. of errors}}{\text{No. of responses}} = \geqslant .90$$

$$= 1 - \frac{46}{5 \times 150} = 0.94$$

<u>Question 8 (items 30-33)</u>

Number of questions = 4,

Number of errors = 60

Therefore:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. of errors}}{\text{No. of responses}} \geqslant .90$$

$$= 1 - \frac{60}{4 \times 150} = 0.90$$

<u>Question 9 (items 34-36)</u>

Number of questions = 3,

Number of errors = 36

Therefore:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. of errors}}{\text{No. of responses}} \geqslant .90$$

$$= 1 - \frac{36}{3 \times 150} = 0.92$$

<u>Question 11 (items 38-44)</u>

Number of questions = 7

Number of errors = 104

Therefore:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. of errors}}{\text{No. of responses}} \geqslant .90$$

$$= 1 - \frac{104}{7 \times 150} = 0.90$$

Question 12 (items 45-50)

Number of questions = 6,

Number of errors = 20

Therefore:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. of errors}}{\text{No. of responses}} \not> .90$$

$$= 1 - \frac{20}{6 \times 150} = 0.98$$

Non-insured Respondents

Question 3 (items 2-7)

Number of questions = 6,

Number of errors = 94

Therefore:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. of errors}}{\text{No. of responses}} = \not> .90$$

$$= 1 - \frac{94}{6 \times 150} = 0.90$$

Question 4 (items 8-14)

Number of questions = 7,

Number of errors = 106

Therefore:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. or errors}}{\text{No. of responses}} = \not> .90$$

$$1 - \frac{106}{7 \times 150} = 0.90$$

Question 5 (items 15-20)

Number of questions = 6,

Number of errors = 95

Therefore:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. of errors}}{\text{No. of responses}} \geqslant .90$$

$$= 1 - \frac{95}{6 \times 150} = 0.90$$

Question 6 (items 21-24)

Number of questions = 4,

Number of errors = 42

Therefore:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. of errors}}{\text{No. of responses}} \geqslant .90$$

$$= 1 - \frac{47}{4 \times 150} = 0.93$$

Question 7 (items 25-29)

Number of questions = 5,

Number of errors = 80

Therefore:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. of errors}}{\text{No. of responses}} \geqslant .90$$

$$= 1 - \frac{80}{5 \times 150} = 0.90$$

Question 8 (items 30-33)

Number of questions = 4,

Number of errors = 42

Therefore:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. of errors}}{\text{No. of responses}} \geqslant .90$$

$$= 1 - \frac{42}{4 \times 150} = 0.93$$

<u>Question 9 (items 34-36)</u>

Number of questions = 3,

Number of errors = 32

Therefore:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. or errors}}{\text{No. of responses}} \geqslant .90$$

$$= 1 - \frac{32}{3 \times 150} = 0.93$$

<u>Question 11 (items 3 8-44)</u>

Number of questions = 7,

Number of errors = 64

Therefore:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. of errors}}{\text{No. of responses}} \geqslant .90$$

$$= 1 - \frac{64}{7 \times 150} = 0.94$$

<u>Question 12 (items 45-50)</u>

Number of questions = 6,

Number of errors = 56

Therefore:

$$\text{Coefficient of reproducibility} = 1 - \frac{\text{No. of errors}}{\text{No. of responses}} \geqslant .90$$

$$= 1 - \frac{56}{6 \times 150} = 0.94$$

A coefficient of reproducibility of .90 or more is generally considered to constitute evidence for the "scalability" of the scale, that is; evidence for ordinality, which means the accuracy of adjustment between the ordinality of the scale utilized and the respondents response patterns. In the present case, the highest coefficient of reproducibility shown by the Insured respondents is .98 for question 12, and the lowest coefficient is .90, for questions 5, 8 and 11, but still acceptable. For the Non-insured respondents, the highest coefficient is .94 for questions 11 and 12, and the lowest coefficient is .90, for questions 3, 4, 5 and 7.

5.2.2 Question Wording and Sequence

The word questionnaire in general refers to a device for securing answers to questions by using a form which the respondent fills in himself (Goode, 1952). The function of a question in such a questionnaire is to elicit a particular communication; that is, the respondent has certain information or attitudes on the subject of our inquiry, and we want to get this information (or his attitude) with a minimum level of distortion (Oppenheim, 1966). To insure the reliability and validity of the respondent's answers, both wording and sequence of the questions should be prepared carefully.

i) Question wording

Emory, 1976, stated that the difficulties brought about by the problems of question wording exceed most other sources of distortion in surveys. Stouffer et al., 1950, concluded that error or bias attributable to sampling and to methods of questionnaire administration were relatively small as compared with other types of variations, especially variation attributable to different ways of wording questions.

Therefore it is essential to take into consideration that the wording of each question is used in the simplest possible form, making sure that words which could be easily mis-interpreted or mis-understood are omitted. In addition, it is of major importance that the questions utilize a clear vocabulary, shared by the researcher and the respondent, and are adequate for the communication of the subject.

The questionnaire must not merely ask the respondent for information, it must help him to provide the correct information in the appropriate context and in the correct (proper) unit of measurement. This can help the researcher to explain or predict the specific phenomenon which he set out to investigate. In brief, wording the questions should be on a level that will be understood by the least sophisticated respondent, but avoid the appearance of being oversimplified.

On the other hand, however, the respondent must have a certain degree of ability to communicate i.e. he must be able to put things into words adequately. He must, also, have the willingness to communicate, i.e. he must have accepted the role of respondent in the situation. However, it may be very difficult to obtain a relatively unbiased answer, even from a willing and clear-headed respondent, unless making our task practically impossible through avoiding poor question wording.

Therefore, we need first to define precisely the issue of inquiry. In addition, greater precision concerning the purpose of the question will make it easier to avoid ambiguity in question wording, leading, and loaded questions.

In this study the mapping sentence for the definition by facets of the research problem, enabled the systematic limitation of the universe of content to be investigated (see Chapter 4). According to the mapping sentence mentioned above, we were easily able to formulate the questionnaire by putting each item or element of the facets and sub-facets into a question (see Appendix 2a). The data collected was in two types of variables: 1) attitudinal: questions 2 to 12, and 2) factual (classification) questions: questions 13 to 16. The main aim of the attitudinal questions was to identify the respondents' cognitive attitude (belief), towards the life insurance purchasing decision variables. These variables include reasons for purchasing life insurance, decision-making process variables, and the environmental variables (e.g. inflation expectations and the competition imposed by the other financial institutions). The classification questions (which are a special type of factual question), asked about age, education, occupation, income and so on.

Finally, in order to examine the content validity of the questions, the first few completed questionnaires were discussed, with both the first few respondents (after completion of the questionnaire), and with some members of staff from the Faculty of Commerce, University of Cairo, as well as with some senior executives from the three main Egyptian Insurance Companies (Misr, Al-Chark, and the National Insurance Company). Following these discussions slight changes in both wording and sequence of some questions were made.

All questions were direct. i.e. non-disguised. and all attitudinal questions were closed (structured). A five-point scale was used to measure the rate of importance attached by the respondent to each item (question), running from very important to not important at all, for the attitudinal questions. With regard to the classification questions, categories were provided for each question, and the respondent's task was to tick the category he fell into (e.g. age, education, family life cycle and income questions). In other questions (occupation and family size) the respondent was asked to write down his answer in the space provided.

ii) <u>Question Sequence</u>

Question sequence can drastically affect both the respondent's willingness to cooperate and the quality of responses received (Emory, 1976). The basic principle to guide sequence decisions depends on the nature of the data and the needs of the respondents. Generally, the sequence should begin with efforts to awaken the respondent's interest in the study and motivate his participation. We tried to bring this about by choosing early interview questions that are attention getting and not controversial in subject or thrust.

The second rule concerns the inappropriate requesting of information which is too soon to ask, such as personal information questions (e.g. age, income and so on), and private questions (e.g.illness and sex problems). The respondents will normally provide this data but the request should be made at the end of the questionnaire.

A third rule is to place simpler questions first and to move progressively to the more complex ones. The procedure of moving from general to more specific questions is called the "funnel approach" (Emory, 1976). Finally, questions should be arranged so that there is a minimum of shifting in subject matter and frame of reference. Since respondents will often interpret questions in the light of earlier questions and will, therefore, miss shifts of perspective or subject unless they are clearly stated.

The questionnaire for this investigation (appendix 2a) was prepared with the following internal components. We began with the simpler questions after the directions provided, moving to the most specific ones, and finally the classification data, occupying the final section of the questionnaire and regarding the respondent's age, education, occupation, family size, family life cycle. Moreover, the question on the personally sensitive topic (e.g. income) was kept to the last question of the questionnaire.

5.2.3 The Questionnaire Instructions

In order to minimise a potential source of error in the process of administration of the questionnaire, the first section of the first page included some opening remarks (instructions). These instructions appeared only on the Arabic copy of the questionnaire (appendix 2b), which was administered. Besides giving the title and the main purpose of the research, the instructions included how to complete the questionnaire. In fact we tried to build up the respondent's confidence in order to get his honest cooperation. We emphasised that there was no need for the respondent to give his name, for two reasons: firstly, it was a firm condition, from the Central Agency of Statistics and Public Mobilization in Egypt, if we were to be allowed access to such information. Secondly, it was also recommended by senior executives of the insurance company where we took our sample of insured respondents, because of the confidentionality of the matter (i.e. life insurance). We stated also that replies would be treated in strict confidence and analysed on an aggregate basis only.

Indeed, one of the main reasons for the respondents to answer the questionnaire honestly was the anonymity approach.

5.3 Data Collection

In collecting survey data three major steps should be considered. Firstly, planning the field-work stage; secondly, sampling the population of respondents and, finally, deciding on the method of the data collection.

5.3.1 Planning the Field-work Stage

Before going home to Egypt to collect the data, a very important procedure had to be arranged. This was to get access for the data required from both the government authorites and the area(s) concerned. Following that, in January 1984 an application was sent to Egypt, through the Egyptian Education Bureau in London, to ask for permission from the government authorities and cooperation from the insurance companies. A letter of introduction was enclosed with the application stating the objectives of the investigation, the general feature of the study and asking for the insurance companies' cooperation. The letter was signed by my supervisor, Dr A. Meidan (see appendix 1a).

Three months later in April I received a letter from Egypt, through the Egyptian Education Bureau in London, indicating the agreement of both the Central Agency for Statistics and Public Mobilization and Misr Insurance Company to allow me to obtain the data required (see appendix 1b).

On the 19th May 1984 I went to Egypt and the first week was devoted to meeting senior executives not only from Misr Insurance Company but also from the two other companies (Al-Chark and the National). The main objective of these meetings was to ask for some suggestions and opinions with regard to the questionnaire contents and find the best way in which to administer it. In fact, we found all the encouragement and support we needed as well as some constructive ideas as to the field-work stage.

5.3.2 Sampling the Population of Respondents

The sampling process is based on two premises; one is that there is enough similarity among the elements in a population that a few of these elements will adequately represent the characteristics of that population. The second is that while some elements in a sample underestimate a population value, others overestimate this value, and the result is that sample statistics are generally a good estimate of population parameters (Emory, 1976).

Blalock, 1968, stated that a proper sample must give a precise picture of the population from which it was drawn. Besides, the sample must be obtained by a probability process in order to permit the use of statistical inference (i.e. relate the results to the population from which sample came). The sample should be as small as precision considerations permit and as economical as possible.

Briefly, a proper sample should be a small piece of the population obtained by a probability process that mirrors, with precision, the various patterns (characteristics) of the population.

The ultimate judgement of a good sample is how well it represents the characteristics of the population where it was drawn from. In measurement terms, however, the sample must be valid. Validity of a sample depends upon two major factors; firstly, is the matter of accuracy which is defined as the degree to which bias is avoided. Secondly, is the matter of precision of estimate.

In sampling procedures there are four steps which must be taken in designing a sample. Firstly, to decide on what is the relevant population (this is apparent from research objectives). Secondly, is to decide on what type of sample shall we draw (i.e. random or non-random).

The third step then is to determine the sampling frame which will be used (it is defined as the list of elements from which the sample is actually drawn and it must be complete and correct). Finally, a decision is to be made as to the size of the sample we should draw.

With regard to sample size, Emory, 1976, criticised the decision of sample size when he stated that: "one false belief is that a sample must be large or it will not be representative". He added, sample size is only one aspect of representativeness; a sample of more than two million can be misleading while a sample of one thousand, drawn in the proper manner, can be more than adequate. In other words, the assertion is more on the correct way of drawing samples than on how large a sample should be.

In this study we are investigating attitudes of insured and non-insured typologies towards the variables which determine life insurance purchasing decisions in Egypt. Therefore, there are two sub-populations (i.e. insured and non-insured). Moreover, in the case of insureds, we had to decide on what type of insureds. This is in terms of either new business or policies in force, the type of policy under investigation, and the type of policyholders (i.e. ordinary or group insurance). The decision was made to determine the insured's population as the new business endowment ordinary life insurance policyholders. With regard to new business and not in force, it was due to: firstly to facilitate, from the part of the insured person, to recall what exactly occurred when he made his decision to purchase life insurance. Secondly, we aimed to investigate the latest trend in the life insurance purchasing decisions.

The endowment policyholders' decision was made simply because this type of policy represents around 90% of the total sales of life insurance

Table 5.1* : Number of Life Insurance Policies (in force) by the end of 1982/83 in the Egyptian Insurance Companies

Type of Policy	Misr Insurance	Al-Chark	The National	Almohandes**	Al-Delta**	Total
With Profit						
Whole Life	23	2	55	-	2	82
Pure Endowment	7,392	39	-	6	26	7,463
Endowment	191,866	38,951	574	127	83	231,601
Without Profit						
Term insurance	163	288	189	17	21	678
Whole Life	131	313	376	-	-	820
Pure Endowment	12,030	39,305	4,749	-	-	56,084
Endowment	49,976	140,463	117,002	-	-	307,441
Annuities	21	56	47	-	-	124
						604,293

* Source: The Year Book of the Egyptian Insurance Market 1982/83, The Egyptian Insurance Supervisory Authority (in Arabic).

** Almohandes and Al-Delta Insurance Companies were first established in 1980.

in force in Egypt. Table 5.1 presents the number of life insurance policies in force in the financial year 1982/83 for Egyptian Insurance Companies.

The decision was made to include only the profit sharing policies because it was found that almost 99.8% of the total new business was with profit sharing and that around 84% of that total was in the form of Endowment policies. Table 5.2 shows comparisons between the total number of policies in force in 1981/82 and 1982/83, and the new business for only the three major companies (Misr, Al-Chark and The National).

Table 5.2* : Life Insurance New Business as the Difference Between 1981/82 and 1982/83 in Force Policies Figures in the Three Main Companies

Type of Policy	Total Number of Policies (in force)		New Business (2-1)	
	1981/82 (1)	1982/83 (2)	Number	Percent (%)
With Profit				
Whole Life	83	80	-	
Pure Endowment	42	7,431	7,389	16.2
Endowment	193,399	231,391	37,992	83.6
Without Profit				
Term Insurance	553	640	87	00.2
Whole Life	859	820	-	
Pure Endowment	56,323	56,084	-	
Endowment	307,509	307,441	-	
Annuities	129	124	-	
			45,468	100

It was also discovered that in the Misr Insurance Company, from which we took our sample, the number of policies issued was 18,718 of the Endowment with profit sharing. This figure represented around 50% of the total new business for the Egyptian insurance market with regard to this type of policy. Fortunately, it was this company (Misr Insurance) which allowed us access to draw our sample, after much effort and many recommendations.

With regard to the non-insured population, we were very much aware of the main objective of the study which was to investigate the similarity (or dissimilarity) of attitudes between the two typologies, insured and non-insured, towards life insurance purchasing decision variables. Since different people, may have different attitudes for many different reasons and with different levels (Abelson, 1955). We therefore decided to draw the non-insured sample in the light of the distribution of the insured sample. This means that we tried to keep, as much as possible, the same distribution within both samples, so that we can observe the similarity (or dissimilarity) between their attitudes which are due to only their similar (or different) beliefs and not because of other reasons such as different culture, social class, area of living or occupation etc.

The second step in designing the two samples was to decide on what type of sample to draw. The decision was made to use the simple random sample approach in order to reduce the sampling error of estimate since each element of the population has the same probability of being selected (Sudman, 1976).

The third step was to decide on the sampling frame, from which we drew the two samples. With regard to the insureds, we had a unique opportunity to have access to the policyholders' documents, i.e. the list of names of the policyholders and their files for the new business of the year 1983/83 of the Endowment with profit sharing policies in Misr Insurance Company. The policies were written down in a systematic way with the total number being 18,718. Using the table of random numbers, 300 policyholders were chosen (excluding all numbers which exceed the range of the whole population, i.e. 18,718, and any repeated figures). A list was made of those 300 policyholders including their names and addresses (both work and home), age, occupation, number of children, and sums insured. Also we wrote down some remarks, as found in the files, such as an application for borrowing and/or a letter for tax exemption purposes. Giving those names code numbers we were able to use this information, as a second independent source of information, to check the validity at a later stage (see reliability and validity section).

With regard to the non-insureds, unfortunately, a list of the whole population was not available. However we tried, as much as possible, to keep to the same random level in selecting this sample. Using different lists for different occupation levels, and from the same areas of habitation as for the insured people, we were able to interview 150 of the non-insured people. Both the sample respondents were from the cities of Cairo and Giza.

Finally, the decision of how large the sample should be was made according to the two traditional limits (i.e. cost and time). The proposed sample size was 300 of each typology (i.e. insured and non-insured). The decision was made, deliberately, to interview the same number from each typology so as to keep the same weight within received responses. However, according to the Egyptian Education Bureau in London, I was allowed only three months to collect the data from home. We did, however, manage to interview 150 respondents from each typology, during the period from 20.5.84 to 7.9.84.

5.3.3 Deciding on the Method of Data Collection

The nature of the research determines the most efficient way of collecting the data (Sudman, 1976). This research is mainly concerned with a rather confidential and complex matter (i.e. life insurance). Also we were investigating the problem in a way which is not familiar in the Egyptian society.

It was therefore proposed that the only suitable way to collect the data was via personalinterview questionnaires. The telephone interview method was eliminated because telephone interviews are limited to those respondents with telephones and thus are biased against lower income households without telephones. Again with such a long questionnaire, the level of cooperation of the respondent would probably be lower without the personal visual touch. A mailed questionnaire method was also discounted because of the length of time required to complete the survey, due to both the expected low cooperation and the problem of the mail service in Egypt.

Therefore the personal interview questionnaire was preferred over both alternatives (telephone and mail) for the following reasons:

1) The personally administered questionnaires allowed us a relatively higher completed response rate than would otherwise be the case (the response rate was 50%).

2) The presence of the interviewer (myself) was necessary in case there needed to be any clarification of the meaning of certain terms which could be interpreted differently by the respondents, and to answer any queries.

However the most critical disadvantage of a personal interview using a closed and direct questionnaire is the danger of personal bias. Nevertheless, this potential disadvantage was limited by presenting the respondent with the questionnaire and asking him to complete it by himself (with the interviewer present).

The interviews were made either at the respondent's home or place of work. For the insured people, we were able to find their addresses (both home and work) from their files which included the application form and a copy of the insurance policy. Some interviews were made in the presence of the insurance agent, when he was collecting the regular premiums, which helped by his introducing us to the customer.

5.4 Reliability and Validity

In doing a social research, there are many sources of error that may arise in the course of a survey. We will not concern ourselves here with the errors that arise due to sampling, faulty design, high non-response rates or interviewer bias; nor shall we discuss ignorance, misunderstanding on the part of the respondent, and so on.

Our main concern is, however, the possibility of bias due to question wording and the reliability and validity problems raised by the questionnaire technique. These issues underline much that is prevalent in social research and require careful discussion (Oppenheim, 1966).

First of all we should distinguish between reliability and validity. Reliability refers to consistency in obtaining the same results again. Validity tells us whether the question or item of the question really measures what it is supposed to measure. We will discuss each aspect in more detail as follows.

5.4.1 Reliability

To ascertain reliability, Oppenheim, 1966, distinguished between two kinds of questions: 1) factual questions, i.e. classification, e.g. age, income, occupation and so on), and 2) attitudinal questions. For the factual questions, we should plan to have a number of internal checks. So as not to annoy the respondent we refrained from asking the same question repeatedly in the same way; even so, in spite of variations in technique we expected a cooperative respondent to be consistent in factual matters. An inconsistency would point to faults in question wording, serial or contextual effects or other sources of errors.

Since attitudinal questions are more sensitive than factual questions to changes in wording, content, and so on, it becomes almost impossible to assess reliability by asking the same question in another form. For this reason we should not rely on single questions when we come to measure those attitudes. We should have sets of questions or attitude scales. Sets of questions are more reliable than the single opinion items; they give more consistent results, mainly because vagaries of question wording will apply only to particular items, whereas the underlying attitude will be common to all the items in a set of scale (Oppenheim, 1966).

5.4.2 Validity

To ascertain the validity of factual questions, a variety of techniques could be employed. These techniques are usually known as cross-checks, where a second independent source of information is required. In this research we checked on the validity of the factual questions (i.e. classification), by comparing the responses with the list we made from the respondents' files at the insurance company.

The main difficulty in assessing the validity of attitude questions is the lack of criteria. Nevertheless the most practical approach to check on validity is to compare our own findings with the results of other similar studies. If such an external check is corroborative we may justify the validation of our results; however if there are serious differences we will not be able to determine which set of results is more valid. In Chapter Seven later on, we checked on the validity of our findings by comparing with other findings in the same field.

5.5 Preparing for the Quantification of the Data

All the completed questionnaires were numbered, according to the number of respondent's policies for the insureds, and a serial number from 1 to 150 for the non-insureds.

The questionnaires were revised before the input process (i.e. input the data as files into the computer). The revision included the translation of the answers from the Arabic language into English.

With regard to the attitudinal data (Questions from 1 to 50), they were entered into our file on the Prime Computer terminal of the University of Sheffield Computer Services. There were two files, one for each typology, i.e. insured and non-insured. Each column represented a stimuli (a question) and each row represented a respondent's answer on the 50 attitudinal questions (alternative possible answer was 1 to 5).

For the classification data (i.e. age, education, income and so on), there was a coding for the categories entered to Multiple Classification Analysis (MCA). For example, the age of the respondent was coded as 1 for the first group (i.e. under 30 years old), 2 for the second group (i.e. 31 to 40 years old) and 3 for the third group (i.e. 41 or over) and so on for the other five predictors. For the purpose of analysis, however, several visits and contacts had been made in order to prepare for the computing issues before and after the field work stage (see Appendix 7).

5.6 Summary

In this chapter we described the main steps in the design of the questionnaire, the process of sampling the two populations of respondents (i.e. insureds and non-insureds), and the planning and the performing of data gathering. We presented also some remarks and considerations on the reliability and validity of the research design, particularly the questionnaire design as a device of collecting survey data in social research.

The design of the questionnaire was based on the previous faceted design of the universe of content (Chapter 4). This approach allowed a systematic and easy way of both designing the questionnaire and the analysis of the universe of attitude in order to accept or reject research hypotheses. We presented the various questionnaire characteristics in terms of question wording, sequence, the principal components of scale, and the questionnaire instructions.

In sampling the two populations of respondents (insured and non-insured), the decision was made to interview the same number of each; this is because our main concern was to keep the same weight in the responses received. We decided not only on the same number of respondents, but also on the same distribution within the two samples.

The insured sample was optimally drawn on a simple random sample basis, since we have a complete and correct list of all the population under investigation (i.e. the new business Endowment policyholders for the year 1982/1983). We tried as much as possible to keep the randomness of the non-insured sample by using different lists according to the distribution in the insured sample (since, there was not a complete list for the whole non-insured population available). The data gathering method was via a personal interview questionnaire, that is by myself.

Finally we presented a brief examination of the reliability and validity, and the preparation for the quantification of the data in order to be ready for the analysis procedures.

Chapter Six

The Methodology of Analysis

6.1 Introduction

The scientific method in the research process was described by Phillips, 1976, as an effort to achieve increasing understanding of phenomena. This is always to be done through three major steps which are: firstly, defining problems so as to build on available knowledge; secondly, obtaining information essential to dealing with these problems and thirdly, analysing and interpreting this data in accordance with clearly defined rules in order to communicate the results of these efforts to others.

Figure 6.1 indicates how these phases of the research process relate to one another. We can see the third phase leading back to the first.

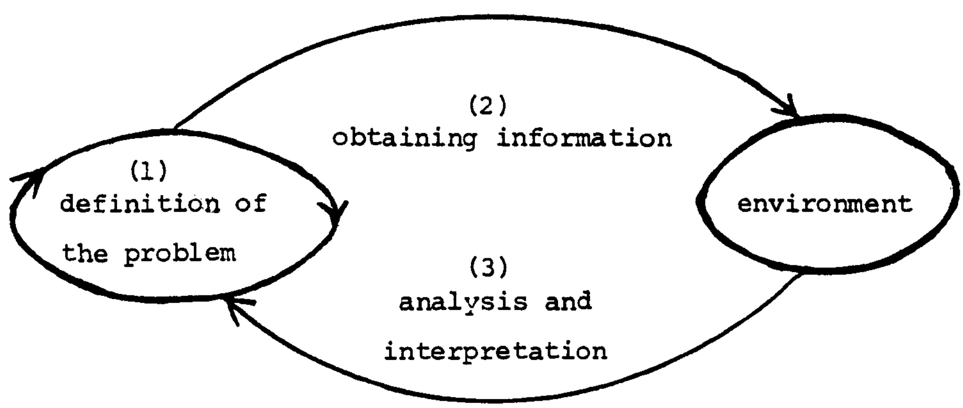


Figure 6.1 : The scientific method as a feedback process

The process of analysis and interpretation of the research data gives the basis for redefining the research problem. In this way the scientific process becomes a never-ending one, with each research finding becoming the basis for new directions in obtaining knowledge.

In this chapter, following the scientific method in doing a research, we will start by reviewing the research problem, choosing the relevant methodology(ies) for the analysis and interpretation of the data collected, and finally discussing how to test the fundamental assumptions (hypotheses) of this investigation.

6.2 Review of the Research Problem

In this study we are investigating life insurance purchasing behaviour in Egypt. The study of consumer behaviour is, in a large part, the study of decision making, which is the major characteristic of consumer behaviour (Green and Wind, 1973). It has been clearly indicated that, for the purposes of marketing research, in which the study of consumer behaviour is the most important process, most of the analysis tools are multivariate. Moreover, one is forced to conclude that unless a marketing problem is treated as a multivariate one, it is treated superficially (Sheth, 1971).

This is true, since most of the marketing problems, with particular reference to purchasing behaviour, are the product of many different variables. Nicosia, 1966, classifies the variables that define the morphology of consumer purchasing decisions into two main groups: first, variables internal to the consumer (i.e. psychological constructs) such as attention, attitude, motives and satisfaction, which intervene between the marketing stimuli and the purchaser's response. Secondly, there is the group of exogenous factors such as demographic and socioeconomic variables (e.g. social class, age, occupation, and income level). In other words, multivariate methods seem to be consistent with modern marketing concepts in focusing on marketing research needs. The most pressing need of marketing research is the ability to analyse complex data (Sheth, 1971).

This investigation is concerned with virtually all the determinants of life insurance purchasing behaviour using the faceted approach (see Chapter Four). The study includes the examination of both attitudinal (internal variables) and categorical (external variables) which determine life insurance purchasing decisions in Egypt.

The type of problem to be examined in this research, has not received substantial attention in the field of consumer behaviour towards purchasing life insurance. Almost all previous studies have paid attention only to the aggregate figures of premium income, amount of insurance, and the type of policy as a function of various demographic and socioeconomic variables (see Survey Research Centre, University of Michigan, 1957; Katona, Lininger and Mueller, 1964; Hammond, Houston and Melander, 1967; Ducker, 1969; Berekson, 1972; Anderson and Nevin, 1975; Ferber and Lee, 1980; and Burnett and Palmer, 1984).

Although, some of these studies found a significant relationship between a number of selected predictors and the premium expenditures, and/or the amount of insurance purchased. Anderson and Nevin, 1975, showed the weakness of such demographic and socioeconomic variables as predictors (determinants), of household life insurance purchasing behaviour. Greene (1963, 1964) investigated the association between life insurance purchasing behaviour and specific non-demographic variables; his results indicated no significant relationship between risk attitudes and previous insurance purchasing behaviour.

In fact, any study of household behaviour towards the life insurance product is limited, if not impossible, by the quality of data available. Diacona, 1980, stated that ideally, cross-section studies which provide information on households purchasing life insurance are the most useful. He indicated also that time series studies or any study which does not pertain entirely to those purchasers of life insurance, is not entirely successful. This is because, for example, household income which is approximated by aggregate personal disposable income per capita; this figure, of course, includes the income of those households not purchasing life insurance and so is not appropriate.

A study of the demand for life insurance has a distinctive characteristic; Shelly, 1968, made a statement that, in most product fields which are believed to be necessities by the public, the pattern is very different. If a product is believed to be a necessity, the public tend to obtain a certain amount of knowledge of the subject as well as some confidence in their ability to make decisions, in order to whether to justify or not. However, this is not the case in life insurance. It has always been said that life insurance products are to be sold, not to be bought. This is because of the fundamental characteristics of life insurance products, which are:- first, life insurance as a financial service, under which an insurer promises future delivery of money. The delivery may take place only upon the death of the insured person or, when he himself cashes in or borrows against his policy. In either situation, life insurance requires the policyholder to forgo the present enjoyment of the consumption in exchange for the promise of future delivery.

Second, the subject matter of life insurance is distasteful; no one enjoys discussing death or related topics.

Third, the life insurance contract as a financial instrument is a complex one, in relation to the very strong competition from other intermediaries as well as the economic conditions (e.g. inflation). Therefore this study will attempt to explore the relevant factors and variables (both attitudinal and categorical), which affect the consumer's decision to purchase life insurance in Egypt. This will be carried out through the investigation of attitudes of insured and non-insured typologies towards the variables (attitudinal) which are supposed to have some influences on the purchasing decision. In addition, the study examines the relationship (association) between the selected predictors and the amount of insurance purchased for those insured people.

6.3 Selecting the Methodology of Analysis

Methodology of analysis is the procedure which is carried out on the raw data in order to either accept or reject the research hypothesis(es). In selecting the appropriate methodology of analysis there are three major factors which should be taken into consideration, they are:-

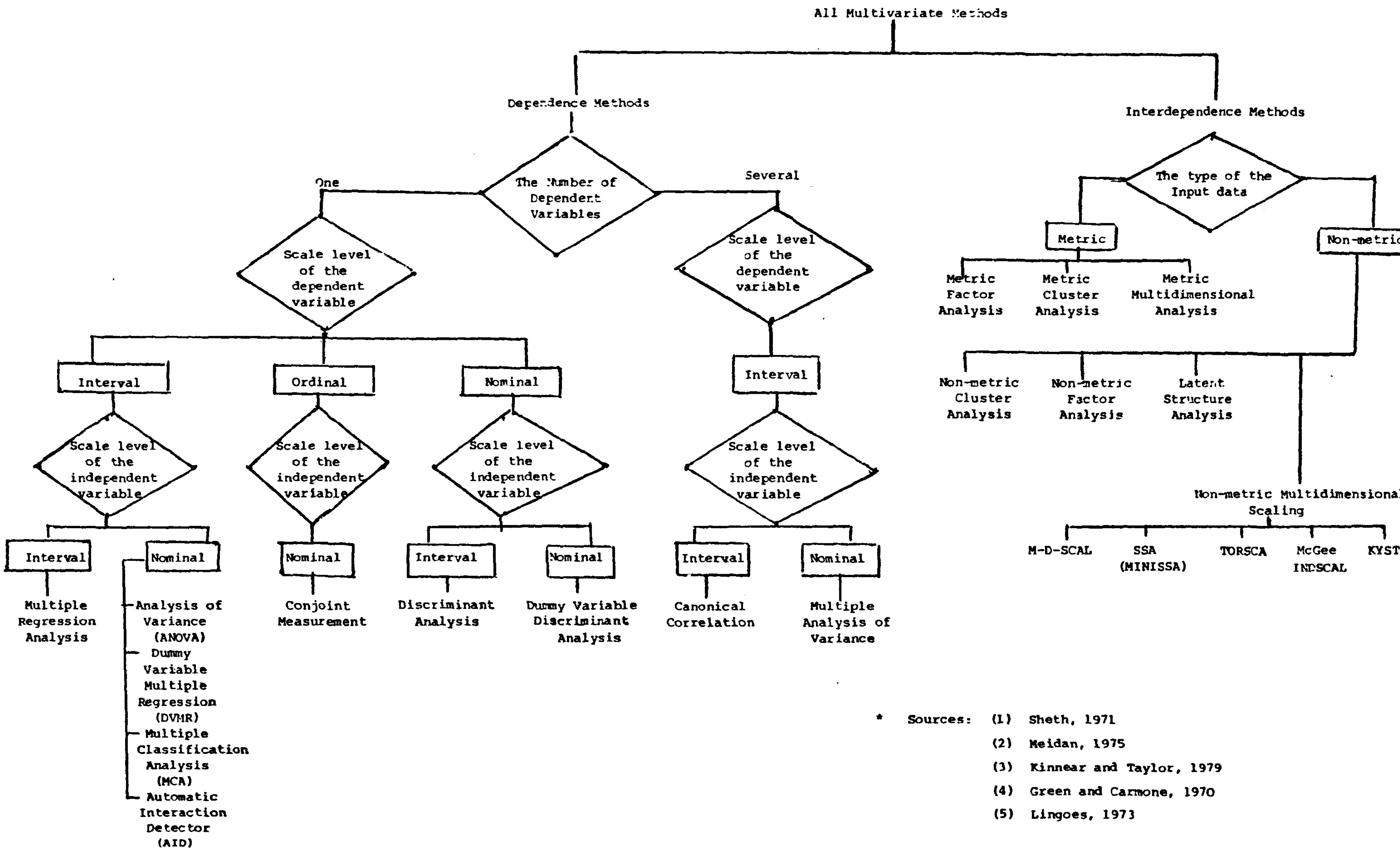
i) The type of data input (i.e. metric or non-metric).

ii) The independence or interdependence between the variables being investigated i.e. whether or not some variables are designated as being predicted by others or explained by them. The goal, rather, is to give meaning to a set of variables or objects (Aaker, 1971).

iii) The data output generated by the techniques employed which serve in solving research problems (i.e. research objectives and hypotheses).

In Figure 6.1 the main groups of techniques suitable for analysing multivariate data are presented. The figure also shows the various computer programs available for the analysis of Non-metric Multi-dimensional Scaling and Multiple Classification Analysis. Since in this study we investigate the various variables which determine life insurance purchasing behaviour (as employed previously in the mapping sentence of this research), the use of multivariate methods of analysis are appropriate. Moreover, because there are two major groups of variables (i.e. attitudinal and categorical) it should be a multi-technique analysis, in order to obtain a comprehensive picture of the problem under study. In other words, the phenomenon under investigation is of a dual measurement level. There are the attitudinal variables group which is ordinal scaled and the demographic and socioeconomic variables group, which is nominal scaled. This means that <u>two</u> different techniques should be used in order to handle the two groups of variables properly.

Figure 6.1 : A Classification of Multivariate Methods*



* Sources: (1) Sheth, 1971
(2) Meidan, 1975
(3) Kinnear and Taylor, 1979
(4) Green and Carmone, 1970
(5) Lingoes, 1973

6.4 Non-metric Multidimensional Scaling Approach

6.4.1 Historical Review

Non-metric Multidimensional Scaling (NMS) was first introduced by Shepard (1962a; 1962b). It has been amplified and generalized by Kruskal (1964a; 1964b), and others (e.g. Lingoes, 1966; McGee, 1966; Young and Torgerson, 1967; and Guttman, 1968).

The purpose of non-metric multidimensional scaling is to find a set of numbers representing the similarities (or dissimilarities) between a set of points (Young, 1970).

In psychophisics, however, multidimensional scaling methods have recently come into prominence (Torgerson, 1952). These methods scale physical stimuli in a multidimensional psychological space. The fundamental concept involved is that of psychological distance.

The main idea behind that,is if psychological distances can be analysed as though they were physical distances, it will be possible to obtain a map of the way in which individual structures show the similarities and differences among attitudes in a given domain (Abelson, 1955). On such a map, short (psychological) distances would represent (psychological) similarity, or agreement, and long distances would represent dissimilarity or disagreement.

There was a theorem, due to Young and Housholder (1938) which permitted a multidimensional map to be constructed from a set of interpoint distances. Torgerson, 1952, gave procedures for obtaining the coordinates of n stimuli from interstimulus distances when the data from which the distances were computed was not completely reliable.

The importance of Shepard's work (1962 and 1966) on NMS is that he provided a method of building up a spatial representation of objects in which distances were metric representations of differences between objects, from data which was non-metric (i.e. in the form of rankings). Shepard combined the best of both earlier scaling approaches (i.e. fully metric and fully non-metric). Using rank order input data, his algorithm was able to determine a metric solution, so that the ranks of interpoint distances were highly correlated with the ranks entered as input data. Moreover, he provided the first computer algorithm for implementing this objective.

Coombs, 1964 was the first to develop the concept of an ideal point and a procedure for unfolding a set of preference data to yield the underlying stimulus in rank order. This assumes that a respondent prefers those items nearer his ideal point (i.e. a hypothetical stimulus point in the same space as the real stimulus point) to those items further from his ideal (Green and Carmone, 1969).

Kruskal in 1964, pointed out some weaknesses in Shepard's technique. He stated that Shepard did not give a mathematically explicit definition of what constitutes a solution and then presented a technique similar to Shepard's, which arose from attempts to improve and perfect Shepard's ideas.

Kruskal's technique is viewed as a problem of statistical fitting. Like Shepard, he adopted a monotone relationship between dissimilarity and distance. However he went further and gave a natural quantitative measure of nonmonotonicity.

Briefly, for any given configuration he performed a monotone regression of distance upon dissimilarity, and used the residual variance as a quantitative measure. This measure was called the stress and it indicates how well the given configuration represents the data (Kruskal, 1964).

The formula used to measure the stress (goodness of fit) is:-

$$S \text{ (stress)} = \sqrt{\frac{\sum_{i<j}(d_{ij} - \hat{d}_{ij})^2}{\sum_{i<j} d_{ij}^2}},$$

Kruskal also suggested the following verbal evaluation for stress:-

Stress	Goodness of fit
20%	Poor
10%	Fair
5%	Good
2½%	Excellent
0%	Perfect

By "perfect" it is meant that there is a perfect monotone relationship between dissimilarities and distances. In other words, smaller stress means better fit.

6.4.2 Advantages of NMS

The earlier methods of measuring attitudes (e.g. Thurstone, Likert, Guttman and others) were described by Abelson 1955; Green and Carmone, 1969; and Doyle 1973; as being unidimensional. They stated that the majority of these techniques (for scaling attitudinal judgements or responses) produce scales which are one-dimensional. Since the scale consists of a single continuum of opinion along which are located a succession of opinion items. This continuum generally ranges between pro- and anti- the attitudinal object.

In all the earlier scaling methods, however, the criticism was that in regard to the property of one dimensionality. This unidimensionality has been forced on the scale by the choice of items and by the analytical methods. And it by no means necessarily represents the dimensionality of the set (components) of all commonly held attitudes in the domain.

It is certainly true, that in many attitude areas different individuals may be favourable (or unfavourable) in different ways, on different levels, or for different reasons (Abelson, 1955). In other words, the methods do not provide for multidimensionality of the material as an alternative to one dimensionality; this is an unfortunate limitation in the power of scaling methods.

Doyle, 1973, stated that NMS differs in three main ways from these earlier methods of measuring attitudes; they are:-

1) NMS is a truly multidimensional scale. The earlier scales have definite limitations in market research where one is frequently interested in seeking the number and kinds of dimensions involved in, for example, the actual purchasing decisions of consumers. Hence the advantage of NMS is that it avoids this particular problem by treating the data as multidimensional from the outset.
2) Unlike the conventional scaling methods, dimensions are not pre-specified when using NMS. This is valuable in the typical situation, where the researcher is uncertain about the dimensions involved; it avoids the danger of asking the consumer (or respondent) to respond to insignificant items.
3) Only ranked data is required. Earlier scaling methods required the assumption that comparative data provided by the respondents were equivalent to Euclidean distances. That is, the input data was interval or ratio scaled (i.e. estimates of the relative size of the difference among products or services). However, psychologists have shown that it is rare for consumers (respondents) to be able to provide such precise information.

Briefly, the particular advantage of the NMS technique is that we do not need to make the restrictive assumption that respondents can provide data on measurable differences between objects (or brands).

6.5 Justification of the Application of Non-metric Multidimensional Scaling (NMS) Approach

In this research, as previously indicated, there are two major groups of data to be analysed (i.e. attitudinal and categorical). Regarding the attitudinal data, Green and Wind, 1973, suggested that attitudes can be represented as coordinates in a person's cognitive, affective, or behavioural space. The evaluation of the objects within this space was assumed to be related to distances of real objects from a person's ideal object in the same space.

Green and Carmone, 1970, stated that any product or service can be visualized as being composed of both objective and perceived attributes or dimensions. In other words, individuals may be characterized as having an ideal stimulus in a subjective (perceived) attribute space. The interpretation is that individuals prefer some particular combination of values on the perceived product or service dimensions to all other combinations within a given product service class.

In one formulation of this concept, brands or services closer to an individual's ideal point will tend to be preferred to those further away. Moreover, the individual may weight differentially the dimensions in terms of their relative importance to him in an evaluation context. Therefore, the distance of a specific brand or service from his ideal point is assumed to reflect the differential stretching which he applies to the dimensions of interest.

In this study we investigate the attitudes of the two hypothesised typologies (Insured and Non-insured), towards the life insurance purchasing behaviour variables, in order to determine the similarities (or dissimilarities) between the two groups of people in their judgement. So the data is non-metric input (ordinal scaled), interdependence and multivariate variables. As a result, the methodology appropriate to this investigation must be able to analyse multivariate, non-metric (ordinal scaled), interdependence data and, in addition, to help in solving the research problem (i.e. objectives and hypotheses). As we mentioned earlier, multidimensional scaling and related techniques are primarily concerned with the representation of relationships, differences, similarities (or dissimilarities) and interaction among behavioural data such as perceptions, preferences and attitudes.

Therefore, the most appropriate technique to be employed was found to be the Non-metric Multidimensional Scaling (NMS). The NMS technique enables one to observe, analyse and quantify ordinal, multivariate, and interdependent data (Meidan, 1975).

Moreover, the NMS methodology allows the comparative analysis of the two hypothesised typologies in regard to their attitudes towards the various variables investigated, both between the facets and within the factors (sub-facets) which pertain to these facets.

The conceptual basis of NMS (as we previously stated), is that given a rank order of proximity data to find a configuration whose rank order or distance, in a specified dimensionality, best reproduces the original rank order of the input data (Green and Carmone, 1970).

In other words, all multidimensional geometric models attempt to position items in such a way as to represent the best of all pairwise relations among items.

The main goal of NMS is to find a compact, accurate geometric representation of the original distances between items. The degree of accuracy is determined by the extent to which the Euclidean distances, between the positions of pairs of items in the derived configuration, reproduce the rank order of the original pairwise distances (Shepard et al., 1972).

This accuracy of measurement is what Kruskal called the stress. When interpreting the spatial configurations which are plotted by the NMS computer programs we can look for substantively meaningful clusters in the solution. Items that are relatively close to each other in the Euclidean sense are considered to be members of a common group or cluster (Napior in Shepard et al., 1972).

6.5.1 Alternative Techniques

Since the attitudinal data collected (Chapter 4) is non-metric (ordinal scaled), the input data could be analysed by one of the four main alternative methodologies as follows:-

1) Non-metric Cluster Analysis (NCA)
2) Non-metric Factor Analysis (NFA)
3) Latent Structure Analysis (LSA)
4) Non-metric Multidimensional Scaling (NMS)

The essential differences, advantages, and disadvantages among these techniques are as follows:-

1) Non-metric Cluster Analysis (NCA)

Cluster analysis is a generic label applied to a set of techniques aiming at identifying similar entities from characteristics possessed by the entities (Green, Frank and Robinson, 1967). In other words, the objective is to classify a population of entities into a small number of mutually exclusive and exhaustive groups based on the similarities of profiles among entities (Sheth, 1971).

Aaker, 1971, stated that the purpose of cluster analysis is to identify objects (or variables) which are similar with respect to certain criteria.

The resulting object clusters should have high internal (within cluster) homogeneity and high external (between cluster) heterogeneity. Geometrically, the objects within a cluster should be close together and the objects in different clusters should be far apart. Hence, Cluster analysis is in a sense similar to multidimensional scaling in that both are used for reduced space analysis and are often based on the proximity principle.

In comparison with Factor analysis, for example, Kinnear and Taylor, 1979, stated that Factor analysis allows one to study the structure of a set of variables or objects in relation to their variance which is explained by a set of underlying factors, whereas cluster analysis allows the researcher to place variables or objects into subgroups or clusters. Moreover, some researchers consider Q-Factor analysis to be a form of Cluster analysis.

On the other hand, all clustering techniques (i.e. distance measures, correlation and similarity coefficients) suffer from certain specific limitations (Aaker, 1971). To illustrate, distance measures are usually restricted to instances in which the characteristics of objects to be measured can be expressed as interval scaled variables. In addition, the Euclidean measure suffers from the disadvantage that two objects may be viewed as different solely because their values on one variable differ markedly.

The main limitations of this technique, however, are that there are not yet defensible procedures for testing the statistical significance of these clusters, and often various clustering methods yield different clusters (Green and Tull, 1978). Finally, Degerman, 1970, adds that there is the problem of error in the data, that the more errors existing in the original data, the poorer will be the results of the initial procedures for obtaining a configuration.

2) Factor Analysis

Factor analysis is a procedure which takes a large number of variables or objects and searches to see whether they have a small number of factors in common which can account for their intercorrelation (Kinnear and Taylor, 1979). In other words, it is a tool to reduce a large number of variables to a few interpretable constructs (Aaker, 1971).

Factor analysis can be a useful technique in four ways. First, it can point out the latent factors or dimensions that determine the relationship among a set of observed or manifest values. This is by factor analysing preference data, for example, the analyst may discover some salient characteristics (attributes) in observed values which determine the relative preferences.

The second way in which Factor analysis can be helpful, is by pointing out relationships among observed values that were there all the time but not easy to see. Shepard in 1971 gives an example for this case; a Factor analysis of cosmetic use suggested that hair spray was more closely associated with face cosmetics (e.g. eye shadow and lipstick), than with other products women use specifically for their hair.

Third, Factor analysis is useful when objects need to be grouped. To illustrate, suppose there may be, say, seven or eight scales dealing with some aspects of a commercial (e.g. the attractiveness). Factor analysis summarizes information of these highly correlated scales into a very small number of basic ideas which hopefully are easier to grasp.

Finally, and related to the third function, Factor analysis can be used for empirical clustering of observations. The use of Factor analysis, however, may be either to cluster variables or individuals for classification. When variables are classified, it is generally referred to as cluster analysis and the procedure is the usual R-type factor analysis. When individuals are classified, it is generally referred to as profile analysis and the procedure is called Q-type factor analysis (Sheth, 1968).

There are three main steps in Factor analysis solution. The first is to develop a set of correlations between all combinations of the variables of interest. Secondly, to extract a set of initial factors from the correlation matrix developed in the first step. The final step is to rotate the initial factors to find a final solution. The basic idea of rotation is to yield factors so that each have some variables that correlate highly and some that correlate poorly. Consequently, it avoids the problem of having factors with all the variables having a midrange correlation, and thus it allows for an easier interpretation.

Factor analysis, compared with Cluster analysis and Multidimensional Scaling, attempts to explain a set of observed input variables by a linear combination of unobservable underlying common factors (Jackson, 1983). In other words, Factor analysis is used to examine the underlying factors, or internal structures, of a set of variables. In contrast, Cluster analysis objects (variables or observations) are grouped in terms of overall similarity; there is no attempt to look inside or decompose the objects.

Factor analysis and non-metric multidimensional scaling are similar and both are used to find underlying dimensions. Factor analysis finds dimensions underlying a single measure (often a person's perception), of similarity or dissimilarity within objects. In Factor analysis, the input variables are assumed to have full co-ordinal properties, while in non-metric scaling the input variable is assumed to have ordinal properties only.

The main disadvantage of Factor analysis, however, lies in the fact that the representation of its solution is usually in three or five (or possibly more than five) dimensions. Such results cannot be cast into the form of a readily visualizable picture (Shepard et al., 1972). In other words, the most critical limitation of the ordinary factor analysis outcome is, that it cannot be presented in a space since it very often has more than three dimensions.

3) Latent Structure Analysis

Latent analysis shares both of the objectives of Factor analysis, i.e. to extract important factors and express the relationship of variables with these factors and, secondly, to classify respondents into pure types. The relative disadvantage of this technique compared with Non-Metric Multi-dimensional Scaling (NMS), is that there is a relative lack of computer programs with which one can handle this method (Meidan, 1975).

4) Non-Metric Multidimensional Scaling

It is not surprising that a technique so versatile and robust as non-metric scaling has been hailed as a "breakthrough" by marketing researchers (Christopher, 1973). Its very facility to utilise the simplest form of data without any need to pre-structure the respondents' thinking with scale descriptions is in itself a major contribution. The technique, however, by its ability to reveal the deep structure of individual and group perceptual space, is capable of an impressive number of applications in marketing and market research.

The applications of the NMS technique in the marketing area are numerous. The major applications which had been successfully undertaken by employing this methodology were in three main areas of marketing: a) Sales and market research, b) Buyer behaviour, and c) Brand and Product analysis. Market research was one of the first areas of marketing in which the NMS model was applied. Doehlert, 1968, presented a preference map of automobile colours, trying to provide a guide for future product development. A similar study trying to investigate the significance of attitudinal differences with regard to alternative models of British and foreign made cars, was performed by Doyle and Hutchinson, 1973. The British housewives' perceptions of various supermarkets were also analysed by employing an NMS technique (Doyle and Fenwick, 1973). An analysis for convenience food, aiming to determine which dimensions are important to the consumers and how the various brands are evaluated against each other, was investigated by Doyle and McGee, 1973. Other applications in market share, market segmentation and marketing mix were also undertaken using the NMS technique (see Green and Carmone, 1968; Barret, 1971; Johnson, 1971; Green and Rao, 1972; Doyle, 1973; and Turner, 1971).

Consumer purchasing behaviour has also been studied by means of NMS. Green and Maheshawari, 1969 examined the consumer buying behaviour with regard to common stock perceptions and preference in portfolio selection. In a recent study, Moutinho, 1982, investigated vacation tourist behaviour in Portugal using the NMS technique.

With regard to Brand Position Policy, Stafflre, 1968, suggested the application of the NMS technique for the design of new products for existing markets and new markets for existing products. Green, Wind and Jain, 1972, suggested that conjoint measurement can be used to develop new appeals for existing products, or even new products. By presenting respondents with various product descriptions, which offer different benefits and combinations of benefits, and asking them to provide similarities and preference judgement. From this information, those clusters of benefits which have the greatest appeal are readily identifiable.

Finally, other applications of the NMS technique were undertaken in Export Marketing (e.g. Stefflre, 1968; Perry and Perry, 1974; Meidan, 1974).

The decision was made to choose the NMS technique for the analysis of this investigation (the attitudinal data) as it has four major advantages as compared with the previously discussed alternative methodologies (Meidan, 1975). These advantages are:-

i) It is a relatively reliable tool for reducing a large number of variables to a few interpretable constructs.

ii) It enables the portraying of all the variables in a spatial configuration, so that the structure of data is easily comprehensible.

iii) NMS is treating the data as being multidimensional from the outset, the dimensions being determined following the analysis of the data and not prespecified.

iv) NMS, as with all multidimensional scaling, is invariant to changes in scale.

However, the Non-Metric Multidimensional Scaling technique has some limitations in terms of the number of dimensions and uniqueness. With NMS, the decision of how many coordinates to use to describe the data rests with the analyst's judgement. The problem here is that as dimensionality increases, so does the ability to fit. However, Doyle, 1973, suggested three main ways of approaching this dilemma. First, to choose the number of dimensions such that S (stress) is acceptably small, so that further increases in the number of dimensions does not significantly reduce it.

The second criteria lies in the interpretability of the coordinates. If a two-dimensional solution provides a satisfactory interpretation, but a three-dimensional one reveals no further structure, it may be satisfactory to use the former.

A third criteria can be used if there is an independent estimate of the statistical error of the data. The more accurate the data, the more dimensions one is entitled to extract.

Not only the number of dimensions is a matter of judgement, but also the resultant configuration is unique only up to a similarity transform. That is, it may be rotated around the origin, the origin may be translated, or the axes may be reflected. These transforms are permissible because none will change the rank order of the interpoint distances.

Briefly, the central difficulties with the NMS technique are the subjective nature of the choice of the number of dimensions, and the interpretation of these dimensions. Of course, such difficulties are not unique to NMS. Analogous problems occur with Factor, Cluster Analysis, and other Multidimensional techniques (Doyle, 1973). Hence, all such methods require good judgement and the use of external information in their interpretation in order to be utilized effectively.

6.5.2 Main Features of the Alternative NMS Computer Programs

An important advantage of using the NMS technique is that a variety of computer programs are available for analysing and for testing the research hypotheses. The various NMS computer programs are, generally speaking, very similar. All of them aim at a configuration of points in an interpretable space, and in a metric form output of non-metric data input.

The main differences among these programs are, for example, in their flexibility, speed, number and type of various options available, and so on.

More specifically, the main characteristics of the NMS programs compared with each other are:-

1) Kruskal's Multidimensional Scaling Programs M-D-SCAL

Kruskal's M-D-SCAL III program scales up to 75 stimuli in up to 10 dimensions (Kruskal, 1964a and 1964b). Input data may be in either half matrix or whole matrix form. Moreover, missing entries, tied data, and asymmetrical data can be handled. In addition, weights can be assigned to reflect the differing importance of various data values.

Scaling can be done in a traditional Euclidean distance form, or any other special case of Minkowski p-metric. The program plots the configuration which fits best, and also plots the scatter diagram of proximities against computed distances and proximities against best fitting distances. The fit measure of Kruskal's stress is also computed.

2) Guttman and Lingoes' Smallest Space Analysis (SSA) Series

The Guttman and Lingoes's Smallest Space Analysis Series (SSA, SSAR and SSAP) consists respectively of four programs for intact matrix analysis (Lingoes, 1979). The SSA-I program is designed to handle unconditional, intact and symmetric proximity matrices up to 60 by 60. Both the Euclidean and city block matrices are permitted.

The program operates upon the rank order of the correlation matrix, derived from correlating every questionnaire item with each other. It finds n-dimensional space such that the rank of the distances between the points, representing items in the space, gives a maximum relationship to the rank of correlation coefficients. The output is, thus, a distribution of points representing items, the distance between them being the inverse of inter-item correlation.

Further, the more similar items are to each other, in terms of their facet constituents, the higher their expected intercorrelations. The consequence of this principle is that an inverse relationship is predicted between similarity of item profiles and their distance within any spatial representation of their correlations.

The program can also handle tied data (but not missing entries) and compute a fit measure; Guttman and Lingoes's normalized Phi (ϕ) measure (which can be mathematically related to Kruskal's stress measure). This series contains also the SSA-II, SSA-III, SSA-IV and MINISSA. The Guttman-Lingoes SSAR series consists of four programs, dealing, in this case, with off-diagonal or rectangular proximity matrices, either unconditional or conditional. The last series is SSAP programs which are designed for scaling partitioned matrices and provide non-metric analogous to Factor analytic approaches.

In 1975, Meidan made a comparison among the outputs of M-D-SCAL, SSA, and TORSCA and it was found that TORSCA-9 and SSA-I are the best in terms of computer time, whereas in terms of quality of output (i.e. visuality of the configurations, ability to interpret them and the reliability of the solution, i.e. goodness of fit) the best program was the Guttman-Lingoes's SSA-I.

3) Young and Torgerson's TORSCA 8 and 9 Programs

The TORSCA 8 program represents a flexible approach to multidimensional scaling. The program can handle input data in either whole matrix, half matrix, or vector form, for up to 75 stimuli.

Version 9 of the program extends its flexibility to deal with off-diagonal (but unconditional) matrices, as well as providing additional features such as: a) rotation of solution to simple structure or to match some of the configurations supplied by the user; b) inclusion of the Minkowski p-matrices; and c) tabulation of triangle inequality violation.

4) McGee's Multidimensional Scaling Programs

McGee's programs are very similar to Kruskal's in terms of the mechanics. However, McGee views distances between pairs of points as elastic springs and uses a chi-square criterion as a measure of effectiveness (McGee, 1968).

The McGee program also, like Kruskal's, uses a very steep descent algorithm but, initial starting coordinates (in one dimension) are non-arbitrary. Its major difference concerns the goodness of fit measure and the fact that solutions are started in one space; fits in higher dimensions are attempted only if lower dimensional solutions do not satisfy the cut-off criterion. The major function of McGee's program, however, is to provide a way to deal with individual differences in proximity data.

5) Carroll and Chang's INDSCAL Program

The INDSCAL program is designed to perform a metric analysis of proximity data that reveals individual differences among subjects, in the weights, that they apply to a common or group space (Carroll and Chang, 1970).

The output of the program consists of the group configuration of stimuli and the plot of subject weights for each dimension. It also provides a goodness of fit measure to the data of each individual subject. The program has been generalized to handle N-way matrices and, in this respect, can be used in selected types of multi-mode factor analysis and canonical correlation when more than two sets of data are available.

6) Kruskal, Young, Shepard and Torgerson's Program (KYST)

KYST is an extremely flexible and portable computer program for multi-dimensional scaling and unfolding. It represents a merger of M-D-SCAL 5M and TORSCA-9 including the best features of both, as well as some new features of interest.

KYST includes the powerful initial configuration procedure from TORSCA as well as the very helpful practice of rotating solutions to the principal components. It incorporates the wide generality of M-D-SCAL 5M, as well as M-D-SCAL's easy to use input procedure.

New features include improved portability, more easily readable printer plotting, an easier way to transform the data prior to scaling, an easy way to introduce weights as functions of the data, and substantial economy of computer memory by complicated re-use of arrays.

6.5.3 The Smallest Space Analysis Program (MINISSA version)

i) Description

The Michigan-Israel-Netherlands-Integrated-Smallest-Space-Analysis (MINISSA) is a program for the Smallest Space Analysis of square symmetric matrices (Lingoes, 1973; Roskam, 1975). Based on the one hand, on extensive studies (Lingoes, Roskam and Guttman, 1969) of the non-metric algorithms advanced by Kruskal (1964a,b), and, on the other hand, by Guttman and Lingoes (Guttman, 1968; Lingoes, 1965, 1966). An integrated program containing the best features of both approaches, has been developed for the multidimensional analysis of ordered matrices (Roskam, 1975). In brief, the chief advantage of the MINISSA program over that of its predecessors, M-D-SCAL (Kruskal) and SSA-I (Guttman-Lingoes), resides in the factors of: 1) virtual elimination of local minimum traps (which, without suitable counter-measures, are far more frequent than one would suppose), 2) smoothness and speed of convergence, and 3) versatility of options for manipulating the data matrix, the configuration, and the constraints on the solution.

ii) Measurement Model

Given the rank order or ratings of the similarities or dissimilarities among n objects (or stimuli), the purpose of the algorithm is to find the co-ordinates of n points, representing the stimuli, in an r-dimensional space such that the distances among these points are in approximately the same rank order as the dissimilarities (Roskham, 1975). This is the basic non-metric smallest space analysis program.

Let the stimuli or points be indexed by i, j = 1, ..., n. Let the co-ordinates be written as X_{ip}, p = 1, ... r. The distance

$$d_{ij} = \{ \sum_p | X_{ip} - X_{jp}|^u\}^{1/u} \qquad u = 1,2$$

For u = 2, this is the familiar Euclidean distance metric;
For u = 1, this is the so-called city-block metric.

iii) Criterion for goodness of fit

Let the dissimilarities be symbolised by δ_{ij}. These can be either rank-numbers running from 1, ... through n(n-1)/2. These values have only ordinal interpretation, they are usually arranged as the elements of a lower triangular data matrix. Roskam, 1975 refers to the set of co-ordinates, X_{ip}, as the configuration. The stress of this configuration is defined as

$$S = \sqrt{\frac{\sum_{ij} \{d_{ij} - f(\delta_{ij})\}^2}{\sum_{ij} d_{ij}^2}} \quad , \quad i > j , \qquad \text{(SFORM 1)}$$

where

$f(\delta_{ij})$ is a real number assigned to the dissimilarity δ_{ij} such that $f(\delta_{ij}) > f(kl\ )$ whenever $\delta_{ij} > \delta_{kl}$.

There are basically two ways of obtaining the values of $f(\delta_{ij})$, namely:

a) Kruskal's monotone regression procedure ($\hat{d}_{ij}$: d-hat)

b) Guttman's rank-image procedure ($\overset{*}{d}_{ij}$: d-star)

An alternative of the "stress" (originally defined by Kruskal, 1964) is the coefficient of alienation (originally defined by Guttman in connection with the rank-image procedure). The coefficient of alienation is defined in terms of an intermediate coefficient ϕ, so that when $\overset{*}{d}$ is substituted for $f(\delta_{ij})$, the stress is almost equal to the coefficient of alienation.

The "raw stress" which is equivalent to Guttman-Lingoes' "raw phi" is:

$$\phi_0 = S_0 = \sum_{ij} \left\{d_{ij} - f(\delta_{ij})\right\}^2 , \quad (i > j) ,$$

(Raw stress),

(Raw PHI) ,

and the coefficient of alienation k, is:

$$k = \sqrt{1 - \frac{\left\{\sum_{ij} d_{ij} \times f(\delta_{ij})\right\}^2}{\sum_{ij} d_{ij}^2 \times \sum_{ij} \left\{f(\delta_{ij})\right\}^2}} , \quad \text{(ALIENATION)}$$

This coefficient of alienation (k) is typically larger than the stress (S) by a factor of about 1.4. One should, however, bear in mind that k is used whenever $f(\delta)$ is defined by the rank image method, and that S is used when $f(\delta)$ is defined by monotone regression, also that MINISSA minimizes S in terms of monotone regression.

As a rule in interpretation of the stress, Raskham considers:

Stress < 0.1 : excellent

.01 < S < .05 : good

.05 < S < .10 : fair

.10 < S < .15 : moderate

.15 < S < : poor

iv) Output from MINISSA

The output for each analysis consists of two parts:

a) information on the history of the iterations;

b) the final results.

Each of those is preceded by the following general information:

The program prints its title first, followed by the title of the data set, as read in the input. At the end of the iterations the final results are printed. The program gives:

ITER : the index of the iteration where convergence was attained.

RAW STRESS DHAT: with $f(\delta_{ij}) = \hat{d}_{ij}$ (monotone regression)

COEFF ALIEN DSTAR: with $f(\delta_{ij}) = \overset{*}{d}_{ij}$ (rank image permutation)

The FINAL CONFIGURATION, stimuli (objects) by rows and the dimensions by columns. Next, a lower triangular matrix is printed giving the distance d_{ij} according to the final configuration.

6.6 Correlation Analysis

The correlation analysis between the attitudinal data was chosen for two main reasons: Firstly, to identify the variables that are associated with others in order to be able to see the way in which they are related and how this can be used in the interpretation of the research findings. Secondly, as an evidence to support the findings on the MINISSA analysis section, since, the output of MINISSA is based on the correlation matrix of these variables.

It was decided to use the Kendall rank correlation coefficient τ (tau) since the data is ordinal scaled. The Kendall (τ) is suitable as a measure of correlation with similar data for which the Spearman rank-order correlation (r_s) is useful (Siegel, 1956). That is, if at least ordinal measurement of both X and Y variables has been achieved, so that every subject can be assigned a rank on both X and Y, then τ will give a measure of the degree of association or correlation between the two sets of ranks.

The degree of the relationship between the two sets of ranks is indicated by the ratio of the actual total of +1's and -1's to the possible maximum total. The Kendall rank correlation coefficient is that ratio:

$$\tau = \frac{\text{Actual score}}{\text{Maximum possible score}}$$

If we donate to the observed sum of +1 and -1 as S, and the maximum possible score will be $\binom{N}{2}$; which can be expressed as $\frac{1}{2}N(N-1)$. Then;

$$\tau = \frac{S}{\frac{1}{2}N(N-1)} \quad .$$

In the comparison of τ and r_s, Siegel (1956, p. 219) computed both τ and r_s for the same data. He found that the numerical values of τ and r_s were not identical when both were computed from the same pair of rankings (i.e. when $r_s = .82$, the equivalent τ was $= .67$). This illustrates the fact that τ and r_s have different underlying scales and that numerically they are not directly comparable. This means, in other words, that if the scale of r_s is, say, under .10, it is considered negligible, it may be considered a weak correlation in τ, and if r_s of .11 to .29 is weak, it could be explained as a fair correlation in τ of the same scale, and so on.

One advantage of τ over r_s is that τ can be generalized to a partial correlation coefficient. However, both coefficients utilize the same amount of information in the data and they have the same power to detect the existence of association in the population.

6.7 The Multiple Classification Analysis (MCA) Model

Multiple Classification Analysis (MCA) is a technique for examining the interrelationships between several predictor variables and a dependent variable within the context of an additive model (Andrews et al., 1973). Moreover, unlike simpler forms of other multivariate methods, the MCA technique can handle predictors with no better than nominal measurement, as well as interrelationships of any form among predictors or between a predictor and the dependent variable. The dependent variable, however, should be an intervally scaled (or a numerical) variable.

MCA, in essence, is multiple regression using dummy variables (Suits, 1957; Melichar 1965). Its chief advantage over conventional dummy variable regression is a more convenient input arrangement and understandable output that focuses on sets of predictors such as occupation groups, and on the extent and direction of the adjustments made for intercorrelations among the sets of variables.

The statistical model upon which the MCA is based specifies a coefficient assigned to each category of each predictor, and each person's score on the dependent variable is treated as a sum of the coefficients assigned to categories characterizing that person plus the average for all cases and an error term[1].

Therefore,

$$Y_{ij} = \bar{Y} + a_i + b_j + \dots + e_{ij}$$

(1) More details about MCA are available in Andrews et al., 1967 and 1973.

where:

Y_{ij} = the score (on the dependent variable) of an individual who falls into category i of predictor A, category j of predictor B, etc.

$\bar{Y}$ = grand mean on the dependent variable.

a_i = the effect of membership in the ith category of predictor A (i.e. adjusted coefficient)

b_j = the effect of membership in the jth category of predictor B (i.e. adjusted coefficient)

e_{ij} = error term for this individual.

The adjusted coefficients (or the effects of membership) can be thought of as having been estimated in such a way that they provide the best possible fit to the observed data, i.e., so as to minimize the sum of the (squared) errors, that set of coefficients can be obtained by solving a set of equations known as the least squares equations (or the Normal Equations).

The Normal Equations used by the MCA program are as follows (shown here for three predictors A, B and C):

$$a_i = A_i - \bar{Y} - \frac{1}{w_i} \sum_j w_{ij} b_j - \frac{1}{w_i} \sum_k w_{ik} c_k$$

$$b_j = B_j - \bar{Y} - \frac{1}{w_j} \sum_i w_{ij} a_i - \frac{1}{w_j} \sum_k w_{jk} c_k$$

$$c_k = C_k - \bar{Y} - \frac{1}{w_k} \sum_i w_{ik} a_i - \frac{1}{w_k} \sum_j w_{jk} b_j$$

where:

a_i = mean value of Y for cases falling in the ith category of predictor A.

b_j = mean value of Y for cases falling in the jth category of predictor B.

c_k = mean value of Y for cases falling in the kth category of predictor C.

w = number of cases (weighted).

6.7.1 Advantages of the MCA Technique

The MCA technique overcomes some of the problems when attempting to apply the more usual multivariate procedures to survey data (Andrews et al., 1967). If analysis of variance, for example, is to be used then the problem of correlated predictors must be considered. If, also, multiple regression or discriminant function analysis is to be used, one is faced with the problem of predictors which are not numerical variables but categories and, with scales as weak as the nominal level(1).

With regard to the first problem (i.e. correlated predictors), traditional analysis of variance techniques generally require that the predictors be independent. This is often expressed in terms of equal or proportional numbers of cases in the cells. However, when observations are not subject to human control (i.e. the inability of the researcher to acquire experimental control by causing his predictors to be unrelated), what usually occurs is that the predictors prove to be correlated with one another. In this case, the analysis of the resulting data is more complicated.

Correlated predictors not only make problems for estimating the total variation explained by a set of predictors, they also affect the estimate of the predicted value of the dependent variable for any particular individual (or unit). Therefore, dealing with this complication is one

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(1) We will classify scales into nominal, ordinal, and interval levels of measurement. This distinction was first proposed by Stevens, 1946. A nominal scale is one which simply categorizes objects (e.g. apples, oranges, pears and so on). An ordinal scale classifies items and assumes the categories are arranged in some meaningful order. An interval scale requires classifications, ordering and equal distances between the categories. A sub-class of interval scales is called ratio scales.

key feature of the MCA technique. It has the ability to show the effect of each predictor on the dependent variable both before and after taking into account the effects of all the other variables. Of course simple forms of traditional multivariate methods (e.g. analysis of covariance, multiple regression, and discriminant analysis) also do this, but they can do it only when the data is of a prescribed form. They usually require that variables be measured on interval scales, that the relationships be linear (or linearized) and that distributions be bivariate normal.

The second key feature of the MCA model lies in its freedom from these restrictions: The predictors are always treated as sets of classes or categories, so it does not matter whether a particular set represents a nominal scale (categories), ordinal scale (ranking), or an interval scale (classes of a numerical variable).. Since the categories of a nominal scale can be placed in any order, one cannot speak of the direction or sign of the relation with the dependent variable or even of the form of its relation to other scales.

For these advantages, the MCA technique was found to be the most appropriate for investigating the demographic and socioeconomic variables associated with the amount of life insurance purchased, both because they are dependent intercorrelated variables and there are different levels of scale measurement (e.g. nominal for occupation and family life cycle and interval for age and income).

6.7.2 Alternative Techniques

It was indicated in the previous section (6.7.1) that the MCA program could appropriately be applied to data which does not meet the assumptions of the simpler, commonly used forms of multivariate analysis methods.

Following, is a discussion of the relationship between the MCA technique and two similar techniques (i.e. analysis of variance and multiple regression).

1) Analysis of Variance (ANOVA)

Generally speaking, the MCA is directly related to analysis of variance in its more complex form. ANOVA, in its simpler form usually assumes an equal number of cases in each of the cells formed by the cross classification of two or more predictors. For many years, however, statisticians have indicated how to perform the more complex analyses of variance on data characterized by unequal numbers in the cells (Andrews et al., 1973).

In one sense, the MCA program is a computerized version, closely linked conceptually to classical techniques for complex analyses of variance. Specifically, the "coefficients" approximated by the MCA program are identical to the classical "fitted constants" in ANOVA, and the MCA program's "explained sum of squares" is identical to the classical "reduction in the sum of squares due to fitting constants". Finally, what the program calls "residual sum of squares", is the sum of the "within sum of squares", plus "interaction sum of squares".

2) Multiple Regression Using Dummy Variables (MRUDV)

Multiple regression using dummy variables (MRUDV) is a technique which allows use of the usual multiple regression equations when predictors are nominal scale classification. When predictors are measured on ordinal or interval scales, however, dummy variable multiple regression may still be useful since it requires no assumptions about relationships being linear.

In MRUDV, the multiple regression equation would have perfect correlation among the predictors if an individual's membership in each class but one is known, his membership of the last class is perfectly derivable. To avoid such over-determination, one of the coefficients is usually constrained to zero for each set of dummy variables (accomplished simply by omitting one of the dummy variables of each set from the analysis). Under this constraint, the obtained coefficients for the remaining dummy variables within each set indicate deviations from the omitted variable. Moreover, if the number of cases in the omitted category is small, its coefficient may be quite distant from the overall mean, and hence all other coefficients may appear unusually large (i.e. relative to their standard errors). On the other hand, if a large group is excluded, the reader will have no information on its coefficient unless he performs additional calculations.

Therefore the MCA is often more convenient to use than MRUDV. Therefore there is no need to recode the predictor variables into sets of dummy variables prior to making an analysis. Besides, the coefficients for <u>all</u> categories are obtained and expressed as deviations from the mean (i.e. not from the omitted variable as in MRUDV), a form in which they are easily understood.

Briefly, the MCA program requires no conversion of the basic data and no creation of dummy variables, since, each class of each predicting characteristic becomes, in essence, a dummy variable. The major advantage of MCA, in comparison with the alternative methods, is in accepting the data the way it usually arrives and printing out the results one would most likely want to present and in the most convenient way. However, MCA has some limitations with regard to the minimum category size requirements, and the interpretation of the Beta (β) coefficient included in the output.

6.7.3 Description of the MCA program output

The MCA program examines the relationship between several categorical predictor variables and a dependent variable, in terms of an additive model. The program determines the weight or coefficient (associated with each category of each predictor) to approximate the best dependent variable in a least squares sense.

The output of the program contains statistics which show how each predictor relates to the dependent variable, both before and after adjusting for the values of other predictors. A multiple correlation coefficient is also computed which indicates the magnitude of the relationship between the dependent variable and all the predictors together.

The major statistics printed by the program are:

a) A coefficient for each category of each predictor (which is considered to be the solution of the normal equation), and indicates the effect of this category in explaining variation in the dependent variable. This is the adjusted coefficient (i.e. after all other predictors have been held constant).

b) Eta (η) and Eta-squared (η^2). Eta (η) indicates the ability of the predictor, using the categories given, to explain variation in the dependent variable. Eta-squared (η^2) is the correlation ratio and indicates the proportion of the total sum of squares explained by the predictor.

c) Beta (β) and Beta-squared (β^2) - these are directly analogous to the η and η^2 statistics (in b) above) but are based on the adjusted means, rather than the raw mean. Beta (β) provides a measure of the ability of a predictor to explain variation in the dependent variable after taking into account the effects of all the other predictors.

d) A multiple correlation coefficient squared (R^2). This is the coefficient of determination and indicates the proportion of variance in the dependent variable explained by considering all the predictors together. In other words, R^2 is a measure of the ability of all the independent variables, included, to account for the dependent variable.

The major interpretation in MCA is of the adjusted and unadjusted coefficients printed out for each sub-class. In a population where there is no correlation among the predictors, the observations in one class of characteristic A would be distributed over all the classes of the other characteristics and in a way identical to that in which those in other classes of A were distributed. If this is the case, then the unadjusted Mean Y for each sub-class of A, would be an unbiased estimate of the effect of belonging to that class of characteristic A.

In the real world, however, characteristics are correlated. Young people are more likely to be in lower income groups, and in higher education groups than are older people (Andrews in et al., 1973). Therefore, the multivariate process is essentially one of adjusting for such non-orthogonality[(1)]. The adjusted means (or coefficients) are estimates of what the mean would have been if the group had been exactly like the total of its distribution over all the other predictor classifications. It is useful not only to have the pure effects of each class adjusted for all the other characteristics, but also to see how these adjusted effects differ from the unadjusted ones.

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(1) Non-orthogonality, as defined by Pedhazur, 1982, refers to the absence of orthogonality in a set of independent variables. In other words, when two variables are orthogonal, they are independent of each other and the correlation between them is zero.

Finally, other users of the MCA program have recommended a minimum category size of anywhere between 25 and 50 observations. Failure to meet the minimum size requirement can cause the adjusted coefficient to be misleading (Anderson and Nevin, 1975). In addition, the partial beta (β) coefficient included in the output of the MCA computer program, based on the adjusted coefficients, must be interpreted with caution, and is useful only as an approximate measure of the relationship between a predictor and the dependent variable while holding constant all other predictors (i.e. to indicate the relative importance of the various predictors in their explanation of the dependent variable, if all other predictors are held constant).

6.8 Statistical Tests of the Research Hypotheses

A statistical hypotheses is an assumption or a statement, which may or may not, be true. The purpose of a statistical test is to make a decision as to whether a relationship exists that could not easily occur on the basis of chance alone.

Kerlinger, 1973, suggested two main criteria for formulating a good hypothesis: a) a hypothesis is a statement about relations between two or more measurable (or potentially measurable) variables; 2) a hypothesis should carry clear implications for testing the stated relationship (i.e. specifying how the variables are related). A statement that lacks either or both these characteristics is no hypothesis in the scientific sense.

The statistical procedures for testing the hypotheses, comprise approaches in order to make decisions as to the significant bearing of the data on the research problem (Phillips, 1976). They also help the investigator to become more explicit as to the basis on which he arrives at a given decision. In other words, to conclude that there is an evidence to support his initial hypothesis. Therefore statistical procedures for testing hypotheses are aids to the process of scientific communication.

In doing a statistical test one must choose between accepting or rejecting the null hypothesis (H_0). If H_0 is rejected, then one tends to use this as evidence in favour of H_1. In order to reach an objective decision as to whether a particular hypothesis is confirmed by a set of data, we must have an objective procedure for either rejecting or accepting that hypothesis (Siegel, 1956). Objectivity is emphasized as it is one of the requirements of the scientific method by which scientific conclusions are arrived at. This objective procedure should be based on the information we obtain in our research, on the one hand, and on the risk we are willing to take that our decision, with respect to the hypothesis, may on the other hand be incorrect. The procedure involves several steps, the two most important ones being:

i) to state the null hypothesis (H_0). H_0 is a hypothesis of no differences, it is usually formulated for the express purpose of being rejected; therefore if H_0 is rejected, the alternative hypothesis H_1 may be accepted.

ii) To choose a statistical test with its associated statistical model for testing H_0. When choosing the suitable test one should bear in mind the importance of choosing a test whose model most closely approximates the conditions of the research. This is in terms of the assumptions which qualify the use of the test. In addition, the test selected should have the same measurement requirements used in the study. After that we specify a significant level (α), a sample size, and then compute the value of the statistical test using the data obtained from the sample(s).

If that value is outside the region of rejection, then the decision is that H_0 cannot be rejected at the chosen level of significance.

In this study it was hypothesised that:

H_0-A : There is no significant difference in the attitude of the two typologies (Insured and Non-insured) towards the variables (attitudinal) which determine life insurance purchasing behaviour in Egypt.

H_0-B : There is no significant difference in the importance that both insured and non-insured people attach to saving through life insurance and that attached to saving with other financial institutions.

H_0-C : There is no significant relationship (association) between the selected demographic and socioeconomic variables (i.e. age, education, occupation, family size, family life cycle, and income) and the amount of life insurance purchased.

For both hypotheses A and B it was decided to use the Wilcoxon test. Siegel, 1956, stated that "when the measurement is in an ordinal scale both within and between pairs, the Wilcoxon test should be used". And both hypotheses A and B are based on ordinal scaled data and we are seeking the significant difference between the two groups (i.e. insured and non-insured) with regard to their judgement. The Wilcoxon test is applicable when the researcher can meaningfully rank the differences observed for the various matched pairs.

When the Wilcoxon test is used for data which, in fact, meets the conditions of the t test, its power-effeciency is about 95.5 percent for large samples and not much less than that for smaller samples. Therefore, the Wilcoxon matched-pairs signed-ranks test was chosen because the study employs two related samples and it yields score differences which may be ranked in order of absolute magnitude.

The formula for calculating the Wilcoxon test is:-

$$Z = \frac{T - \frac{N(N+1)}{4}}{\sqrt{\frac{N(N+1)(2N+1)}{24}}} \qquad (6.1)$$

where

T = the smaller of the sums of the like-signed ranks

N = the number of pairs (minus any pairs whose difference (d) is zero).

The procedures for using the Wilcoxon test can be summarized in the following steps:-

1) For each matched pair, determine the signed difference (d_i) between the two scores.
2) Rank these d_is without respect to sign. With tied d_is, assign the average of the tied ranks.
3) Affix to each rank the sign + or - of the d which it represents.
4) Determine T = the smaller of the sums of the like signed ranks.
5) By counting, determine N = the total number of ds having a sign.
6) The procedure for determining the significance of the observed value of T depends on the size of N:-
   a) If N is 25 or less, Table G (in Siegel, 1956), shows critical values of T for various sizes of N. If the observed value of T is equal to or less than that given in the table for a particular significance level and in particular N, H_0 may be rejected at that level of significance.

b) If N is larger than 25, compute the value of Z as defined in the formula (6.1). Determine its associated probability under H_0 by referring to Table A (Siegel, 1956). For a two tailled test, double the p shown. If the p thus obtained is equal to or less than α, reject H_0.

With regard to hypothesis C, since we are seeking the significance of the variance as explained in the dependent variable, by a specific independent variable(s), the F-ratio is chosen. F-ratio is to compare the regression-associated variance with the error variance and determine whether the regression has explained a statistically significant portion of the variation in the dependent variable.

6.9 Summary of the Chapter

Life insurance purchasing behaviour, as with all consumer buying behaviour models, is a complex one. This is not only because it comprises multivariate variables, but also we can go further to suggest it should be treated on a multi-technique analysis basis. The study of consumer purchasing decisions should indicate not only why people do (or do not) take the decision to purchase, but also to specify what are the determinants of the magnitude of purchases, in order to achieve better understanding of the purchasing decisions phenomenon. Therefore this investigation is mainly concerned with the two major questions of consumer purchasing decisions (i.e. why? and how much? the magnitude is).

In selecting the appropriate methodology of analysis, the characteristical features of the data collected should be taken into consideration. This is in terms of the nature of the variables to be analysed (in terms of dependence or inter-dependence), the type of scaling measurement of the input data (i.e. metric or non-metric), and, finally, the main objectives of the research we are aiming at. In Figure 6.1, we presented a taxonomy of alternative multivariate methodologies.

The data in this investigation consists of two major groups of variables (i.e. attitudinal and demographic and socioeconomic). The first group (attitudinal) is non-metric (i.e. ordinal scaled), multivariate, and interdependent data, whereas the second group is categorical, multivariate and dependent data (with both nominal and interval scaling).

After the main alternative methodologies of analysis were reviewed, the decision was made to use the Non-metric Multidimensional Scaling (NMS) technique for the analysis of the attitudinal data. The Multiple Classification Analysis (MCA) model was found to be the most appropriate one for the analysis of the relationship (association) between the dependent variable (amount of insurance purchased) and the selected predictors (i.e. age, education, occupation, family size, family life cycle, and income).

Since the type of data input (in the first group) is of the so-called proximity (dissimilarity) type, the alternative computer programs available for implementation are 5 optional programs: M-D-SCAL, SSA(MINISSA), TORSCA, McGee's INDSCAL or KYST. These programs were briefly reviewed and the decision was made to use the Smallest Space Analysis one (MINISSA version).

The MINISSA computer program enables us to obtain two separate configurations, one for each of the two hypothesised typologies of respondents, assuming that the (average) respondent's ideal point is placed at the origin of the axes. The distance between each variable point and the origin, reflects the degree of importance that is attached to this point; the lower the distance is of a specific point (variable), the more important it is and vice versa.

For the second group of data (categorical), the MCA computer program, which is a complex model of the Analysis of Variance, was employed. This is a technique designed to examine the relationships (association) between a dependent variable and several independent variables (predictors). Moreover, it has the advantage of dealing with non-linear and inter-correlated independent variables.

MCA also enables us to measure each predictor's ability to explain variation in the dependent variable both before and after adjusting for the effect of the other predictors (i.e. after being held constant). The MCA output includes both the Beta (β) statistics, and the coefficient of determination (R^2) which are used to measure the ability of each predictor (i.e. age, education, occupation, family size, family life cycle, and income), to explain variation in the dependent variable (amount of insurance purchased). Also, it indicates to what extent all the selected predictors account for the dependent variable.

Finally, we presented the statistical tests for the research hypotheses. It was decided to use the Wilcoxon test for the ordinal scaled data, to test for the significance of the difference in attitudes between the two hypothesised typologies (i.e. insured and non-insured), towards the variables determining the life insurance purchasing decisions in Egypt. The F-ratio test was used for determining the significance of the relationships (association) between the selected predictors (age, education, occupation, family size, family life cycle, and income), and the dependent variable (amount of life insurance purchased).

Chapter Seven

Research Findings

7.1 Introduction

The main objective of the methodology adopted when interpreting research findings is to achieve a significant, coherent, and scientific explanation of the problem under investigation. The process of decision-making in purchasing life insurance, as well as in all models of consumer behaviour, is a complex one. From the consumer point of view, there are multivariate variables which are supposed to have some influence on purchasing decisions.

Therefore, the faceted approach utilised in this study enabled us firstly to include all the variables which determine the life insurance purchasing behaviour. Secondly to examine, systematically, the importance of and the relationship between the various variables, by the subfacets which were explored above.

The two computer programs selected for analysing and interpreting the research findings were the Michigan-Israel-Netherlands-Integrated Series-Smallest Space-Analysis (MINISSA) and the Multiple Classification Analysis (MCA). The application of these programs allowed us to obtain a comprehensive, visual and reliable output, which was also used to test the research hypotheses.

The MINISSA output was employed to examine the similarity or dissimilarity between the two typologies (Insured and Non-insured), in their judgement, towards the variables which determine the life insurance buying behaviour. The basic solution of the MINISSA output is a geometrical representation of the variables as points in a spatial configuration. The Euclidean distance between each point (variable) and the origin (i.e. the centroid point), reflects the degree of importance attached by the average respondent to a specific variable investigated.

The MCA results, with regard to the amount of life insurance purchased, indicate the way in which each predictor relates to the dependent variable. The statistics also show how all selected predictors (i.e. age, education, occupation, family size, family life cycle and income), considered together, account for the dependent variable (i.e. amount of insurance purchased). In other words, how well all the independent variables explain variation in the dependent variable.

Finally, one sometimes needs to know whether an independent variable's ability to predict, is significantly better than chance; for that purpose the F-test is the appropriate criterion.

The analysis and interpretation of the findings of this investigation have been carried out through the following six major stages:

i) Testing the research hypotheses,

ii) The analysis of the life insurance purchasing decision variables for the two typologies,

iii) Comparison between the two typologies,

iv) Correlation analysis between the various variables which are supposed to have some influence on life insurance purchasing decisions for the two typologies,

v) Comparative analysis of the importance attached to saving through life insurance vs saving with the other financial institutions.

vi) Analysis of the amount of life insurance purchased, as a function of the six independent variables (i.e. age, education, occupation, family size, family life cycle, and income).

7.2 Testing the Hypotheses

The hypotheses presented and tested in this study are based on the output of the MINISSA and MCA computer programs. These hypotheses were formulated for investigation via a personal interview questionnaire (in Arabic) designed and administered to collect the necessary data (Appendix 1a); there is an English translation of this questionnaire (Appendix 1b). The main research null hypotheses (H_0) were:

Hypothesis$_0$ (A) : Attitudes towards the variables determining the life insurance purchasing decisions are similar (i.e. there is no difference) for insured and non-insured typologies in Egypt.

Hypothesis$_0$ (B) : The importance attached to saving through life insurance is similar, (i.e. there is no difference) to the importance attached to saving with the other financial institutions in the cases of insured and non-insured typologies.

Hypothesis$_0$ (C) : There is no significant relationship between age, education, occupation, family size, family life cycle, and income (taken together and separately), in explaining variation in the amount of life insurance purchased.

The Wilcoxon test was employed to test hypotheses A and B, whereas the F-test was used for hypothesis C, as follows.

7.2.1 The Wilcoxon Test

The selection of the appropriate statistical test was made with regard to the assumption of the level of measurement to the data collected. The Wilcoxon Matched-Pairs Signed-Ranks test was employed because of the following advantages:

i) it requires no assumptions regarding the distribution of the sample investigated;

ii) it could handle weaker assumptions about the independence of the data and about the underlying continuity of the variables under investigation;

iii) it has a high power efficiency as well as being simple and easy to apply.

A two-tailed test was found to be appropriate since the trend of the difference between the two typologies was not known. The preliminary calculations (i.e. differences, ranks and signed ranks) for the application of the Wilcoxon test are presented in the Appendices 3, 4 and 5.

$H_0(A)$: Attitudes towards the variables determining the life insurance purchasing behaviour are similar (there is no difference), for insured and non-insured typologies.

$H_1(A)$: Attitudes towards the variables determining the life insurance purchasing behaviour are different for insured and non-insured.

$H_0(A)$: insured = non-insured; $H_1(A)$: insured $\neq$ non-insured where insured, non-insured = various Euclidean distances between each point (variable) and the centroid point for the two typologies. The number of the variables investigated in this test is thirty-seven (i.e. $N = 37$). The level of significance (α) was set at .05. The total difference $T = 292$.

$$Z = \frac{T - \frac{N(N+1)}{4}}{\sqrt{\frac{N(N+1)(2N+1)}{24}}}$$

$$Z = \frac{292 - \frac{36^{*} \times 37}{4}}{\sqrt{\frac{36 \times 37 \times 73}{24}}} = -.64$$

The table gives P (for two-tailed test) = 2 x .2611 = .52. Taking the level of significance of $\alpha = .05$, H_0 cannot be rejected since the value of P = .52 is not of the region of rejection ($\alpha = .05$). In this case the conclusion is that: there is no significant difference in attitudes (i.e. they are similar) towards the life insurance purchasing behaviour variables, for insured and non-insured typologies in Egypt.

$H_0(A)$: Insured = non-insured

$H_0(B)$: The importance attached to saving through life insurance is similar to the importance attached to saving with the other financial institutions in the case of the insured typology.

$H_1(B)$: The importance attached to saving through life insurance is different to the importance attached to saving with the other financial institutions, in the case of the insured typology.

$H_0(B)$: Life insurance savings = other financial institutions savings.

$H_1(B)$: Life insurance savings $\neq$ other financial institutions savings where life insurance savings, other financial institutions savings = various Euclidean distances between each point (variable) and the centroid point for the insured typology.

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* Note that N = 36; as there is one pair of difference that has no sign.

The number of variables investigated by this test is thirteen (i.e. $N = 13$). The level of significance (α) was set at .05. The total difference $T = 17$. Using table G in Siegel, 1956 (since $N < 25$), taking $N = 13$, it has been found that one should reject the null hypothesis (H_0) in favour of H_1 at the .05 level of significance (for detailed calculation see Appendix 4). The decision is to accept the alternative hypothesis, that there is a significant difference in attitudes towards the importance that insured people attach to saving through life insurance to that attached to saving through the other financial institutions.

$H_1(B)$: Life insurance savings $\neq$ other financial institutions savings.

$H_0(B)$: The importance attached to saving through life insurance is similar to the importance attached to saving with the other financial institutions in the case of non-insured typology.

$H_1(B)$: The importance attached to saving through life insurance is different to the importance attached to saving with the other financial institutions in the case of non-insured typology.

$H_0(B)$: Life insurance savings = other financial institutions savings.

$H_1(B)$: Life insurance savings $\neq$ other financial institutions savings where life insurance savings, other financial institutions savings = various Euclidean distances between each point (variable) and the centroid point for the non-insured typology. The number of variables to which this test pertains is thirteen (i.e. $N = 13$). The total difference $T = 14.5$. Using table G in Siegel, 1956 (since $N < 25$), taking $N = 13$, it has been found that one should reject the null hypothesis (H_0) in favour of H_1 at the .05 level of significance (for detailed calculation see Appendix 5). The conclusion is, therefore, to accept the alternative hypothesis, i.e. there is a significant difference in attitudes towards the importance that non-insured people attach to saving through life insurance and that attached to saving through the other financial institutions' services.

7.2.2 F-test

The MCA computer program does not calculate F-tests. This is because of the likelihood that they would be misinterpreted by many users. However, the basic statistics, from which several different F-tests can be easily calculated, are part of the output.

The following tested hypotheses are those relating to the significance effect of all predictors considered together, and each predictor taken separately, in explaining variation in the dependent variable. It was hypothesised that:-

$H_0(C)$: There is no significant effect of age, education, occupation, family size, family life cycle, and income, simultaneously, in explaining variation in the dependent variable (amount of insurance).

$H_1(C)$: There is a significant effect of all predictors (mentioned above) in explaining variation in the dependent variable.

$H_0(C)$: There is no significant effect of age, education, occupation, family size, family life cycle, and income, taken separately, in explaining variation in the amount of life insurance purchased.

$H_1(C)$: There is a significant effect of the above mentioned predictors, taken separately, in explaining variation in the amount of life insurance purchased.

Test 1 : A test for all predictors simultaneously

This test is to answer the question: do all predictors together explain a significant portion of the variance of the dependent variable?

The formula is:

$$F = \frac{E/(C-P)}{Z/(N-C+P-1)}$$

where

E = explained sum of squares

C = total number of categories across all predictors

P = number of predictors

Z = residual sum of squares

N = number of individuals

Then:

$$F = \frac{856/(25-6)}{558/(150-25+6-1)}$$

$$F = \frac{856/19}{558/130} = 10.5$$

$F(19,130) = 10.5$, $P < .01$ (i.e. the obtained F-value exceeds the tabled value for $\alpha = .01$ level). So, the decision is to reject the null hypothesis (H_0), and conclude that all predictors together do explain a significant portion of the variance of the dependent variable.

Test 2 : A test for a single predictor

This test is to answer the question: does this predictor on its own explain a significant portion of the variance of the dependent variable?

An F-test for predictor i which answers this question is:

$$F_i = \frac{U_i/(C_i-1)}{T - U_i/(N-C_i)}$$

where

U_i = sum of squares based on unadjusted deviations for predictor i (this is identical with the between groups sum of squares in the analysis of variance)

C_i = total number of categories in predictor i

T = total sum of squares

N = number of individuals

i) Testing for the significance of age of respondent

Since:

$$F_i = \frac{U_i/(C_i-1)}{T - U_i/(N-C_i)}$$

where

U_i = sum of squares based on unadjusted deviations for predictor 1 (age)

C_i = total number of age categories

T = total sum of squares

N = number of individuals

Therefore,

$$F = \frac{45/(3-1)}{1414-45/(150-3)}$$

$$F = \frac{45/2}{1369/147} = 2.42$$

$F(2,147) = 2.42$, $P < .10$ (i.e. taking 2, 147 degrees of freedom, the obtained value of F-ratio = 2.42 exceeds the tabled value for $\alpha = .10$). Hence, the decision is to reject the null hypothesis (H_0) in favour of the alternative one (H_1). This means that: age of respondent has a significant effect in explaining variation in the amount of life insurance purchased.

ii) Testing for education of respondent

Since:

$$F_i = \frac{U_i/(C_i-1)}{T - U_i/(N-C_i)}$$

where

U_i = sum of squares based on unadjusted deviation for predictor 2 (education level)

C_i = total number of education categories

T = total sum of squares

N = number of individuals

Therefore,

$$F = \frac{166/(3-1)}{(1414-166)/(150-3)}$$

$$F = \frac{166/2}{1248/147} = 9.54$$

$F(2,147) = 9.54$, $P < .01$ (i.e. taking 2,147 degrees of freedom, the obtained value of F-ratio = 9.54 exceeds the tabled value at .01 level of significance). This means one should reject the null hypothesis (H_0) in favour of the alternative one (H_1). And one can conclude that the education level of the respondent does have a significant effect on the amount of life insurance purchased.

iii) Testing for occupation of respondent

Since:

$$F_i = \frac{U_i/(C_i-1)}{T - U_i/(N-C_i)}$$

where

U_i = sum of squares based on unadjusted deviation for predictor 3 (occupation)

C_i = total number of occupation categories

T = total sum of squares

N = number of individuals

Therefore,

$$F_i = \frac{406/(6-1)}{(1414-406)/(150-6)}$$

$$F_i = \frac{406/5}{1008/146} = 11.6$$

F (5,146) = 11.6, $P < .01$ (i.e. taking 5,146 degrees of freedom, the obtained value of F-ratio = 11.6 exceeds the tabled value for α = .01 significance level). One should, therefore, reject the null hypothesis and conclude that there is a significant effect of the occupation of the respondent in explaining variation in the dependent variable. In other words, occupation does have a significant effect in determining the amount of life insurance purchased.

iv) Testing for family size

Since:

$$F_i = \frac{U_i/(C_i-1)}{T - U_i/(N-C_i)}$$

where

U_i = sum of squares based on unadjusted deviation for predictor 4 (family size)

C_i = total number of family size categories

T = total sum of squares

N = number of individuals

Therefore,

$$F = \frac{120/(5-1)}{(1414-120)/(150-5)}$$

$$F = \frac{120/4}{1294/145} = 3.36$$

$F (4.145) = 3.36$, $P < .05$ (i.e. taking 4, 145 degrees of freedom, the obtained value of F-ratio = 3.36 exceeds the tabled value for $\alpha = .05$ level of significance). Therefore the decision is to reject the null hypothesis (H_0) in favour of the alternative one (H_1). We conclude that the family size <u>has</u> a significant effect in explaining variation in the dependent variable (i.e. in determining the amount of life insurance to be purchased).

v) <u>Testing for family life cycle</u>

Since:

$$F_i = \frac{U_i/(C_i-1)}{T - U_i/(N-C_i)}$$

where

U_i = sum of squares based on unadjusted deviation for predictor 5 (family life cycle)

C_i = total number of family life cycle categories

T = total sum of squares

N = number of individuals

Therefore,

$$F = \frac{39/(4-1)}{(1414-39)/(150-4)}$$

$$F = \frac{39/3}{1375/146} = 1.38$$

$F(3,146) = 1.38$, $P > .05$ (i.e. taking 3,146 degrees of freedom, the obtained value of F-ratio = 1.38 does not exceed the tabled value for $\alpha = .05$). The conclusion is that one should not reject the null hypothesis (H_0). This means, therefore, that the family life cycle has no significant effect in explaining variation in the dependent variable (i.e. the amount of life insurance purchased).

vi) Testing for income

Since:

$$F_i = \frac{U_i/(C_i-1)}{T = U_i/(N-C_i)}$$

where

U_i = sum of squares based on unadjusted deviations for predictor 6 (income)

C_i = total number of income categories

T = total sum of squares

N = number of individuals

Therefore,

$$F = \frac{721/(4-1)}{(1414-721)/(150-4)}$$

$$F = \frac{721/3}{693/146} = 50.59$$

$F(3,146) = 50.59$, $P < .01$ (i.e. taking 3,146 degrees of freedom, the obtained value of F-ratio = 50.59 exceeds the tabled value for $\alpha = .01$ level of significance). Hence, one should reject the null hypothesis (H_0) in favour of the alternative one (H_1). The conclusion is, therefore, that the income of the respondent has a significant effect in explaining variation in the dependent variable (i.e. the amount of life insurance purchased).

7.3 Smallest Space Analysis Findings

7.3.1 Interpretation of the MINISSA output

The smallest space analysis provides a space diagram which presents the variable points being investigated, plotted in a two-dimensional space for each typology of respondents (Insured and Non-insured). The MINISSA computer program calculates the position of each point according to the similarity (or dissimilarity) within the corresponding points. Points which are related to each other are closer and the more remote points being less related.

The number of variables identified, analysed and portrayed in the two configurations (see Figures 7.1 and 7.2), is 50. The number of cases (respondents) is n = 150 in each typology.

The present output of the MINISSA has revealed interesting findings, the most important finding of the study being the identification of the three main groups (facets) of variables that determine the life insurance purchasing behaviour (attitudinal variables). The three main facets (and subfacets) of variables identified within both typologies are:-

FACET D1 Reasons for Purchasing Life Insurance; with the following subfacets:

Subfacet $D1_a$ Family Benefits

Subfacet $D1_b$ Financial Aspects in Purchasing Life Insurance

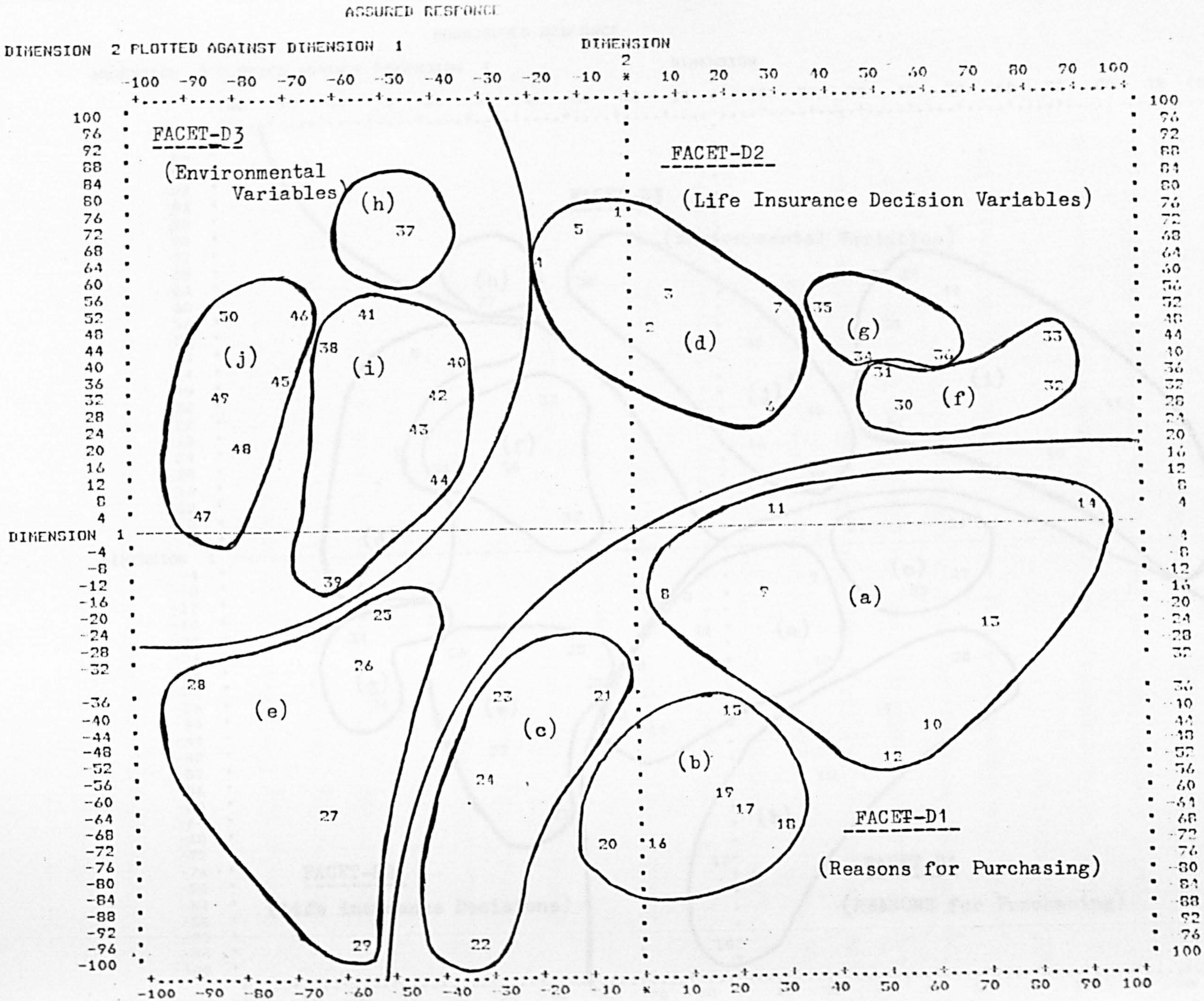

Figure 7.1 :The Configuration of Insured Typology (MINISSA output)

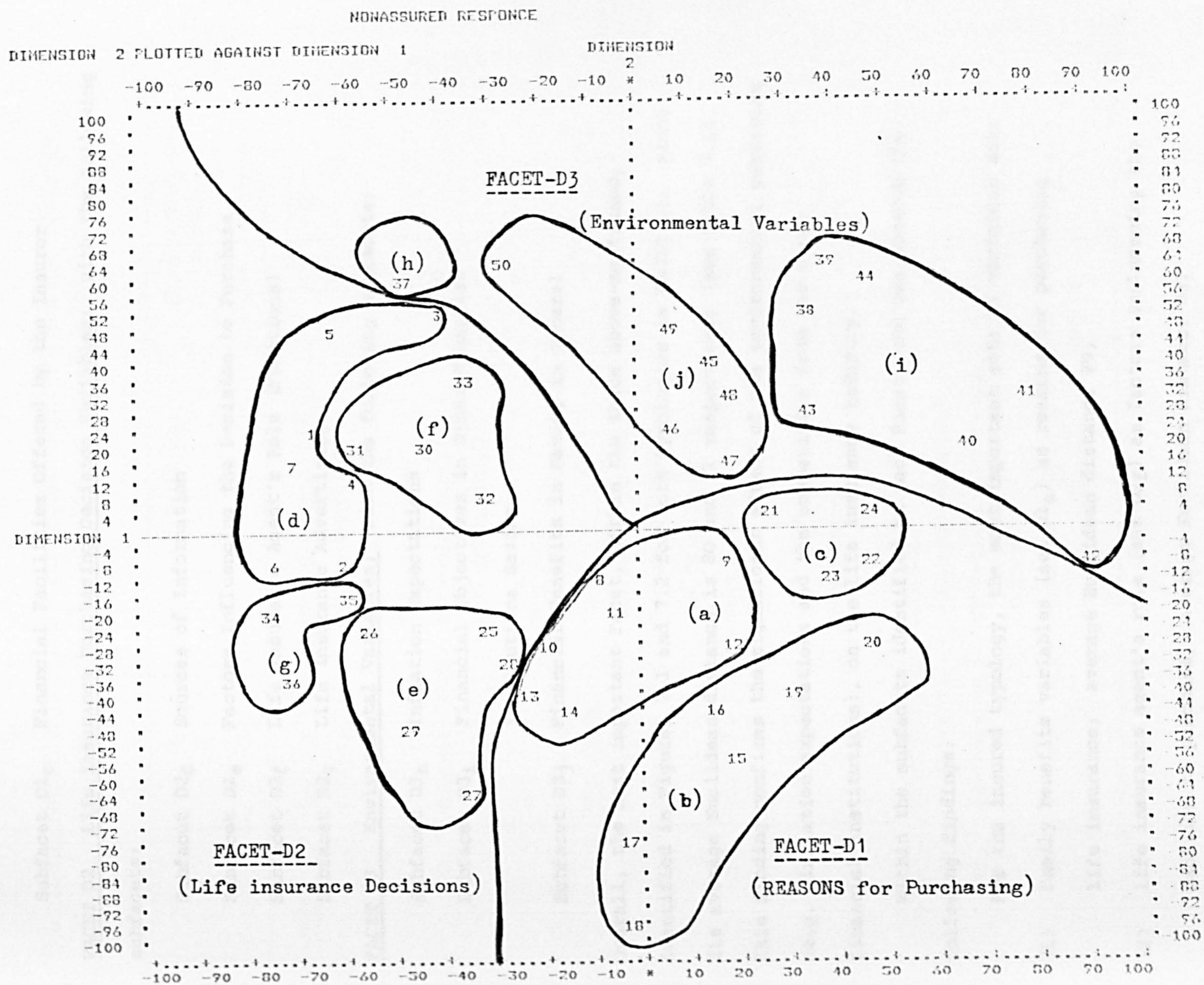

Figure 7.2 : The Configuration of Non-insured Typology (MINISSA output)

Subfacet $D1_c$ Financial Facilities Offered by the Insurer

FACET D2 Life Insurance Purchasing Decision Variables; with the following subfacets:

Subfacet $D2_d$ Sources of Information

Subfacet $D2_e$ Factors Influencing the Decision to Purchase

Subfacet $D2_f$ Life Insurance Agent's Role (Functions)

Subfacet $D2_g$ Life Insurance Advertising

FACET D3 Environmental Variables; with the following subfacets:

Subfacet $D3_h$ Inflation Expectations

Subfacet $D3_i$ Financial Objectives in Other Financial Institutions Saving

Subfacet $D3_j$ Financial Benefits in Saving in General

Overall, the most important Facet, within the three above-mentioned, identified in Figures 7.1 and 7.2 for both typologies is FACET D3; since its average Euclidean distance, is 80 and 71 respectively (see Table 7.1). This finding confirms the significant effect of the environmental variables (e.g. inflation expectations and the competition from the other financial institutions), on the life insurance industry.

Within the subfacets identified in each Facet, one can observe the following findings:

For the insured typology, the most important sets of variables are:

(1) Family benefits variables (set $D1_a$) as reasons for purchasing life insurance; average Euclidean distance 99,

(2) life insurance agent's role (set $D2_f$) as factors influencing the decision to purchase; average Euclidean distance 83,

(3) objectives for saving in the other financial institutions (set $D3_i$) as competition variables; average Euclidean distance 73.

Table 7.1 : The relative importance of Facets and Subfacets within life insurance purchasing behaviour variables (MINISSA Output)

No.	Title of Facets and Subfacets		Average Euclidean Distance	
			Insured	Non-insured
FACET D1	Reasons for Purchasing Life Insurance		104	100
$D1_a$	Subfacet (i)	Family benefits	99	99
$D1_b$	Subfacet (ii)	Financial aspects in life insurance	111	112
$D1_c$	Subfacet (iii)	Financial facilities offered by insurer	101	88
FACET D2	Life Insurance Purchasing Decision Variables		97	103
$D2_d$	Subfacet (i)	Sources of information	92	116
$D2_e$	Subfacet (ii)	Factors influencing the decision to buy	94	88
$D2_f$	Subfacet (iii)	Life insurance agent's role	83	81
$D2_g$	Subfacet (iv)	Life insurance advertising	118	125
FACET D3	Environmental Variables		80	71
$D3_h$	Subfacet (i)	Inflation expectations	80	63
$D3_i$	Subfacet (ii)	Objectives for saving in general	73	75
$D3_j$	Subfacet (iii)	Financial benefits in saving in general	86	74

For the non-insured typology, the most important sets of variables are:

(1) Financial facilities offered by the insurance (set $D1_c$); average Euclidean distance 88.

(2) The life insurance agent's role (functions (set $D2_f$); average Euclidean distance 81.

(3) Inflation expectations (set $D3_h$); average Euclidean distance 63.

For more details about each factor (element), within each Facet and Subfacet, this analysis follows for each typology.

7.3.2 The Insured Typology

The data collected in this study (Figure 7.1) was analysed and interpreted according to the Miller, Shepard and Chang's (1964) NMS approach; it is based on the interpoint (or intervariable) distances. The centroid point represents the average respondent (insured), and to this extent it is the explicit ideal point of the respondent interviewed. The distances from the centroid, for each of the three main facets, are represented by tables and portrayed separately. The Euclidean distance represents the importance which is attached to each variable investigated. On that basis, the greater the distance of a certain point the less important it is. The lower the distance then the more important it is. The variables which constitute each facet and subfacet are identified by name, number, co-ordinates and Euclidean distance (see Table 7.2).

FACET D1

Within this Facet's table and configuration, one can detect three main clusters of variables. Variables comprise financial family reasons for purchasing life insurance ($D1_a$), financial aspects of having life insurance ($D1_b$), and benefits and facilities provided by the insurer ($D1_c$).

The most important reason for the purchasing of life insurance (as perceived by the insured people), is for the "protection of their dependents" (Euclidean distance 64; Point 8); the importance of this point is more than double that of Point 14 (i.e. return on investment).

Figure 7.3 : FACET D1 - Reasons for purchasing life insurance

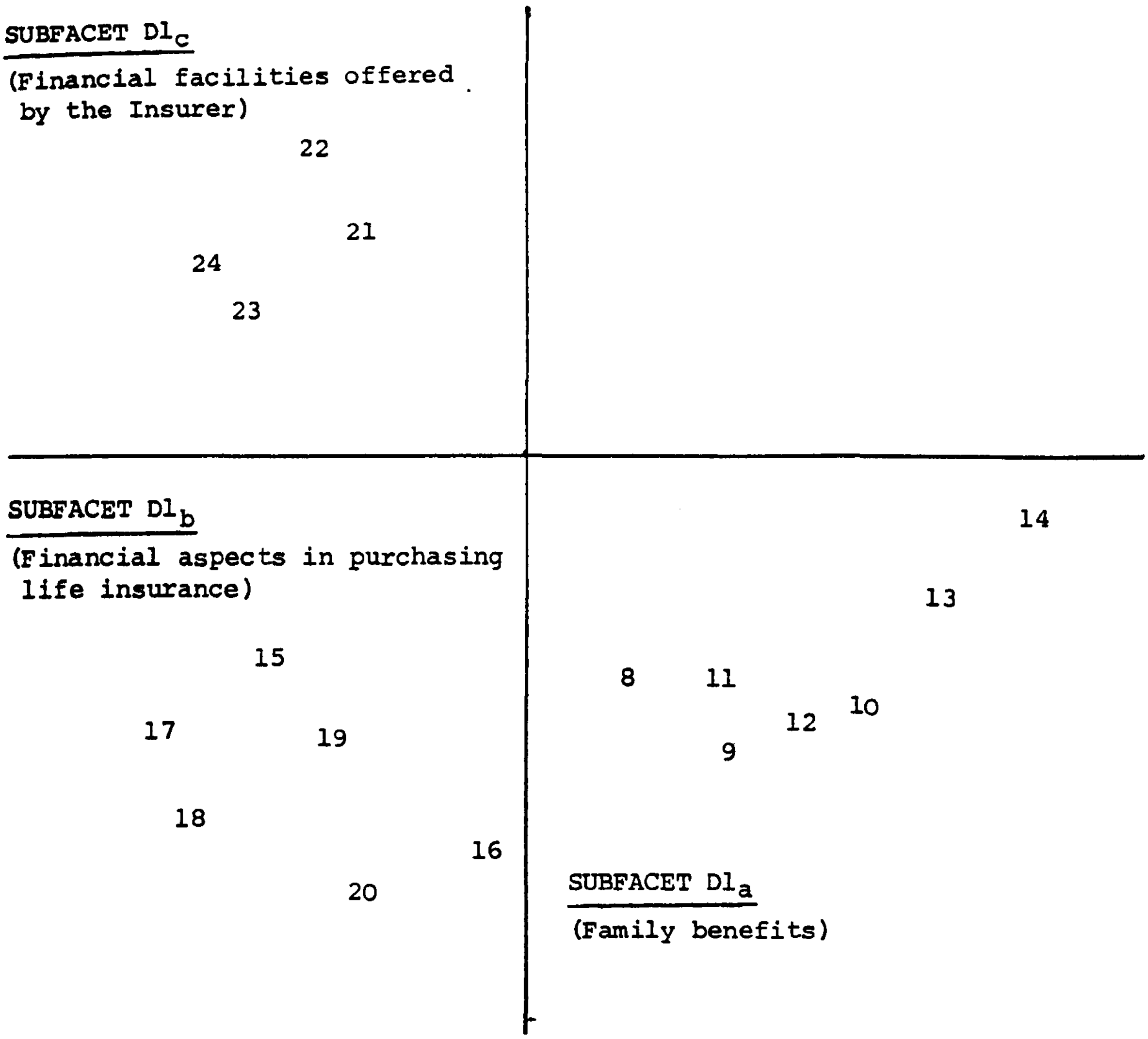

Table 7.2 : MINISSA Space Co-ordinates and Distances for 2 Dimensions (insured responses on FACET D1) (See Figure 7.1)

Reasons for purchasing life insurance		Dimensions		Distance from centroid
Content	No.	1	2	
Family benefits ($D1_a$)				
Protection of dependents	8	.26	.59	64
Retirement income/old age protection	9	.60	.76	97
Children's education	10	.89	.63	109
Daughters' marriage costs	11	.47	.57	72
Beginning a new business after retirement	12	.69	.74	101
Saving for emergencies	13	1.08	.36	113
Return on investment	14	1.37	.04	137
Financial aspects in having life insurance ($D1_b$)				
A good method of saving	15	.74	.58	94
Safety for money	16	.11	1.04	105
High return on investment	17	1.06	.66	125
Un-fixed return	18	.94	.82	125
Provision for inflation	19	.55	.79	96
Policy prizes (bonuses)	20	.45	1.10	119
Financial facilities offered by the insurer ($D1_c$)				
Profit sharing	21	.53	.69	87
Tax allowances	22	.61	1.11	126
Borrowing against the cash value of the policy	23	.80	.44	91
Surrender values	24	.85	.55	101

This is true since the main purpose of life insurance is to cover risks (protection element) and not to give a return on investments. An interesting finding is that "daughters' marriage costs" (Euclidean distance 72; Point 11) is the second most important reason for having life insurance. This is an important issue which could be used in advertising campaigns, in terms of a positive aspect of life insurance, instead of talking about death and accidents, normally distasteful matters. The third important factor in purchasing life insurance is the "retirement income" (Euclidean distance 97; Point 9).

The least important reasons in determining the life insurance purchasing decisions are found to be "beginning a new business after retirement" (Euclidean distance 101; Point 12), "children's education" (Euclidean distance 109; Point 10), "saving for emergencies" (Euclidean distance 113; Point 13), and "return on investment" (Euclidean distance 137; Point 14).

These findings are in line with a similar study conducted by Bamira, 1975, who stated "people refer to purchasing life insurance as a means of satisfying the need for protection, that also contains the saving element".

The second cluster of variables (Dl_b) relating to financial aspects, suggests that the most important aspects in having a life insurance policy are: "good method of saving" (Euclidean distance 94; Point 15), "provision for inflation" (Euclidean distance 96; Point 19), and the "safety for money" aspect (Euclidean distance 105; Point 16). Life insurance is a good method of saving, since it offers the small saver the chance of regular and modest amounts of saving. Of similar importance to the insured people is the variable "provision for inflation". This is in terms of certain methods should be carried out by the insurer in order to offset the effect of inflation on the policy benefits. Mehr and Gustavson (1984) indicated that the economic uncertainty of the late 1970s and early

1980s often manifested itself in high interest and inflation rates. These conditions resulted in a proliferation of new life insurance products designed to meet the inflation-induced needs of both insurers and insureds. Insurers offering only the traditional products experienced cash flow problems for a number of reasons. Many of their existing policyholders either cashed in their policies or withdrew sizeable sums through policy loan provisions, in order to take advantage of higher rates of return elsewhere. At the same time, other financial institutions became more aggressive in their competition for savings (Mehr and Gustavson, 1984). As a result, insurers experienced a significant decline in the sale of new traditional cash value insurance forms, with an increase in the replacement and lapse of existing policies.

One of the least important aspects of owning life insurance is that related to the return on investment in the life insurance product; the "high return on investment" (Euclidean distance 125; Point 17), and the "un-fixed return" (Euclidean distance 125; Point 18). "The policy prizes (bonuses)" is also of minor importance in having a life insurance policy (Euclidean distance 119; Point 20).

In the third cluster (Dl_c) of variables (financial benefits and facilities provided by the insurer), it is obvious that "profit sharing" (Euclidean distance 87; Point 21) is the major financial benefit produced by the insurer to the insured typology. It is one-and-a-half times more important than the tax allowance benefit: Point 22. The next important facility is "the borrowing against the cash value of the policy" (Euclidean distance 91; Point 23). It has been found that the insurance company in Egypt (where we took the sample of respondents) lends an amount of money equivalent to 90% of the legal reserve* of the policy. The company charges only 7% interest rate on that loan, while the borrower can invest this amount in a bank, for example, and get around 12% interest. This could support the above discussion regarding the provision for inflation and some compensation devices such as new product innovations (e.g., profit sharing), and the advantage of investing the borrowed cash value of the policy. The "surrender values" are also considered as an important benefit in purchasing life insurance (Euclidean distance 101; Point 24). They represent the policyholder's rights and could be of a significant amount, particularly in the case of the savings type policies (e.g., Endowment policy), with a long period of premium payments. The least important facility shown in this subfacet (cluster) is "tax allowance" (Euclidean distance 126; Point 22).

FACET D2

This Facet (figure 7.4) includes 18 variables grouped in 4 subfacets; D_{2d}, D_{2e}, D_{2f} and D_{2g}. They are discussed in detail in Table 7.3. Subfacet D_{2d} could be labelled "Sources of information"; subfacet D_{2e} is referred to as "Factors influencing the decision to purchase"; Subfacet D_{2f} is "Life insurance agent's functions"; and finally, Subfacet D_{2g} is "Life insurance advertising".

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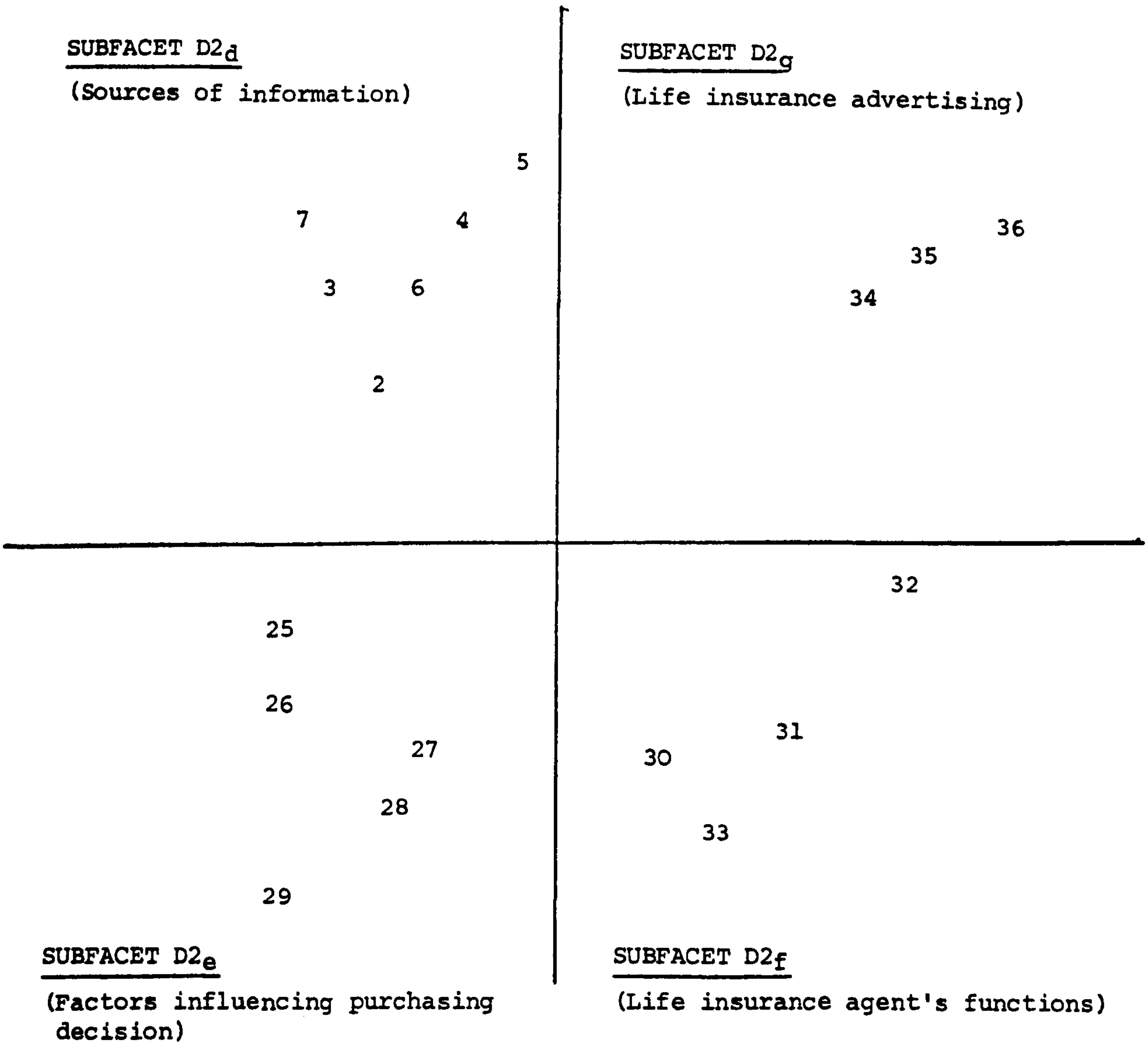
* Under the level premium method, premiums paid during the early years of the policy are higher than is necessary to pay current death claims. While those paid in the later years are inadequate for paying death claims. The redundant or excess premiums (i.e. paid during the early years) are invested at compound interest, and the accumulated funds are then used to supplement the inadequate premiums paid during the later years of the policy. This accumulated fund is referred to as 'legal reserve'.

Table 7.3 : MINISSA Space Co-ordinates and Distances for 2 Dimensions (insured responses on FACET D2)

The life insurance purchasing decision variables		Dimensions		Distance from centroid
Content	No.	1	2	
Sources of information ($D2_d$)				
Life insurance agent	2	.56	.48	74
Advertising - TV	3	.59	.68	90
Magazine/newspaper ads	4	.24	.89	92
Friends/relatives	5	.08	1.04	104
Points of sales (Company offices)	6	.42	.70	81
Work Place	7	.74	.84	112
Factors influencing the decision to purchase ($D2_e$)				
Husband/wife	25	.70	.26	75
Children	26	.71	.46	84
Insurance agent	27	.42	.64	76
Friends/relatives	28	.48	.73	87
Own decision	29	.97	1.07	145
The life insurance agent's functions ($D2_f$)				
Giving more detailed information	30	.25	.62	66
Helping to recognize the future financial problems	31	.62	.53	82
Helping to evaluate life insurance needs	32	.90	.06	91
Keeping in touch with the customers	33	.42	.84	93
The life insurance advertising ($D2_g$)				
Attractive/Exciting	34	.81	.71	108
Understandable/clear	35	.91	.74	117
Sufficient/interesting	36	.94	.87	128

Figure 7.4 : FACET D2 - The life insurance purchasing decision



In this facet analysis of the life insurance decision making process one can observe four clusters of variables influencing the life insurance purchasing decision. This is in terms of source of information, factors influencing the decision to purchase, the functions of the life insurance agent, and advertising life insurance. The most important source of information about life insurance was found to be the "life insurance agent" (Euclidean distance 74; Point 2). The second most important source to get information from was the "points of sales" i.e. the company branches or offices (Euclidean distance 81; Point 6). One can see also that "advertising - TV" (Euclidean distance 90; Point 3), and "magazine and newspaper advertisements" (Euclidean distance 92: Point 4) are of less importance than the life insurance agent and company's points of sales. This is an interesting finding as it means that the life insurance product is not as easy to understand as other goods and services from the media. This is natural because the life insurance issue is a complex one, requiring further explanation in order to be understood. In this case, there is a need for an advisory service within the general field of insurance (and in particular with life insurance), such advisory services are still not to be found in Egypt. The least important sources of information about life insurance are "friends/relatives" and "work place".

The identification of the variables within this subfacet of the life insurance decision-making process suggests that "husband/wife" (Euclidean distance 75; Point 25) is one of the most important influences. Since most of the life insurance purchased is to benefit the other partner, it represents almost double the importance of the own decision-making, Point 29. Another major factor for the insured people is the life insurance agent (Euclidean distance 76; Point 27). This is in terms of a role played by the insurance agent in the consumer satisfaction process in marketing life insurance. In the third position is the influence of "children existing" (Euclidean distance 84; Point 26). Bamira (1975) indicated that 80% of the adult populatior of the US owns some type of life insurance. The percentage goes up to over 90% for adults who are married with families. Moreover he stated that the ownership of life insurance can be regarded as more or less culturally dictated, i.e. when a person reaches a certain age, marries, and has children, should have a life insurance coverage. Of a similar importance is the advice obtained from "friends/relatives" (Euclidean distance 87: Point 28). The least important factor creating an influence on the life insurance purchasing decision is the "own decision" (Euclidean distance 145; Point 29).

When evaluating the important functions of the life insurance agent, one of the major tasks is to "give more detailed information about the life insurance product" (Euclidean distance 66; Point 30). The information needed is the method of illustrating the various types of policies, the relevant costs, the different benefits each type provides and so on. It also means the significant lack of such information expressed by the insured typology, which should encourage new planning for marketing strategies. This could be in the form of advertising and promotion campaigns and/or training plans for life insurance agents. The other functions which are of less importance are "helping to recognize the future financial problems", which a family could face and "helping to evaluate life insurance needs"(i.e. in terms of the convenient type and amount of insurance needed in accordance with the financial and social circumstances). Also "keeping in touch with the customer" so that the life insurance programme is continually updated.

The analysis of the life insurance advertising programme in Egypt revealed important findings. The insured people expressed an unfavourable evaluation of all characteristics of life insurance advertising within the media. Since the greater the distance is, the less important (or unfavourable evaluation) it is, the "sufficient/interest" aspect of the life insurance advertising, promotes more concern for the insured people (Euclidean distance 128; Point 36). Indeed, the advertising programmes on life insurance in Egypt are, merely, for the insurance company's name, with no information or even mention of the life insurance product. The only advertising message about life insurance is to be found in newspapers, but this is still insufficient in terms of the message content. The fundamental characteristics of the life insurance market are accompanied by dynamic and rapid changes in the customers' needs and desires. The existence of inflation and competition from other financial institutions, require more attention to be paid in order to achieve a better understanding of customers' wants and desires (Meidan, 1984).

This could be done through an effective market research system providing an adequate volume of new business at a reasonable level of cost, and securing success for the life insurance company. In other words, the marketing communication in this field should be planned carefully, not only in terms of media planning, but also in terms of message content.

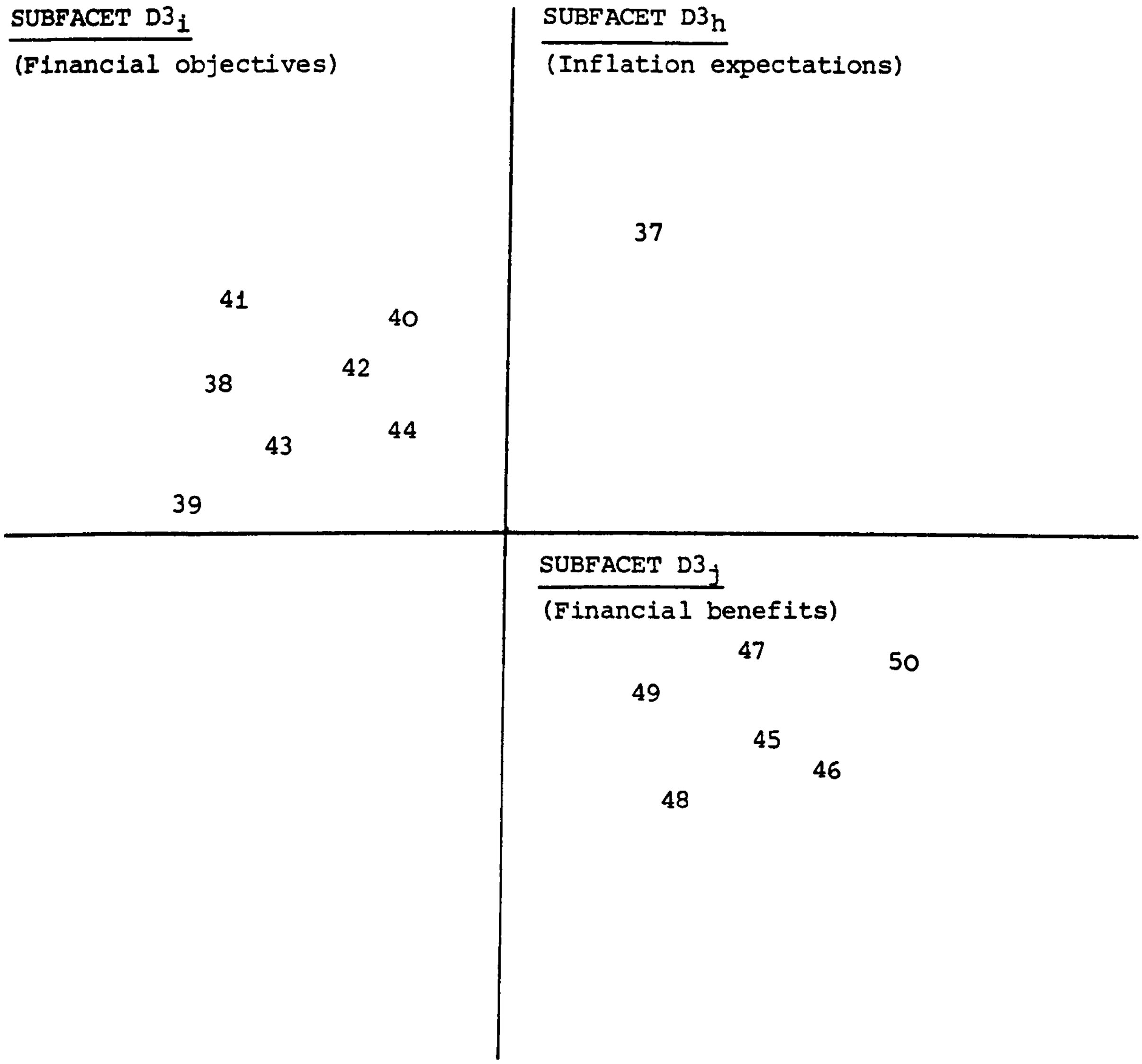
FACET D3

This facet of analysis, (Environmental variables), relates to the consumers' expectations for price rises (inflation) and the competition imposed by the other financial institutions services (Table 7.4 and Figure 7.5). The inflation expectation variable was found to be of great concern to the insured people when making a decision to purchase life insurance (Euclidean distance 80; Point 37). It is one-and-a-half times more important than that of "safety for money" aspect (Euclidean distance 116: Point 46). The impact of inflation upon life insurance contracts and sales has been of increasing concern to both the consumer and the insurance industry. From the consumers' point of view, the effects of inflation on life insurance contracts are especially pronounced due to two factors:

Table 7.4 : MINISSA Space Co-ordinates and Distances for 2 Dimensions (Insured Responses on FACET D3)

Environmental Variables		Dimensions		Distances from centroid
Content	No.	1	2	
Inflation expectations D_{3h}	37	.66	.44	80
Objectives in saving with other institutions D_{3i}				
Protection of dependents	38	.79	.42	89
Retirement income	39	.83	.21	86
Children's education	40	.23	.45	50
Daughters' marriage costs	41	.77	.63	99
Begin a new business after retirement	42	.86	.26	90
Saving for emergencies	43	.22	.53	57
Return on investment	44	.26	.29	39
Financial benefits D_{3j}				
A good method of saving	45	.69	.49	84
Safety for money	46	.93	.70	116
High return on investment	47	.61	.27	66
Un-fixed return	48	.48	.66	82
Provision for inflation	49	.34	.42	54
Investment prizes	50	1.08	.26	111

Figure 7.5 : FACET D3 - Inflation and the Competition of Other Financial Institutions



(i), Life insurance values (benefits) are specified in fixed nominal currency units; to that extent they do not adjust to compensate for the value erosion produced by inflation. (ii), The characteristic of these contracts is long-term and therefore the accumulated erosive effects of inflation on the insurance values can be quite substantial. This is true, if we imagine that prices increase by a yearly average of 5% and the average life insurance policy extends over 20 years; this means that the money (policy benefit) is going to lose about 62% of its value during 20 years*.

A number of writers have examined various aspects of the effect of inflation upon life insurance. Hofflander and Duvall, 1967 (Inflation and Sales of Life Insurance), concluded that inflation not only detracts from the purchasing power of the benefits paid, but also decreases substantially the sales of new insurance. They argued that inflation has been accompanied by decreases in the sales of both permanent and term life insurance.

Neumann, in 1968, criticised the study of Hofflander and Duvall and then followed this by conducting his own study in 1969 (Inflation and Saving Through Life Insurance). Neumann tested the hypothesis that inflation is not adverse to saving through life insurance, and concluded by accepting the hypothesis, i.e. there was no significant effect of inflation on saving through life insurance.

Fortune, in 1972, commented on the limitation of Neumann's approach and concluded that the expected rate of inflation does have a negative impact on life insurance through its effect on the relative real yields of financial and real assets.

A similar study, conducted by Diacon in 1980, (on the Demand for Life Insurance in England), indicated that inflation expectations have a negative effect on new contractual savings via life insurance. In a recent study, in 1981, Babbel concluded that inflation (expected and/or realized) was negatively related to net real per capita life insurance in force in Brazil.

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* The Price Index in 20 years = $(1 + .05)^{20} = 2.65$.
Money value index = $\frac{1}{2.65} = 0.38$, i.e. the decrease of money value $1 - .38 = .62$.

With regard to the competition of the other financial savings, and to what extent this could affect life insurance purchases, one can see that one of the most important objectives in saving with the other financial institutions is the "return on investments" (Euclidean distance 39; Point 44). It is more than double the importance of both "protection of dependents" (Euclidean distance 89; Point 38), and "retirement income" (Euclidean distance 86; Point 39).

Other variables which represent important objectives to the insured people when saving with the other channels of investments are "children's education" (Euclidean distance 50; Point 40), and "saving for emergencies" (Euclidean distance 57; Point 43). The least important variables which comprise some of the objectives for saving in general are "begin a new business" (Euclidean distance 90; Point 42), and "daughter's marriage costs" (Euclidean distance 99; Point 41).

There are some interesting findings shown in this subfacet analysis on the important financial aspects in saving through the other financial institutions. The most desirable aspect in saving in general (excluding the life insurance), is the "provision for inflation" (Euclidean distance 54; Point 49). This is because of the high return on investments, resulting from the increasing interest rates (this is always concomitant with the increase in inflation rates), could offset the decline in the purchasing power of money. There are also other aspects of minor importance, desired by the insured typology from saving in general. The "unfixed return on investments" (Euclidean distance 82; Point 48), in terms of getting a return proportionate to the actual investment results (i.e. without pre-specifying of the rate of interest). This is an increasing trend in our society for some religious reasons. Also the insureds consider saving through the other financial institutions as a "good method of saving" (Euclidean distance 84; Point 45); this is because it provides a convenient method of access on demand to the money invested, without capital losses.

The least important financial aspect sought in saving with other channels of investments is the "safety for money" (Euclidean distance 116; Point 46). One can see the logic of this finding when observing that the "high return on investments" (Euclidean distance 66; Point 47), is the second most important variable in this subfacet of analysis. Since the higher the return sought, the greater the investment risk involved and vice versa. For example, the Government Bonds yield relatively lower return, but have a low risk.

Dougall and Corrigan, in 1978, stated that: "the smaller the fund and the greater the importance of each dollar of income, the lesser is the risk that can be assumed and the lower the rate of income that can be obtained with required safety". In other words, if assurance of income is paramount, the high return of income must be sacrificed.

7.3.3 The Non-insured Typology

The findings below relate to the information collected from non-insured respondents on an identical questionnaire (appendix 1a). The findings of this typology are as follows:

There are three main facets:

FACET D1 "Reasons for Purchasing Life Insurance"

FACET D2 "Life Insurance Purchasing Decision Variables"

FACET D3 "Environmental Variables"

Discussing firstly FACET D1 (see Table 7.5 and Figure 7.6).

FACET D1

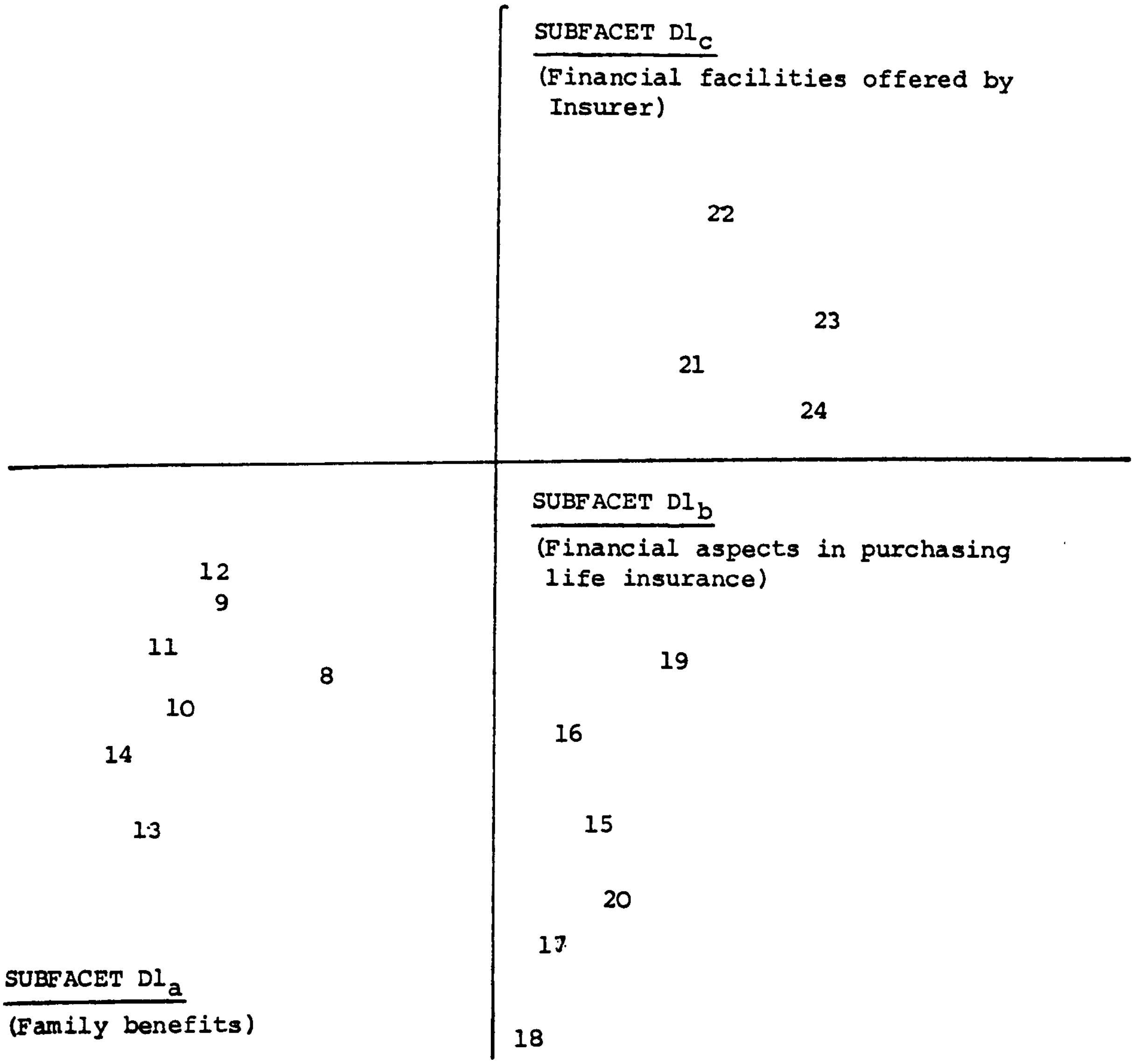
The most important reason (family benefits) for having life insurance for the non-insured person is the "protection of dependents" (Euclidean distance 72; Point 8). This reason is one-and-a-half times more important than the importance attached to "saving for emergencies" (Point 13). The non-insured typology considers "retirment income/old age protection" (Euclidean distance 78; Point 9) and "beginning a new business after retirement" (Euclidean distance 79; Point 12) to be in second and third place of importance respectively, whereas "children's education" (Euclidean distance 109; Point 10) and "daughters' marriage costs" (Euclidean distance 100: Point 11) appear to be of less importance. The least important reasons for purchasing life insurance, as expressed by the non-insured typology appear to be "return on investment" (Euclidean distance 124; Point 14), and "saving for emergencies" (Euclidean distance 132; Point 13).

One can see, in this subfacet of analysis, that both insured and non-insured people consider that the "protection of dependents" factor is the most important one when purchasing life insurance. This could support the fact that protection of dependents, particularly in the case of premature death of the family breadwinner, is the most distinctive function of life insurance coverage. With regard to other reasons for purchasing life insurance, the non-insured's place "retirement income" and "beginning a new business after retirement" in the second and third place of importance respectively. Also one can see other variables showing a common perception of less importance (for both typologies) namely: "children's education", "saving for emergencies", and "return on investment". This is supported by Dougall and Corrigan (1978) who

Table 7.5 : MINISSA Space Co-ordinates and Distances for 2 Dimensions (Non-insured Responses on FACET D1)

Reasons for Purchasing Life Insurance		Dimensions		Distances from centroid
Content	No.	1	2	
Family Benefits ($D1_a$)				
Protection of dependents	8	.42	.59	72
Retirement income/old age protection	9	.72	.31	78
Children's education	10	.87	.65	109
Daughters' marriage costs	11	.89	.44	100
Beginning a new business after retirement	12	.74	.28	79
Saving for emergencies	13	.90	.98	132
Return on investment	14	.99	.75	124
Financial Aspects Sought of in Purchasing Life Insurance ($D1_b$)				
A good method of saving	15	.39	.94	102
Safety for money	16	.31	.73	79
High return on investment	17	.21	1.31	132
Un-fixed return	18	.06	1.65	165
Provision for inflation	19	.53	.50	73
Policy prizes (bonuses)	20	.36	1.13	118
Financial Facilities Offered by the Insurer ($D1_c$)				
Profit sharing	21	.52	.33	62
Tax allowance	22	.70	.77	104
Borrowing against the cash value of the policy	23	.87	.42	97
Surrender values	24	.88	.06	86

Figure 7.6 FACET D1 - Reasons for buying life insurance



indicated that if the individual's objective is the provision for the education of his children (as one of the purposes of saving and investment), and the need for money is some years away, he may decide that growth of capital (i.e. a return on investment) is required. If one of the objectives is to provide for sudden emergencies, liquidity or immediate recovery of the principal (i.e. the face value of money invested) is a requirement. In both these cases, however, life insurance cannot be of much help.

The "provision for inflation" variable is considered as the most important financial aspect sought in purchasing life insurance for the non-insured people (Euclidean distance 73; Point 19). In the second position is the "safety for money" (Euclidean distance 79; Point 16). One can see that the "provision for inflation" variable is more than double the importance of the "un-fixed return" (Euclidean distance 165; Point 18). It could be suggested in this case that this might be one of the reasons for not buying life insurance on the part of those (non-insured) people.

The "safety for money" concept, as the second most important factor, is one-and-a-half times more important than that in the high return on investment (Point 17). Indeed, the distinctive characteristic of life insurance companies' function, is the immediate recovery of the principal to provide for the beneficiaries of its policyholders. Moreover, they hold the largest amount of assets and carry out, more cautiously, well-planned investment policies in order to protect both shareholders' and policyholders' rights.

The most important financial facility offered by the insurer, from the non-insured viewpoint, is "profit sharing" (Euclidean distance 62; Point 21). This is more than one-and-a-half times more important than "tax allowances". The second most important factor in this subfacet analysis is the "surrender values" (Euclidean distance 86; Point 24). Two other variables perceived by non-insured people as of minor importance are: "borrowing against the cash value of the policy" (Euclidean distance 97; Point 23), and "tax allowances" (Euclidean distance 104; Point 22).

FACET D2

This facet comprises four clusters of variables (Figure 7.7) which are supposed to have some influence on the purchasing decision. These

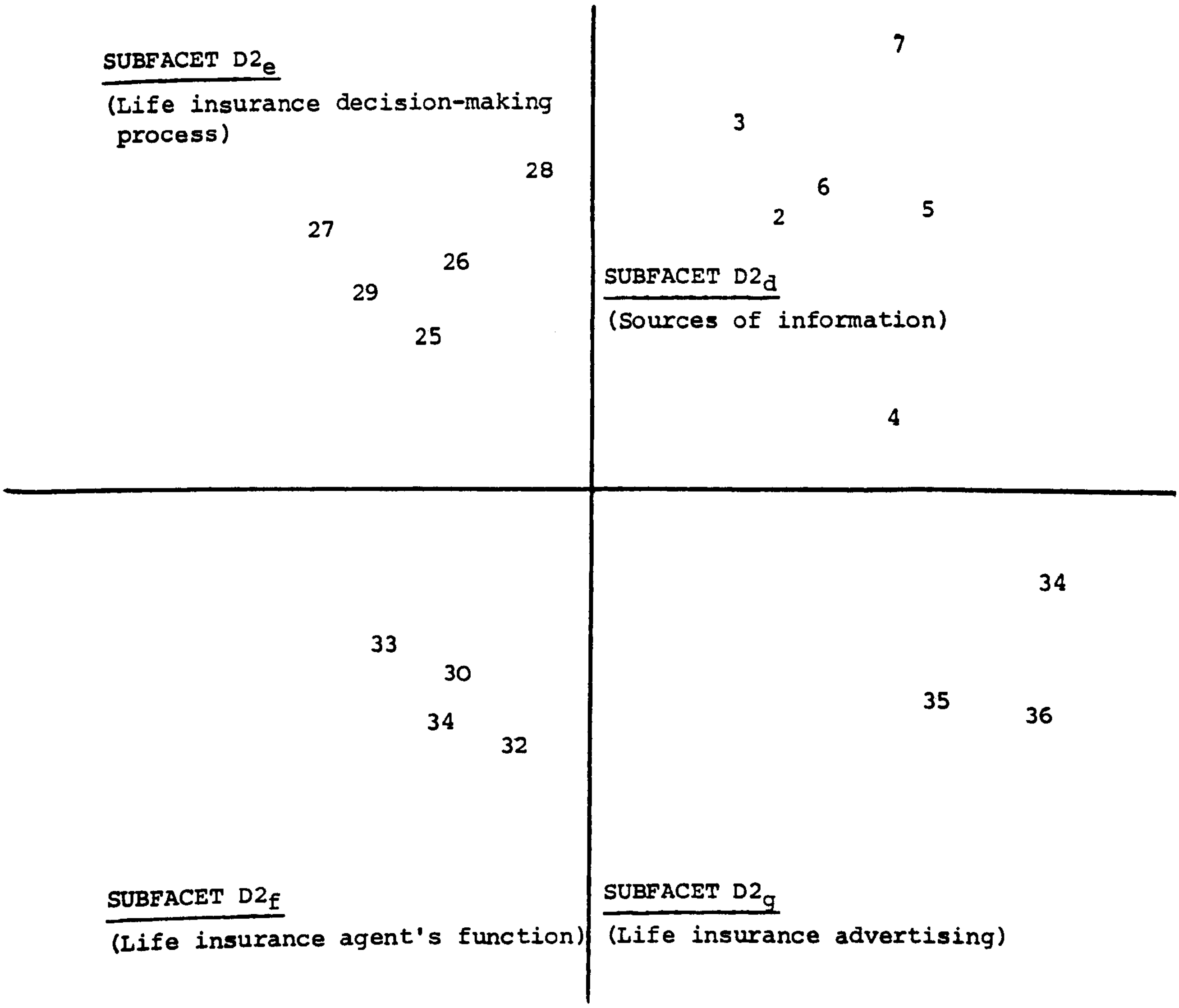
Table 7.6 : MINISSA Space Co-ordinates and Distances for 2 Dimensions (Non-insured responses on FACET D2)

Life insurance purchasing decision variables		Dimensions		Distance from centroid
Content	No.	1	2	
Sources of information available ($D2_d$)				
Life insurance agent	2	.56	.78	96
Advertising - TV	3	.49	1.07	118
Magazine/newspaper ads	4	.90	.13	91
Friends/relatives	5	.99	.77	126
Points of sales (Company offices)	6	.68	.88	111
Work place	7	.91	1.27	156
Life insurance decision-making process ($D2_e$)				
Husband/wife	25	.44	.59	73
Children	26	.62	.46	77
Insurance agent	27	.74	.80	108
Relatives/friends	28	.95	.09	96
Own decision	29	.59	.64	87
Life insurance agent's functions ($D2_f$)				
To give more detailed information about life insurance products	30	.54	.57	78
To help to recognize the future financial problems	31	.69	.57	90
To help evaluate life insurance needs	32	.69	.30	75
To keep in touch with customers	33	.50	.61	79
Life insurance advertising in the media ($D2_g$)				
Attractive/exciting	34	1.25	.34	129
Understandable/clear	35	.95	.66	118
Sufficient/interesting	36	1.17	.59	131

four groups are: Sources of Information ($D2_d$), Life Insurance Decision-making Process Variables ($D2_e$), Functions to be Carried Out by the Insurance Agent ($D2_f$) and Advertising Life Insurance in the Media ($D2_g$).

The $D2_d$ clusters of variables (Sources of Information) suggests that the most important source of information, to the non-insured typology, is the "magazines/newspapers" (Euclidean distance 91; Point 4). It is more than one-and-a-half the importance of the "work place" point and is placed even before the "life insurance agent" (Euclidean distance 96; Point 2). This could be accounted for by the idea that the public might not want to be put under pressure, from the insurance agent, to buy, before they have had a complete satisfaction. The other sources

Figure 7.7 FACET D2 - Life Insurance Purchasing Decision Variables



of information which are of minor importance to the non-insured people are: "points of sales" (Euclidean distance 111; Point 6), and "advertising on the television" (Euclidean distance 118; Point 3). The least important sources in this cluster of variables are: "friends/ relatives" (Euclidean distance 126; Point 5) and "work place" (Euclidean distance 156: Point 7).

The $D2_e$ group of variables, relating to the life insurance decision-making process, has revealed interesting findings. The non-insured person place the other partner (husband or wife), as the most important source of influence, if they have to make a decision to purchase life insurance. This is one-and-a-half times more important than the life insurance agent's opinion variable (Point 27). Also the existence of children has an important influence when making that decision (to purchase life insurance). The "own decision" variable (Euclidean distance 87; Point 29) has some importance in making the decision to purchase life insurance. This could be true, as some people see that owing a life insurance policy is a rather confidential matter and, is frequently not to be discussed, even among close friends.

The least important sources of influence in purchasing life insurance from the non-insured person's point of view are "relatives and friends" (Euclidean distance 96; Point 28) and "insurance agent" (Euclidean distance 108; Point 27).

The $D2_f$ subfacet analysis relates to the life insurance agent's functions. The Table 7.6 indicates that the most important function of a life insurance agent is to help in evaluating life insurance needs (i.e. the appropriate type of policy) in the light of family, financial and social circumstances. In the second position of importance, the non-insured typology considers "providing more detailed information" as one of the life insurance agent's functions (Euclidean distance 78; Point 30), also keeping in touch and informing customers on any new policies or benefits.

The least important function, as perceived by the non-insured people, is to "help in recognising the future family financial problems" (Euclidean distance 90; Point 31).

The analysis of life insurance advertising $D2_g$ shows, once again, the poor quality of the advertising programmes within the media. The unfavourable evaluation by the non-insured typology, indicates the "insufficient" aspect of life insurance advertising; it has the highest score (Euclidean distance 131; Point 36). The "attractive/exciting" aspect is in second place for an unfavourable evaluation (Euclidean distance 129; Point 34). In the third place comes the "understandable/ clear" aspect (Euclidean distance 118; Point 35).

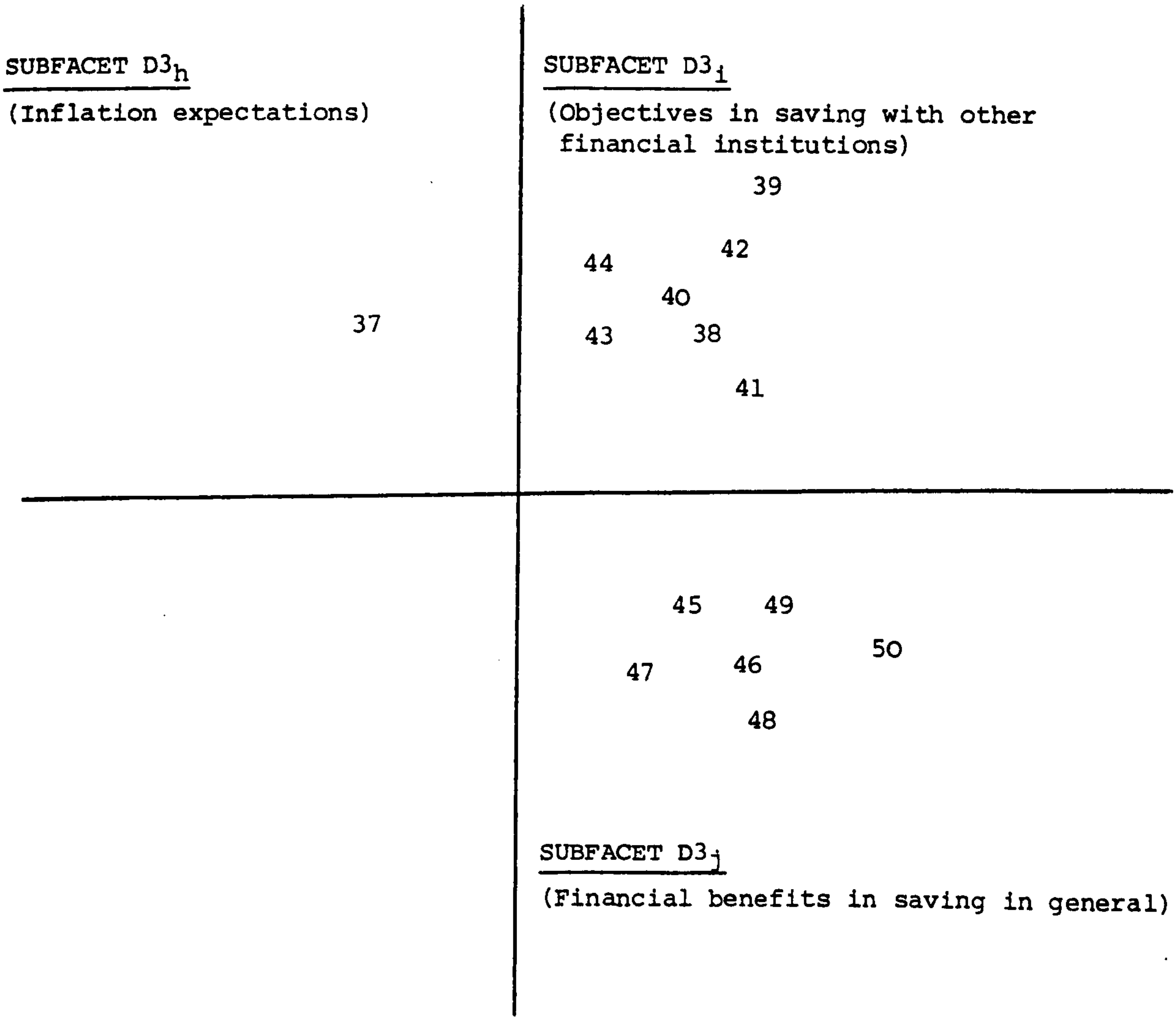
FACET D3

This facet of analysis (Environmental variables), relates to consumer expectations for economic conditions (e.g. inflation) ($D3_h$) and the competition from other financial institutions to the life insurance industry ($D3_i$ and $D3_j$). The non-insured people expressed greater concern about inflation, before purchasing life insurance (Euclidean distance 63; Point 37). It is very much lower (i.e. more important) than in the case of the insured typology for the same variable (see Table 7.4). The non-insured typology considers "saving for emergencies" (i.e. illness or accidents), as the most important objective to save in the other financial institutions (Euclidean distance 55; Point 43).

Table 7.7 : MINISSA Space Co-ordinates and Distance for 2 Dimensions (Non-insured responses on FACET D3)

Environmental Variables		Dimensions		Distances from centroid
Content	No.	1	2	
Inflation expectations ($D3_h$)	37	.40	.49	63
Objectives of saving with other financial intermediaries ($D3_i$)				
Protection of dependents	38	.51	.47	69
Retirement income	39	.67	.89	112
Children's education	40	.42	.49	64
Daughters' marriage costs	41	.59	.29	66
Begin a new business after retirement	42	.62	.72	96
Saving for emergencies	43	.26	.48	55
Return on investment	44	.20	.59	63
Financial benefits ($D3_j$)				
A good method of saving	45	.45	.42	62
Safety for money	46	.68	.47	83
High return on investment	47	.33	.45	56
Un-fixed return	48	.62	.54	82
Provision for inflation	49	.64	.42	77
Investment prizes	50	.77	.32	83

Figure 7.8: FACET D3 - Inflation and the Competition of Other Financial Institutions



In other words, the analysis shows only the priorities of objectives preferred. In the second place of importance, the non-insured saves to get "return on investments" (Euclidean distance 63; Point 44) and of similar importance comes "children's education" (Euclidean distance 64; Point 40). Also "daughters' marriage costs" (Euclidean distance 66; Point 41) and "protection of dependents" (Euclidean distance 69; Point 38), represent important objectives for saving to the non-insured typology. The least important objectives for saving in general, to this typology, are "beginning a new business after retirement" (Euclidean distance 96; Point 42) and "retirement income" (Euclidean distance 112; Point 39). This could be explained as a result of the pension schemes operated by the government. With regard to the financial benefits sought in saving with other financial institutions, the non-insured people consider "high return on investment" as the first most important one. This is one-and-a half times more important than the "safety for money" factor. The second most important aspect is "a good method of saving" (Euclidean distance 62; Point 45).

7.3.4 Comparison of the Two Typologies

The comparison between the two typologies can be carried out by investigating the main similarities or dissimilarities between their expressed attitudes towards the variables determining life insurance purchasing decisions. The data compared are the vectorial Euclidean distances as obtained from the MINISSA computer program (table 7.8).

Interesting findings could be observed from this comparative analysis. With regard to FACET D1 (i.e. reasons for purchasing life insurance), both typologies have the same conception, i.e. that the most important reason for purchasing life insurance is the protection of dependents, whereas in second position of importance the insured people place daughters' marriage costs, while the non-insured people place retirement income.

Concerning the financial aspects sought when purchasing life insurance, (Subfacet $D1_b$) the insured typology considers that life insurance is a good method of saving, while the non-insured typology is more concerned about the methods used in the provision for inflation and safety for money aspect, if he should decide to purchase a life insurance policy. Within Subfacet D_{1c} (financial facilities), though the profit

Table 7.8 : Comparative Attitudes of the Two Typologies

Variable		Euclidean Distance	
Content	No.	Insured	Non-insured
FACET D1 (Reasons for Purchasing Life Insurance)			
SUBFACET D1a (Family benefits)			
Protection of dependents	8	64	72
Retirement income	9	97	78
Children's education	10	109	109
Daughters' marriage costs	11	72	100
Beginning a new business after retirement	12	101	79
Saving for emergencies	13	113	132
Return on investment	14	137	124
SUBFACET D1b (Financial aspects in purchasing life insurance)			
A good method of saving	15	94	102
Safety for money	16	105	79
High return on investment	17	125	132
Un-fixed return	18	125	165
Provision for inflation	19	96	73
Policy prizes (bonuses)	20	119	118
SUBFACET D1c (Financial facilities offered by the insurer)			
Profit sharing	21	87	62
Tax allowances	22	126	104
Borrowing	23	91	97
Surrender values	24	101	89
FACET D2 (Life Insurance Decision Variables)			
SUBFACET D2a (Sources of information available)			
Life insurance agent	2	74	96
Advertising - TV	3	90	118
Newspaper/magazine ads	4	92	91
Friends/relatives	5	104	126
Point of sales (Company offices)	6	81	111
Work place	7	112	156
SUBFACET D2b (Life insurance advertising)			
Attractive/exciting	34	108	129
Understandable/clear	35	117	116
Sufficient/interesting	36	128	131

Table 7.8 (continued)

Variable		Euclidean Distance	
Content	No.	Insured	Non-insured
SUBFACET D2e (Life insurance agent's functions)			
Giving more detailed information	30	66	78
Helping to recognise the future financial problems	31	82	90
Helping to evaluate life insurance needs	32	91	75
Keeping in touch with customer	33	93	79
SUBFACET D2g (Decision-making variables)			
Husband/wife	25	75	73
Children	26	84	77
Insurance agent	27	78	108
Relatives/friends	28	87	96
Own decision	29	145	87
FACET D3 (Environmental Variables) SUBFACET D3h (Inflation)			
Inflation expectations	37	80	63
SUBFACET D3i (Competition of financial objectives from other financial institutions savings			
Protection of dependents	38	89	69
Retirement income	39	86	112
Children's education	40	50	64
Daughters' marriage costs	41	99	66
Beginning a new business after retirement	42	90	96
Saving for emergencies	43	57	55
Return on investment	44	39	63
SUBFACET D3j (Financial benefits in saving in general)			
A good method of saving	45	84	62
Safety for money	46	116	83
High return on investment	47	66	56
Un-fixed return	48	82	82
Provision for inflation	49	54	77
Investment prizes	50	111	83

sharing benefit appears to be of great concern to both typologies, it is of greater concern to the non-insured person. Within the second most important facility, the insured consideres borrowing against the cash value, whereas the non-insured prefers the guarantee of surrender values.

With regard to FACET D2 (Life Insurance Decision Variables), the insured person sees the life insurance agent and the points of sales as the most major sources of information available, while the non-insured person considers firstly, the newspaper advertisements and, secondly, the insurance agent. With respect to the evaluation of life insurance advertising (Subfacet $D2_f$), both typologies have almost a common conception of unfavourable evaluations within all aspects of life insurance advertising, in particular to the sufficient aspect. Advertising insurance in general, within Egypt, is by the name of the Company only, and says nothing about life insurance product. In 1984, Meidan stated that "ten years ago the only form of advertising used by the life insurance companies (in England) was designed to establish their image". Now, greater attention should be paid to the advertising message in terms of clearer, more attractive and sufficient content.

FACET D3 relates to the "Environmental variables" which may affect life insurance purchasing decisions (i.e. inflation and the competition from other financial institutions). One can see that consumers' expectations of economic conditions (e.g. inflation) were taken into consideration when purchasing life insurance and were considered to be of great concern by both typologies.

The competition from other financial institutions to the life insurance industry, appears in terms of two main advantages: (i) "return on investment" and "saving for emergencies". Both typologies have almost the same conception with regard to these two variables.

7.4 Correlation Analysis

7.4.1 The Insured Typology

The Kenall's (tau; τ) correlation results with regard to the various variables which determine the life insurance purchasing behaviour are shown in appendix 6a. In interpreting the correlation coefficients (significant at .01 level), the following arbitrary scale was used:

(1) τ less than 0.10 = negligible correlation

(2) τ of 0.11 to 0.30 = weak correlation

(3) τ of 0.31 to 0.49 = fair correlation

(4) τ of 0.50 to 0.69 = strong correlation

(5) τ of 0.70 to 0.89 = very strong correlation

(6) τ of 0.90 or higher were considered to indicate perfect correlation.

With regard to FACET D1 (Reasons for Purchasing Life Insurance), one can see that the "protection of dependents" (Variable 8) is weakly correlated with the Television advertisements as a source of information about life insurance (Variable 3; τ = .14), whereas it is relatively higher correlated with the retirement income (Variable 9; τ = .21).

This is a natural relationship since both variables ("protection of dependents" and "Retirement income") are the main benefits of the policy under investigation (Endowment). In addition, the most important reason for purchasing life insurance, as we have seen above, ("protection of dependents") is negatively correlated to the "return on investment" (Variable 14; τ = -.17). This result supports the argument we have mentioned before regarding the main purpose of life insurance as to cover risks and not to yield a return. The protection of dependents variable is strongly correlated to the "daughters' marriage costs" variable (τ = .52).

Also, the daughters' marriage costs variable, (the second most important reason for purchasing life insurance), is fairly positive when correlated to the children's education (Variable 10; τ = .32), and, to beginning a new business after retirement (Variable 12; τ = .34). Concerning the inflation and life insurance purchasing decision, the correlation results suggested that the provision for inflation (Variable 19) is fairly correlated to the return on investments (Variable 18; τ = .33); also the same variable (provision for inflation) is strongly associated with that of profit sharing (Variable 21; τ = .50). These results support the idea that the profit sharing and/or the return on investment aspects in life insurance are sought of as some compensation methods in order to offset the effect of inflation on life insurance benefits. The concern about inflation, however, with respect to the purchasing of life insurance was found to be most likely sought of between those who are more aware of life insurance since the correlation between inflation expectation (Variable 37) and life insurance information load (Variable 1) is τ = .34. Moreover, one can detect that inflation expectation fears are higher in correlation to the objective of saving for daughters' marriage costs (Variable 11; τ = .34), than to that of the objective of protection of dependents (Variable 8; τ = .15). This means, in other words, that the greater the saving element involved in a life insurance policy, the greater the concern of the erosion effect of inflation upon life insurance benefits. Within the life insurance purchasing decision-making process, one can see that the inclusion of insurance agent is involved when using the life insurance agent as an information source; τ = .31. When the objective of purchasing is to protect the dependents, the other partner is included when making such a decision (τ = .26), whereas the own decision is negatively correlated (τ = -.25). If the reason for purchasing is to save money for beginning a new business after retirement (Variable 12), the insurance agent is most likely to be involved in making the decision (τ =.30). This also supports the arguments that the life insurance agent tries to sell the most profitable policy from his point of view, (i.e. the policy which involves greater amount of saving element, e.g. the Endowment one). More than 90%* of life insurance purchases in Egypt are Endowment policies. This is because the commission is proportionate to the premium paid, which in its turn depends on the type of policy purchased. The greater the saving element involved the greater the premium to be paid and vice versa.

The existence of children (Variable 26) is also associated with the other partner (husband/wife) when making the decision to purchase life insurance (τ =.42). The relationship between the variables friends/ relatives and the life insurance agent (τ =.51) also show a strong correlation. This means that if the family seeks some advice in regard to the purchasing of life insurance it would be from both the relatives/ friends and/or the insurance agent.

The life insurance awareness among the Egyptian public (Variable 1) is negatively correlated to the life insurance agent as a source of information (Variable 2; τ = -.30), whereas it is fairly correlated to each of magazines/newspapers advertisement, point of sales (Company offices) and work place (τ = .34, .30 and .25 respectively). These results confirm the lack of such information (awareness) to be provided by the insurance agent. It was previously indicated (see the smallest space analysis findings) that both the insured and non-insured

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* The Year Book of the Egyptian Insurance Market 1982/1983, issued by The Egyptian Insurance Supervisory Authority (in Arabic).

typologies have expressed great concern in regard to the life insurance agent's function in giving more detailed information about life insurance products. Finally, the evaluation of life insurance advertising in the media has indicated a high correlation with respect to the three major aspects of the advertising message. The attractive/exciting aspect (Variable 34) is very strongly correlated to the understandable/clear (Variable 35); $\tau = .84$. The sufficient/interesting aspect (Variable 36) is also correlated to both aspects attractive and understandable (Variables 34 and 35); $\tau = .44$ and $.45$ respectively.

7.4.2 The Non-Insured Typology

There are interesting findings revealed in the correlation analysis for the non-insured people (see appendix 6b). Within FACET D1 (Reasons for purchasing life insurance), one can see that the retirement income (Variable 9) is strongly correlated to the protection of dependents (Variable 8; $\tau = .55$). This supports the finding, that those people consider protection of dependents and retirement income as the two most important reasons for purchasing life insurance (see smallest space analysis for non-insured typology). Moreover, the protection of dependents is negligible correlation to the "return on investment" (Variable 14; $\tau = .06$). Also showing a fair correlation relationship is the variable "profit sharing" to both "a good method of saving" (Variable 15) and to "provision for inflation" (Variable 19) ($\tau = .36$ and $.37$ respectively). The possible explanation here could be that life insurance, from the non-insured person's point of view, is a good method for saving when there is the advantage of profit sharing benefit which is considered as a compensation for the effect of inflation upon life insurance benefits.

Concerning FACET D2, (life insurance decision variables), one can detect that both the "point of sales" (Variable 6) and "work place" (Variable 7) are weakly correlated to the "information load" of life insurance (Variable 1; τ = .25 and .29 respectively), whereas the "newspaper/magazine" variable is fairly correlated to the television advertisements (τ = .35), as important sources of information to the non-insured people.

In making a decision to purchase life insurance, the non-insured typology consider the "other partner" (Variable 25) and "children" (Variable 26) to be important influences in making such a decision (τ = .52); and is a strong correlation.

The most interesting relationship is that between the "own decision" (Variable 29 in the Purchasing decision-making process) and the retirement income (Variable 9 in the Reasons for purchasing life insurance) since there is a fair correlation between the two variables, τ = .35.

Regarding life insurance advertising in Egypt, one can see the strongly correlated relationship between all characteristics of life insurance advertising. The "sufficient/interesting" aspect (Variable 36) is strongly correlated to both "understandable/clear" (Variable 35) and "attractive/exciting" (Variable 34) τ = .50 and .56 respectively. The most interesting finding in the correlation analysis of FACET D3 is that a strong correlation relationship exists between inflation expectation (Variable 37) and the "retirement income" (Variable 9), as a reason for purchasing life insurance τ = .53, whereas the same variable ("inflation expectation"), is, relatively, weakly correlated to the "protection of dependents" (Variable 8) τ = .17. This confirms the fact that the fear of inflation, in the field of life insurance, is always related to the saving-type policies (e.g. Endowment policy).

7.5 Comparative Analysis Between the Importance Attached to Saving Through Life Insurance and to Saving With Other Financial Institutions

Hypothesis B tested above, related to the importance the insured and non-insured attach to saving through life insurance and to saving with other financial intermediaries (see the Wilcoxon test). We concluded by rejecting the null hypothesis, i.e. there was a significant difference between the importance attached to saving through life insurance and that attached to saving with the other financial institutions by the two typologies. To investigate the way in which saving through life insurance is considered to be different from saving with the other financial institutions, we use the following comparative analysis for each typology.

7.5.1 The Insured Typology

The comparative analysis between the importance attached to each variable (objective/financial benefit), within the life insurance programmes and saving in general (Table 7.9), has revealed interesting findings. Insured people do buy life insurance, firstly for the protection of dependents, and secondly, as a saving for daughters' marriage costs. One can see that these two variables have almost one-and-a-half times the importance (with life insurance), than with saving in general. On the other hand, this typology (insured) do save with other financial institutions for many reasons: firstly, for a return on investment, which is more than three times important than in life insurance. Secondly, for children's education, which is double the importance of that in life insurance, and thirdly, for emergencies which has again double the importance of that of life insurance.

Table 7.9 : Comparison of Reasons/Objectives for Saving Through Life Insurance and Saving in General

Variables	Euclidean Distance	
	Life insurance	Saving in general
Objectives		
Protection of dependents	64	89
Retirement income, old age protection	97	86
Children's education	109	50
Daughters' marriage costs	72	99
Beginning a new business after retirement	101	90
Saving for emergencies	113	57
Return on investment	137	39
Financial Benefits		
A good method of saving	94	84
Safety for money	105	116
High return on investment	125	66
Un-fixed return (i.e. according to investment results)	125	82
Provision for inflation	96	54
Bonuses/prizes	119	111

Other variables appear to have almost the same importance in both saving channels (life insurance and saving in general). They are: "retirement income/old age protection" and "beginning a new business after retirement". Indeed, the "protection of dependents", as a life insurance function, is a distinctive characteristic of the life insurance programme, particularly in the case of the premature death risk for the family breadwinner, whereas "return on investment" and "saving for emergencies" are not likely to be life insurance functions. Consequently, life insurance programmes might not be of help in these cases.

There are many distinctive financial aspects between purchasing life insurance and saving with the other financial institutions. The "good method of saving" concept is found to be of greater importance for saving in general (i.e. with the other financial institutions), than in saving through life insurance. This is because it allows easy access to the money invested on demand without capital losses. Whereas saving through life insurance is seen as a good method as, being a small amount, it is systematically and compulsorily saved.

The "safety for money" variable receives relatively more attention in life insurance savings than in other financial institutions (Euclidean distance 105 in life insurance versus 116 in saving in general). This is logical because the term "safety for money" as employed here is the principal value safety aspect (i.e. the guarantee to get back the same amount of money invested) which is more acceptable within the life insurance programmes than the other financial savings.

The "return on investment" factor (high or un-fixed) represents twice the importance with the other financial savings than through life insurance savings. This is true, as the most important function of a life insurance programme is to cover risks rather than to give a return on investment.

Provision for inflation received a greater concern in saving in general than in life insurance savings. This means that the higher interest rates (on the other financial institutions savings) are most likely to offset the decline in the purchasing power of money, resulting from price rises. Investment prizes (in the other financial institutions savings) are of greater importance than the policy bonuses in life insurance. This is because of the huge amount of prizes offered by other financial institutions. For example, the National Bank of Egypt offers to the holders of investment certificates, prizes worth E£50,000 in draws which take place three times every month. Since the average monthly income per capita in Egypt is relatively low (around E£*80), these draws are extremely popular and attractive.

7.5.2 The Non-insured Typology

This comparative analysis reveals very different attitudes with regard to the desirability of buying life insurance versus saving with other financial institutions. The non-insured typology considers the "protection of dependents" in the same importance level for "purchasing life insurance" and "saving with other financial institutions". One can see that the "protection of dependents" variable is the major issue for the non-insured people who wish to purchase life insurance, as it comes in the first place for "purchasing life insurance"; whereas this variable comes in fifth position of importance for "saving with other financial institutions". This confirms the idea that there are potential customers for life insurance among those who are as yet non-insured. Moreover, this typology (unlike the insured people) shows that "retirement income/old

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* E£ = Egyptian Pound.

Source: The Statistical Year Book of Egypt; issued by The Central Agency for Statistics and Public Mobilization, 1983 (in Arabic).

Table 7.10 : Comparison of Reasons/Objectives for Saving Through Life Insurance and Saving in General

Variables	Euclidean Distance	
	Life insurance	Saving in general
Objectives		
Protection of dependents	72	69
Retirement income, old age protection	78	112
Children's education	109	64
Daughters' marriage costs	100	66
Beginning a new business after retirement	79	96
Saving for emergencies	132	55
Return on investment	124	63
Financial Benefits		
A good method of saving	102	62
Safety for money	79	83
High return on investment	132	56
Un-fixed return	165	82
Provision for inflation	73	77
Bonuses/prizes	118	83

age protection" is a more important reason for purchasing life insurance than for saving with other financial organizations (Euclidean distance 78 in life insurance and 112 in saving in general).

Both "children's education" and "daughters' marriage costs" are considered by the non-insured people, with more concern for saving in general than through life insurance savings. "Beginning a new business after retirement" represents a more important reason for buying life insurance in comparison with saving through other financial institutions (Euclidean distance 79 in life insurance versus 96 in saving in general). The most interesting finding is that both "saving for emergencies" and "return on investment" were more than double the importance, as motives for saving in general, than being reasons for buying life insurance.

Regarding the financial aspects comparison for the non-insured typology, one can observe different attitudes; the non-insured people consider saving with the other financial institutions as a good method of outlaying their money than to purchase life insurance.

The "safety for money" aspect, appears to be of more importance, for this typology, in saving through life insurance, than saving through other financial institutions (Euclidean distance 79 in life insurance and 82 in saving in general).

Once again, the return on investment (high or un-fixed) is unlikely to be sought in purchasing life insurance, while for the non-insureds it represents the most important benefit in saving with other financial institutions. This factor is more than double the importance in the other channels of saving than that of life insurance.

7.6 Multiple Classification Analysis (MCA) Findings

7.6.1 Presentation of the MCA Results

The MCA attempts to investigate the demographic and socioeconomic variables associated with the amount of life insurance purchased by the 150 policyholders included in the selected sample. The results of the MCA, with the amount of life insurance purchased (Y) as the dependent variable, and the selected explanatory variables (Predictors) are shown in Table 7.11 . The table presents category size (i.e. the number of respondents who fall into each category) and a coefficient for each independent variable. In addition the table shows the Beta (β) statistic and F-ratio.

The β statistic measures the ability of the independent variable to explain variation in the dependent variable after adjusting for the effect of all other independent variables.

The F-ratio statistic is a test of the significance of a variable's ability to explain variation in the dependent variable.

Finally, a multiple correlation coefficient squared (R^2) is also included. This is the coefficient of determination and indicates the proportion of variance in the dependent variable, explained by all predictors considered together. In other words, it provides a measure of the ability of all selected predictors (i.e. age, education, occupation, family size, family life cycle and income), to account for the amount of life insurance purchased decision.

Table 7.11 Life Insurance Purchasing Behaviour as a Function of Selected Predictors - Results from MCA Program[1]

Independent Variables				The Dependent Variable (Y)		
No.	Name and response category	Category size	Percent %	Coefficient (1000's)E£*	Beta (β)	F-ratio
$\bar{Y}$	Grand Mean			4.180		
X1	Age				.07	2.42[c]
	1	23	15.3	.559		
	2	64	42.7	.429		
	3	63	42.0	-.640		
X2	Education				.02	9.54[a]
	1	36	24.0	-1.819		
	2	41	27.3	.186		
	3	73	48.7	.793		
X3	Occupation				.25	11.6[a]
	1	52	34.7	.147		
	2	34	22.7	-.062		
	3	16	10.7	4.008		
	4	14	9.3	.034		
	5	28	18.6	-1.930		
	6	6	4.0	-2.680		
X4	Family Size				.24	3.36[b]
	1	19	12.7	-.496		
	2	41	27.3	.308		
	3	45	30.0	1.064		
	4	21	14.0	-.894		
	5	24	16.0	-1.347		
X5	Family Life Cycle				.22	1.38
	1	20	13.3	-.630		
	2	26	17.3	-.411		
	3	40	26.7	.795		
	4	64	42.7	-.133		
X6	Income				.59	50.59[a]
	1	56	37.3	-2.359		
	2	45	30.0	-.113		
	3	24	16.0	2.070		
	4	25	16.7	3.500		
Coefficient of determination R^2 = .548						10.5[a]

*E£ Egyptian Pound

a Significant at the .01 level

b Significant at the .05 level

c Significant at the .10 level

1 Appendix 5

7.6.2 The Relative Importance of the Selected Predictor

The relative importance analysis of the predictors selected, as explanatory factors of the amount of life insurance purchased, suggests that current income is the most significant explanatory variable, as evidenced by its respective β value of .59. In second place of importance comes occupation with β value of .25. Family size, age and education were also found to be significant in explaining variation in the amount of life insurance purchased with β values of .24, .07 and .02 respectively. The only explanatory variable which has no significant effect in explaining variation in the dependent variable is the family life cycle $\beta = .22$. The independent variables, taken collectively, explained 54.8 percent of the variance in the amount of life insurance purchased. These results show the strength of the demographic and socioeconomic variables included as predictors of household life insurance purchasing behaviour. The variables simply account for a relatively high proportion of the variance in the dependent variable ($R^2 = .55$), which has never been achieved in similar studies before (e.g. in Hammond et al., 1967; Berekson, 1972 and Anderson and Nevin, 1975). However, this R^2 statistic suggests that almost 45 percent of the variation in the amount of life insurance purchased (Y) remains unaccounted for. This could be due to the effect of the other variables (e.g. attitudes towards the objectives and benefits sought in buying life insurance, as well as the role of the life insurance agent and the efforts of the marketing system) which we have already seen above (See the analysis on MINISSA section). This interpretation could be in line with the fact that life insurance purchase decisions are affected by a large group of variables which are difficult to isolate and measure (Hammond, 1967). Attitudes towards death, family, insurance agents, saving, and risk in general, all create differences among individual utility functions for life insurance. In addition, the individual's background (i.e. age, education, income etc.) which formulates the effective demand for life insurance (i.e. desire accompanied by financial ability to buy), is of great importance in making such decisions. The analysis which follows, provides further details on the relationship between the amount of insurance purchased and each predictor.

7.6.3 The Explanatory Variables Analysis

Age of Respondent (Predictor 1)

Table 7.12 Age and the Amount of Insurance Purchased

Age Class (years)	Class size (percent)	Coefficient (1000's)
Under 30	15.3	.559
31-40	42.7	.429
41 & over	42.0	-.640

For age of respondent (X1) the percentage of class size regarding frequency of purchases indicates that: the highest frequency proportion of purchases falls in the class 31-40 years of age (42.7% from the total sample), whereas the lowest frequency is in the class 30 years and under. It could be assumed that in the age group of under 30, the need for life insurance might not yet have arisen, as the couple might not yet have children or the ability to buy. For the dependent variable (Y), the coefficient for a category is an estimate of the difference between the overall sample amount of life insurance purchased (Grand Mean) and the average amount of life insurance purchased in the category under consideration. This coefficient indicates that when the age of the respondent was thirty years or under, the amount of life insurance purchased was E£4739 (4.180 + .559); when the age of respondent was between 31 and 40, the amount of life insurance purchased was E£4609 (4.180 + .429); and when the age of respondent was 41 and over, the amount of life insurance purchased was E£3540 (4.180 - .640).

These findings support the idea that the age of the head of the family is often associated with the amount of life insurance purchased. One would expect that fewer purchases would be made as the age of the insured increases, both because life insurance premiums increase with age and because advancing age implies a diminishing need for insurance protection as children grow older and become self-supporting.

The significance of the magnitude of the amount of life insurance purchased at the younger ages confirms the idea that this group of people is considered as one of the most important market segments for the life insurance industry. Often the first and most important purchases of life insurance are made at this stage of the life cycle in order to cover the premature death risk. Besides, those who insure at the younger ages, on average, are expected to live much longer before a claim is made on their policies than those who insure in later years (Anderson and Nevin, 1975).

Education Level (Predictor 2)

Table 7.13 Education and the Amount of Insurance Purchased

Education Level*	Class size (percent)	Coefficient (1000's)
Lower education	24.0	-1.819
Middle education	27.3	.186
Higher education	48.7	.793

* Lower education : less than 9 years of formal schooling

Middle education : 9-15 years of formal schooling

Higher education : More than 15 years of formal schooling

Interesting findings are shown from the education (X2) analysis. A monotone relationship is found between education level and both frequency of purchases and the amount of insurance purchased. When the respondent was in the "lower education" class the frequency of purchase was 24.0%and the average amount of insurance purchased was E£2361 (4.180-1.819); when the respondent was in the "middle education" class, the frequency of purchases was 27.3%, and the average amount of insurance purchased was E£4366 (4.180 + .186); when the respondent was in the "higher education" class, the frequency of purchases was 48.7;, and the average amount of insurance purchased was E£4973 (4.180 + 793). The positive relationship shown between education level and the amount of life insurance purchased may be viewed as indicating that higher education levels are a positive influence upon such outlays (Hammond et al., 1967). Those with a greater number of years of formal schooling (i.e. a higher level of education) may fall into the higher group of income and/or have a greater awareness of the need and purposes of life insurance and may analyse the purchase more objectively than might otherwise be the case.

Occupation (Predictor 3)

Table 7.14: Occupation and the Amount of Insurance Purchased

Occupation	Class Size (percent)	Coefficient (1000's)
Professionals and Technicians	34.7	.147
Managers, officials, and owners of small businesses	22.7	-.062
Businessmen (i.e. owners of large businesses)	10.7	4.008
Housewives	9.3	.034
Craftsmen, foremen, and operatives	18.7	-1.930
Labourers, and unskilled employees	4.0	-2.680

The findings for each category of occupation (X3) indicate that: the "professionals and technicians" represent the highest percentage of purchases (34.71), and buy, on average, slightly more than the Grand Mean amount of insurance E£4327 (4.180 + 147). This could be accounted for since those people who are in more highly paid occupations could rely on a substantial income and may have a greater awareness of the necessity of life insurance. The "managers, officials, and owners of small businesses" represent the second group of high frequency purchases (22.7), but the amount of insurance bought of E£4118 (4.180 - .062) is less than the total sample average amount.

This might be due to the great availability of insurance through group life insurance schemes for those in this occupational class. "Businessmen" represent 10.7% of purchasers in this sample and buy the highest average amount of life insurance purchases, E£8188 (4.180 + 4.008). This could be the result of many factors; firstly, those people usually utilize the large amount of insurance to obtain sizeable loans for their business, guaranteed by the life insurance policy which is a condition of getting such loans; secondly, they can also make the most of the tax allowance benefits available; thirdly, they may wish to preserve the full value of their large net worth. Therefore, they may purchase life insurance to reduce the risk of a loss resulting from the liquidation of net worth at unfavourable prices. . "Housewives" represent 9.3% of the total purchasers, and E£4212 (4.180 + .034). Other groups of occupational classes, represent a relatively high proportion of purchasers (18.71%) but the amount of insurance purchased E£2250 (4.180 - 1.930) is smaller. They are the "craftsmen, foremen and operatives". This group of people are usually considered to be in relatively high risk jobs; therefore they see life insurance as a necessity, but they cannot afford to buy larger amounts of insurance. The "labourers and unskilled employees" class does not represent a significant portion of both frequency of purchases and amount of insurance: 4.0% and E£1500 (4.180 - 2.680) respectively.

Family Size (Predictor 4)

Table 7.15 : Family Size and the Amount of Insurance Purchased

Family Size (including the head of family)	Class Size (percent)	Coefficient (1000's)
Two persons	12.7	-.496
Three persons	27.3	.308
Four persons	30.0	1.064
Five persons	14.0	-.894
Six persons	16.0	-1.347

The "family composition" analysis (X4) suggests that: when the family size was two persons only, the frequency percentage was 12.7%, and the amount of insurance purchased was E£3684 (4.180 - .496); when there were three people, the percentage was 27.3% and the amount of insurance purchased was E£4488 (4.180 + .308); when there were four people, the percentage was 30% and the amount of insurance purchased was E£5244 (4.180 + 1.064); when there were five people, the percentage was 14.0% and the amount of insurance purchased was E£3286 (4.180 + .894); and finally when the family size was six people and over the percentage was 16%, and the amount of life insurance purchased was E£2833 (4.180 - 1.347). One can see from these results that family composition is logically associated with the amount of life insurance purchased. If an individual has no dependents on his earnings for support, then the need for life insurance is quite small or it may not exist at all. As the dependents, to some extent grow in number, the economic loss caused by the breadwinner's premature death carries a greater impact and the justification for buying insurance becomes stronger. In the cases of five and more (6 and over) persons it appears to be conflicting with the above interpretation, but if one assumes that in the extremely large families, although the need for life insurance might be greater, nevertheless this might involve other factors which could hamper adequate purchases of life insurance. Large families might fall into the lower educational class and/or lower income levels, where there is a smaller awareness of insurance needs and most income is spent on current consumption.

Family Life Cycle (Predictor 5)

Table 7.16 : Family Life Cycle and the Amount of Insurance Purchased

Family Life Cycle	Class Size (percent)	Coefficient (1000's)
Newly married (no children)	13.3	-.630
Married with dependent children (boy(s) only)	17.3	-.411
Married with dependent children (girl(s) only)	26.7	.795
Married with both boy(s) and girl(s) dependents	42.7	-.133

Although the family life cycle variable (X5) does not significantly explain variation in the dependent variable (i.e. amount of insurance), nevertheless interesting findings are present. The percentage of purchases and the coefficient of amount of insurance purchased, indicate that when the family was newly married, with no children, the percentage of purchases was 13.3%, and the amount of life insurance purchased was below the average amount, E£3550 (4.180 - .630). This is logical, since when there are no children then the need for a large amount of life insurance does not emerge. On the other hand, at this stage of the life cycle, there might be a shortage of residual income. The most interesting finding in this analysis is that, when the dependents are only girl(s), the percentage of purchases is 26.7%, which is second in the rank of total purchases, and the average amount of insurance purchased was E£4975 (4.180 + .795), which is the highest amount in this analysis. This could also be supported by the findings we have seen in the MINISSA output analysis where the second most important reason for buying life insurance was indicated by the insured typology, to be the variable "daughters' marriage costs"*.

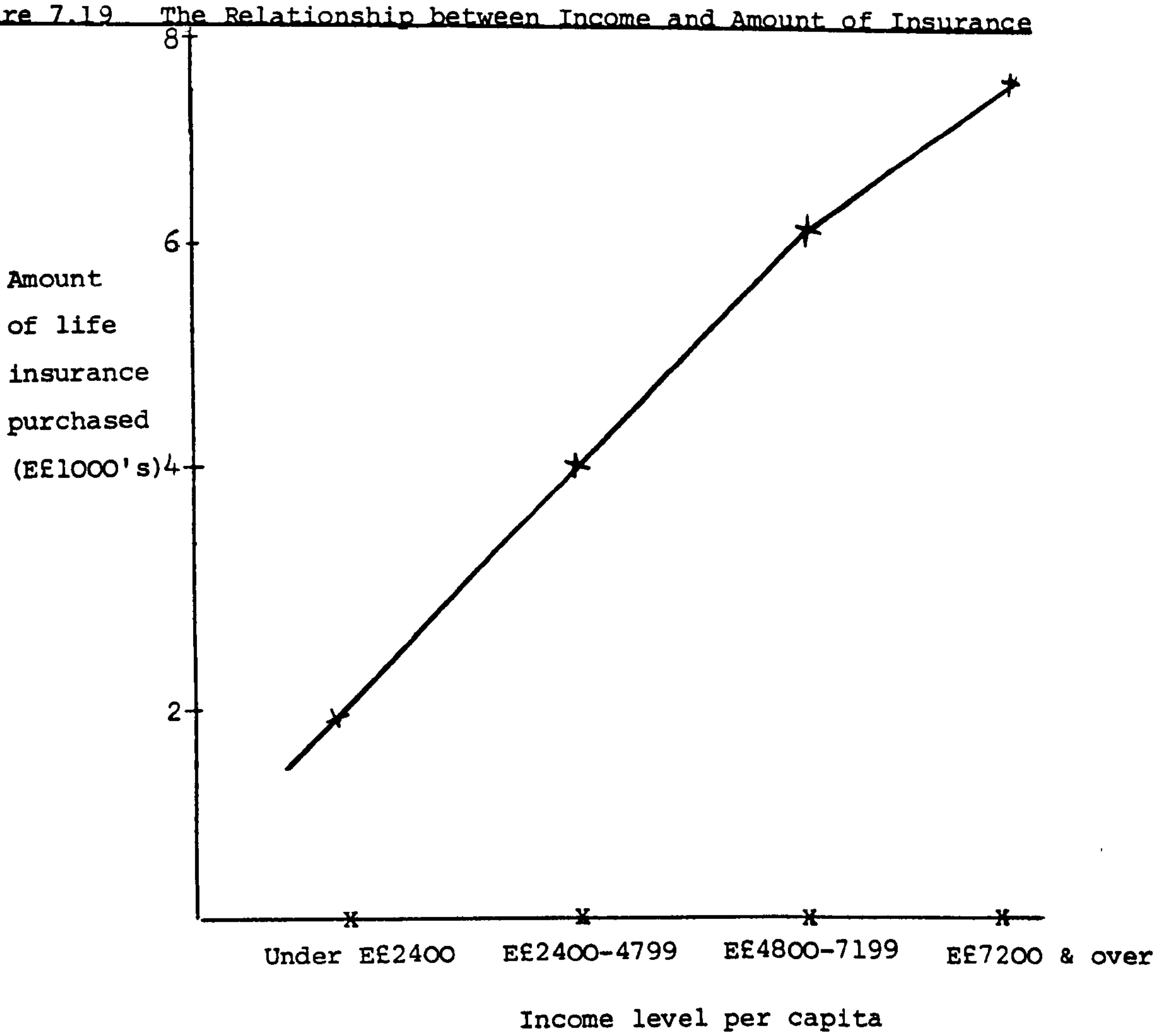
Income (Predictor 6)

Table 7.17 : Income level and the amount of insurance purchased

Yearly income level (E£)	Class size (percent)	Coefficient (1000's)
Under £2400	37.3	-2.359
£2400-£4799	30.0	-.113
£4800-£7199	16.0	2.070
£7200 and over	16.7	3.500

* One of the Egyptian marriage traditions is that the father helps his daughter in establishing her new home (e.g. furniture, durables and wedding costs).

Figure 7.19 The Relationship between Income and Amount of Insurance



The relationship between current household income (X6) and the amount of life insurance purchased was not only statistically significant at the .01 level of significance, but also represented the most important predictor in explaining variation in the dependent variable ($\beta = .59$, see Table 7.11 above).

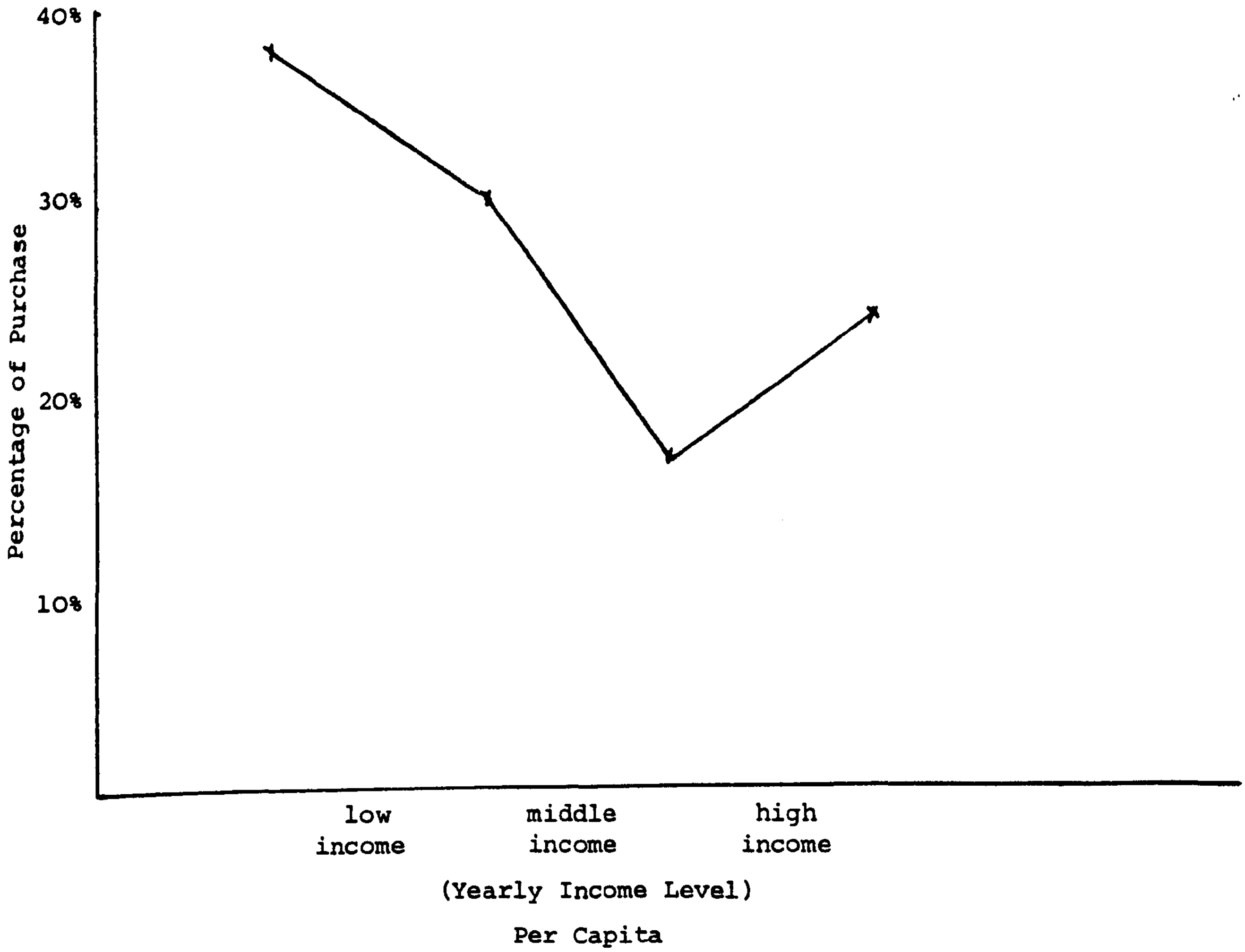
Past researchers (Berekson, 1972; Duker, 1969; Hammond, 1967; and Katona, 1965) emphasized a linear relationship between income and life insurance premium expenditures. Anderson and Nevin, 1975, suggested a non-linear relationship between income and the amount of life insurance purchased. They recommended, for future research to take a closer look at the nature of the relationship between income and the dependent measure of life insurance-purchasing behaviour, rather than simply assume it to be linear. This study's findings confirm the linearity relationship between current income and the amount of life insurance purchased (see Figure 7.10).

The percentage of purchases frequency and the coefficient of the amount of insurance indicate that when income was under E£2400 (per annum) the percentage of purchases was 37.3 percent and the amount of insurance purchased was E£1821 (4.180 - 2.359): when income was in the E£2400 to E£4799 category, the percentage of purchases was 30.0% and the amount of insurance purchased was E£4067 (4.180 - .113); when income was in the E£4800 to E£7199 category, the percentage of purchases was 16% and the amount of insurance purchased was E£6250 (4.180 + 2.070); and finally, when the income was in the E£7200 and over category, the percentage of purchases was 16.7% and the amount of insurance purchased was E£7680 (4.180 + 3.500).

It is not surprising to find such a strong monotone (linear) relationship between income levels and the amount of insurance purchased (since premium expenditures are a function of the amount of insurance purchased, as well as a function of income). What is surprising, however, is that the frequency of purchases in the lower income levels is greater than in the higher levels. But if we realise that in a developing country such as Egypt, the vast majority of people belong to the lower income groups, it is to be expected. Anderson and Nevin, 1975, stated: "Mass advertizing and other sales efforts could very well be more effective in reaching lower income households than middle income households". Although they stated that in justifying why lower income households did buy more life insurance than those in the middle income.

The findings with respect to percentage of purchase and current household income is in line with the utility function model proposed by Friedman and Savage in Anderson and Nevin, 1975. They stated that the Friedman and Savage utility function could be used to explain why the low and high income couples tended to buy more insurance. They concluded that for the low and high income levels the preference is for certainty or the purchase of insurance, whereas for the middle income group the preference is for gambling (see Figure 7.10) below.

Figure 7.10 Relationship Between Percentage of Purchase and Income Level



The most likely justification in this case could be that the insurance utility function for those people was higher than that for the other classes particularly if they relied only on their current income in terms of human capital.

On the other hand, one would argue why should disposable current income and not, for example, net worth or expected income, affect this decision. The answer to that lies in two justifications: firstly, the problem of accurate assessment of expected income (from the respondent's viewpoint), and secondly, net worth might be, in some way, considered a substitute for life insurance, to the extent that a family head is able to utilize the family assets to maintain a certain standard of living, rather than having to rely on life insurance. Therefore, the current disposable income was found to be the most appropriate criterion to relate the demand for life insurance to.

7.6 Summary of the Chapter

The research findings are based on the output of the MINISSA and MCA computer programs and include:

i) The test of the three hypotheses;

ii) The interpretation, by facets, of the configurations of the two typologies with respect to the variables determining life insurance purchasing behaviour; and

iii) The analysis of the relationship between the dependent variable (amount of insurance purchased) and the selected predictors (i.e. age, education, occupation, family size, family life cycle, and income).

The Wilcoxon test was used to test both Hypothesis (A), which pertains to the two typologies (insured and non-insured), with regard to their attitudes towards the variables which determine life insurance purchasing decisions, and Hypothesis (B) which pertains to the importance attached to having life insurance versus that attached to saving with other financial institutions, Whereas the F-ratio test was used on Hypothesis (C) which relates to the significance of the relationship (association) between the amount of insurance purchased and the selected predictors (both simultaneously and separately).

The first null hypothesis (H_0-A) was accepted (i.e. it was indicated that there was no significant difference between the attitudes of the two hypothesised typologies), whereas Hypothesis (H_0-B) was rejected (i.e. there was a significant difference in the importance that insured and non-insured people attached to saving through life insurance against saving with the other financial institutions. Still, it had to be pointed out in which way these attitudes are similar or different. This was done through the interpretation and the comparative analysis of the configurations of the two typologies.

The decision was made to analyse and interpret by the use of facets firstly, because the design of the investigation was also by facets, and secondly, past experiences by other researchers indicated that this approach was the best for analysing the universe of content of a research problem (see Chapter Four).

Both the analysis and the interpretation of the two configurations was based on interpreting the distance of the various variables from the central point of the axes; which represents implicitly the average respondent in each typology. These distances are vectorial Euclidean distances and were obtained from the output of the MINISSA program.

It was concluded that with the exception of some attitudes towards a few variables, the two typologies of respondents are similar in their (average) attitude towards the life insurance buying behaviour variables. It was discovered that some of the most important reasons for purchasing life insurance (by both typologies) were the protection of dependents, daughters' marriage costs, and retirement income/old age protection. However, the most desirable financial facilities offered by the insurer were: profit sharing, borrowing against the cash value of the policy, and surrender values. It was also found that the most important financial aspects sought when purchasing life insurance are the safety for money and the provision for inflation. Indeed, it has been indicated that both typologies (insured and non-insured) are concerned about inflation when making (or considering) a life insurance purchasing decision.

The significantly different attitudes were expressed by both typologies towards the importance they attached to having life insurance against saving with other financial institutions. It was found that the distinctive function of life insurance programmes is to cover risks (protection element), whereas saving with the other financial institutions were considered to be of greater help where the purpose(s) is to get a return on investment and/or saving for emergencies situations.

A Kendall correlation analysis was also carried out on the variables that determine the life insurance purchasing decisions for both typologies. The correlation results showed interesting findings, which support the findings on the MINISSA section, since, we found that the variables that were perceived as being of importance also correlated each other. For example, within the insured people a strong correlation was found between protection of dependents variable and the daughters' marriage costs one. These two variables were perceived by the insured people as the most important reasons for purchasing life insurance. A relatively higher correlation between inflation expectations and the objective of saving with life insurance (i.e., saving for daughters' marriage costs) than to the objective of insurance protection (i.e., protection of dependents). Also, a strong correlation was found between the profit sharing variable and the provision for inflation one (as a means of compensation for the effect of inflation on the life insurance benefits).

With regard to the non-insured typology, a strong correlation was found between the protection of dependents variable and the retirement income one (these two variables were perceived by the non-insured person as being the most important reasons for purchasing life insurance). A fair correlation was found between profit sharing and provision for inflation, whereas a strongly correlated relationship was found between inflation expectations and the retirement income as being a reason for purchasing life insurance. But the same variable (i.e., inflation expectations), was found to be negatively correlated to the protection of dependents (i.e., insurance element). This could be accounted for as that the fear of inflation is most likely related to the saving element in life insurance contracts than to the protection element.

The MCA output, in regard to the relationship (association) between the amount of insurance purchased and the six predictors selected, was also presented. The most important variables, which significantly determine the amount of life insurance purchased, were found to be current income, occupation, education level, family size and age of respondent. The findings showed the strength of the demographic and socioeconomic variables, included, as explanatory variables of household life insurance purchasing behaviour in Egypt. It was found that the selected predictors account for a relatively high proportion of the variance in the dependent variable

(R^2 = .55). However, this R^2 suggested that 45 percent of the variance in the amount of life insurance purchased remains unaccounted for. The most likely explanation could be that the remaining proportion of the variance is due to the effect of the other variables analysed on MINISSA section (e.g., family benefits and the efforts of marketing system).

Chapter Eight

Conclusions and Recommendations

8.1 Main Conclusions of the Research Findings

The application of the technique of Non-metric Multidimensional Scaling (NMS) and the Multiple Classification Analysis (MCA) in this research has led to the identification of the most important variables which determine the life insurance purchasing behaviour process in Egypt.

The comparative analysis between the two typologies (Insured and Non-insured) with regard to their attitudes towards the variables which are supposed to have an influence upon life insurance purchasing decisions, revealed no significant difference in the attitudes perceived by the two typologies. However both typologies have expressed different attitudes with respect to the importance they attach to having life insurance against saving with the other financial institutions.

The results enabled us to observe the relationship between the life insurance marketing variables, their importance and effectiveness and the influence of each of these variables on the purchasing decisions for the average respondent in each of the two typologies.

The Multiple Classification Analysis (MCA) of the Insured's Demographic and Socioeconomic variables (age, education, occupation, family size, family life cycle and income), together with their perceived attitudes (i.e. attitudes towards family protection and saving benefits etc.) enabled the coherent and comprehensive explanation of the research problem. As far as the researcher's knowledge is concerned, it is the first study to tackle, in this way, such a problem in the field of consumer purchasing behaviour in general, and in purchasing life insurance in particular.

The major conclusions which pertain to the central features of the two typologies investigated are as follows:

(i) <u>The Insured Typology</u>

1) The factors that are central variables, as objectives and benefits, in purchasing life insurance were: the protection of their dependents; daughters' marriage costs; profit sharing (offered by the insurer); borrowing against the cash value of the policy; and also they consider life insurance as a good method of saving (i.e. a small amount is being systematically compulsorily saved).

2) The most important sources of information regarding life insurance were found to be: the life insurance agent; point of sales (company offices), advertising - TV, and magazine/newspaper advertisements.

3) The life insurance purchasing decision-making process was found to be influenced, most likely, by husband/wife, and the life insurance agent.

4) The factors that were considered to be of major importance as functions of the life insurance agent are: to provide more detailed information about life insurance products in general (i.e. various types of policies, relative costs and benefits offered with each policy); helping to recognize the future financial problems; sharing in evaluating the appropriate life insurance needs (i.e. type of insurance in the light of social and financial circumstances); and to keep in touch with the policyholders so that the life insurance programme can be updated (i.e. taking care of any changes which could occur in the customers' circumstances or in case of a new product development).

5) The life insurance advertising and promotion policy, in Egypt, was evaluated as being inadequate (in terms of attractiveness, understandability and sufficient aspects).

6) Economic and financial factors for saving with the other financial institutions were found to be the central variables in comparison to saving through life insurance. This is in terms of the high return on investment, the appropriate outlaying in case of emergency situations (e.g. illness, accidents, etc.) and the easiest means of access to the money invested on demand, without any capital losses. Besides, the inflation expectation variable was also found to be of great concern to the insured people with purchasing life insurance.

7) The demographic and socioeconomic variables investigated were found to be statistically significant in explaining the amount of life insurance purchased. Current income was found not only to be the most important factor positively associated with the amount of life insurance purchased, but also a linear relationship was discovered between the size of sums insured and the average income level in the sample. Occupation, education, family size and age of respondent were also found to be of statistical significance in influencing the amount of insurance purchased.

The independent variables (predictors), taken collectively, explained 55 percent of the total variance in the dependent variable (amount of insurance purchased). These results show the strength of the demographic and socioeconomic variables included as predictors of households' life insurance purchasing behaviour in Egypt.

8) Insurance awareness in general and life insurance awareness in particular in Egypt can be said to be rather low, if not very low. The reasons for this could be, firstly, both insured and non-insured typologies were found to have little knowledge about the

subject matter (life insurance) as it was evident from their answers on variable 1 (life insurance knowledge load). Secondly, although the vast majority of the Egyptian population (as a developing country) fall into low and middle income groups, they increasingly tend to purchase the Endowment Policy, even though it is the most expensive one (more than 90% of the total life insurance sales). This policy is considered to be more expensive in comparison with, for example, term insurance, which is the cheapest policy but it provides fully pure insurance protection. Also, it is less likely to be affected by the economic conditions (e.g. inflation), as there is, almost, no saving element involved.

ii) The Non-Insured Typology

1) The factors that are considered to be central variables, as objectives and benefits, in purchasing life insurance were: protection of dependents, retirement income, old age protection, begin a new business after retirement, profit sharing, provision for inflation (i.e. adjustments of premiums and benefits to take care of price rises), safety for money and the guarantee of surrender values.

2) The most important sources of information with regard to life insurance were found to be: magazines/newspapers and life insurance agent.

3) The life insurance purchasing decision-making process is influenced by husband/wife, the existence of children and own decision.

4) The factors that were considered to be of great importance as functions to be carried out by the life insurance agent are:

helping to evaluate life insurance needs (i.e. type of insurance in light of financial and social circumstances), providing more detailed information about life insurance products in general (i.e. various types of policies, relevant costs and benefits), keeping in touch with customers so the life insurance programme can be updated (i.e. taking care of any changes that might occur in the customers' circumstances or a new product development), and helping to recognise the future financial problems.

5) The life insurance advertising and promotion policy, once again, was evaluated by the non-insured as being inadequate (in terms of attractive, sufficient and understandable/clear aspects).

6) Financial and economic factors are the central variables for saving with the other financial institutions in comparison with saving through the life insurance. Variables such as inflation expectations and the competition resulting from the financial benefits provided by the other financial institutions, were evaluated as being of major importance by the non-insured people. This is in terms of saving for emergencies (e.g. illness, accidents, etc.), high return on investment, a good method of saving (i.e. easy access to the money invested on demand, without any losses), children's education, and daughters' marriage costs. The non-insured typology expressed more concern about the effect of inflation on life insurance benefits than the insured typology did.

7) Unfixed return on investment (i.e. according to the actual investment results) was found to be of more concern to the non-insured person. One can suggest that this might be the reason for the non-insured's reluctance to purchase life insurance.

8.2 Contribution of the Research

The contributions of this study to life insurance purchasing research are both theoretical and methodological:

8.2.1 The Theoretical Contributions

This investigation is a comparative and systematic study of life insurance purchasing phenomenon. It looks at life insurance customers' attitudes in comparison to non-buyers of life insurance. In addition, the study examines the relationships between the insured's demographic/socioeconomic characteristics and the amount of life insurance purchased. The main theoretical contributions of this research are:

1) The study investigates some issues and variables which are introduced for the first time in studying life insurance purchasing phenomenon such as:

   i) The competition from other financial institutions to the life insurance industry, i.e. the relative importance of saving through life insurance programmes vis-a-vis the importance of saving with other financial institutions.

   ii) Customer's attitudes to inflation and its impact on life insurance purchasing.

   iii) The evaluation of the life insurance agents' functions and their roles in purchasing life insurance.

   iv) Customers' attitudes towards life insurance media advertising; and

   v) The effect of saving (through buying life policies) in order to provide for daughters' marriage costs in the future.

2) The present investigation, as far as the researcher's knowledge is concerned, is <u>the first study in life insurance purchasing research to employ the Facet theory</u>. The logic and scientific reason for using the Facet theory in designing this research, lies in its ability to define <u>all</u> the component elements of the universe of content under study. This investigation presents a full list of all the variables that are supposed to influence the decision to purchase life insurance. The faceted approach has also some additional advantages in designing this research and interpretation of its findings:

i) The facet design enabled the systematic selection of the sample of items included in the present study, and the identification of the other areas and subjects left for further research.

ii) The design of the questionnnaire that has been used in this investigation was much easier to construct via the facet design.

iii) The analysis and interpretation of the research findings by facets and sub-facets were more systematic and comprehensive.

8.2.2 <u>The Methodological Contributions</u>

The methodology of analysis employed in this investigation is the first one to handle the study of life insurance purchasing decision variables in a systematic and comprehensive way. The main methodological contributions of this study are:

1) The present research employs three different, but integrated, techniques for analysing the variables that influence the decision to purchase life insurance:

   i) Non-metric Multidimensional Scaling (NMS),

   ii) Multiple Classification Analysis (MCA), and

   iii) Correlation Analysis.

   These three methods are employed here for the first time in such a study.

2) The applying of the NMS, in life insurance purchasing research has enabled us to obtain metric output from a non-metric set of data. The attitudinal data analysed in this investigation is ordinal scaled, whereas the results are in a metric form. This enabled us to measure quantitatively the relative importance of each of the variables investigated.

3) The MCA technique employed in this investigation has for the first time been used in a large scale study of life insurance purchasing decision variables. Up to now, there are only two publications in the life insurance literature that employed the same technique in a similar research. The results achieved in this investigation are more significant than those presented in other studies. By including different selected predictors, some introduced here for the first time (e.g. family life cycle) and a different way in drawing the sample of respondents, we obtained a coefficient of determination of R^2 = 55% which has never been achieved before in similar studies. This coefficient suggests that the selected predictors account for a relatively higher proportion of the variance in the amount of insurance purchased, than in any of previous published research.

8.3 Recommendations

The following recommendations are based on the findings of this investigation, and are related to the main areas in which these findings could be applicable. For the life insurance companies, the objectives could be: i) to keep the insured person loyal to the Company; ii) reducing termination rate and increasing renewal rate, and iii) issuing a large number of new policies, or increasing the size of in-force policies. The result would be a drop in the relative cost per unit of output and, consequently, profitability can be increased.

1) For the insurance companies in Egypt, who rely mainly on high pressure selling techniques in order to achieve sales, we suggest the adoption of a marketing orientated approach geared to achieve customers' satisfaction. The ideal process through which the marketing approach, in the life insurance industry, can be conducted is known as <u>the life insurance marketing programme</u>. This includes the functions of i) marketing research (for investigating customers' needs, ii) product developement (for introducing the product that best achieves these needs), iii) advertising and promotion (for the best message and media for advertising life insurance), and iv) distribution and agents (for the best way the product could reach its target customers).

2) The emphasis of insurance companies in Egypt should be on providing the appropriate insurance product that best meets customers' needs and attitudes. The findings of this reasearch suggest that both typologies of respondents consider life insurance as a necessity for both <u>protection</u> and <u>saving purposes</u>. This means, more attention

should be paid to introduce the type of policies that will satisfy these needs. This could be supported by the fact that around 90% of the total sales of life insurance business, is of the Endowment Policy type which offers both protection and saving benefits.

3) It was also found that the most important reasons for purchasing life insurance, from the saving element point of view, were
i) daughters' marriage costs for the insured customers and
ii) retirement income/old age protection for the non-insured person.
This means that new products could be developed to meet these particular reasons (e.g., marriage policy and retirement income contracts).

4) The emphasis should also be placed on the additional benefits and facilities offered to the insured, e.g., profit sharing, borrowing against the cash value of the policy, the guarantee of surrender values, and the tax allowance benefit. This could help the life insurance companies to keep up with the competition. The research findings suggest that a number of benefits obtained from saving with certain financial institutions, are higher than those yielded by saving with life insurance products, e.g., (i) high return on investment, ii) access to the money invested without losses.

5) A major factor for the life insurance market in Egypt is to try to offset the damaging effect of inflation on life insurance benefits (around 20% average of inflation rate during the last five years). It was found that the inflation expectations variable was of great concern to both the insured and non-insured typologies of respondents with respect to purchasing life insurance. Therefore,

we could suggest for the Egyptian life insurance market, the introduction of some new products that could be called "Inflation-era products". These contracts are designed to provide policyholders with some protection against inflation. Examples of these policies are:

i) <u>Indeterminate premium policy</u>

This product was first introduced and became popular in the U.S. in 1979. This policy provides for maximum guaranteed premiums chargeable during the life of the contract. When the policy is issued, however, a premium discount applies; this discount usually results in an initial premium which is considerably lower than that of a comparable regular contract. The initial low premium is guaranteed for the first few years, with subsequent premiums contingent on the insurer's future mortality, investments, and expenses experience.

ii) <u>Variable life insurance</u>

The variable life insurance policy (VLI) is another approach used to remedy the adverse effects of fixed amount contracts in inflationary conditions. VLI was first introduced by a U.S. insurer in 1976. By 1983, VLI had been approved for sale in all the 50 states of the U.S.A. It is a product in which the face amount and cash values fluctuate with the performance of the investments. The distinguishing characteristic of these inflation based models of VLI, is the method by which the face value of the policy is adjusted in response to favourable and unfavourable investment performances. A unique aspect of a VLI policy is that the reserve of the policy is always precisely equal to the assets associated with the policy.

iii) <u>Cost-of-living rider</u>

In the early 1980s, the U.S. life insurance companies introduced another form of inflation-based policy called cost-of-living rider. The insurers write a cost-of-living rider which automatically increases coverage of the basic policy when the consumer price index (CPI) increases. The rider is a term insurance and can be attached to most types of policy.

6) One of the most important areas in which the findings of this research can be applied, is the training programmes for the insurance agents. The present research revealed the main issues that were evaluated by both the insured and non-insured persons, as being the most important life insurance agents' functions. Consequently, the training programmes should include guidance on the following points:

i) how to explain, in detail, the various types of life insurance policies available, the relevant cost for each policy, and the benefits and facilities offered by the insurer and the way to claim them, ii) how to help the customers to recognise their financial needs; for example, the need for money as a saving purpose, e.g., for daughters' marriage and/or to provide a guaranteed income for retirement, and iii) how to keep in touch with the customers, so that their life insurance programme will be updated, i.e., taking care of any changes that might occur in family future financial circumstances, or in case of introducing a new product.

7) This study has revealed the lack of life insurance advertising programmes in the Egyptian market. The only advertising message used, was designed in order to establish the insurance company's image. The Egyptian Authority for Insurance Supervision should employ an advertising policy aiming at educating the public about the importance of insurance in general and life insurance in particular. Moreover, advertising campaigns should be planned carefully not only in terms of message content, but also in relation to the most effective type of media that reaches the target customers.

8) A great deal of attention should be paid to solving the problem of life insurance and religion in the Egyptian society. It was discovered that the un-fixed return on investments, which is related to the religious principle of interest in the Muslim society, was of more concern to the non-insured person than to the insured one. In this case, one could suggest that it might be the reason for the non-insured's reluctance to purchase life insurance. Therefore, insurance men together with the Muslim Scholars should try to find out the best way in which the insurance services could be introduced, in accordance with both the religious and insurance principles.

8.4.1 Research Design Limitations

In the designing and collecting of the data, there were some limitations as follows:

1) The questionnaire was designed with an eye towards easy administration on a personal interview basis, with every effort to avoid bias by preserving the subject's anonymity, both because of the sensitivity of the subject matter and because it was a pre-condition, from the Central Agency of Statistics and Public Mobilization in Egypt, to get access to take the sample of insured respondents.

2) Only the policyholders of new business (i.e. not in force) of the fiscal year 1982/1983 were included into the sample investigated. It was decided to investigate the updated trend as well as to facilitate (for the insured respondent) to recall what happened when making the decision to purchase life insurance (i.e. why and how he came to this decision).

3) Although the proposed sample was 600 (300 of each typology), only 50% of the initial sample of respondents were successfully interviewed. Of the others, some refused to be interviewed or were not at home at the time of calling. Also, because of the time and cost factor limits (according to the Egyptian Education Bureau in London, I was allowed only three months to collect the data from home). Therefore, we were only able to interview 150 of each typology during the period from 20.5.1984 to 7.9. 1984.

4) Only the Endowment policyholders were included in the sample because this type of policy represented more than 90% of the total business in the Egyptian Life Insurance market. Also, we aimed at

keeping the unique measure of the life insurance purchasing behaviour (i.e. the amount of insurance), since only one type is investigated. Other researchers used premium expenditures and/or the amount of insurance purchased as the life insurance purchasing behaviour measures. But we can say that the amount of insurance purchased is the best indicator of the life insurance buying behaviour, particularly in the case of one type of insurance. This is because, for example, the premium expenditures could vary not only because of the different amounts of insurance purchased, but also because there are other factors which may affect such premiums, e.g. old age, the deviation of health level from the standard, if the policy covers additional risks (accidental death) and if the insured's occupation is dangerous.

5) Only the Misr Insurance Company (the largest of the main direct insurance companies operating in Egypt) allowed me access to draw the insured sample, after much effort and with recommendations from very close friends to senior managers and the Chairman of the Company. But, in fact, it is almost impossible to get such data, if at all, due to the fact that the life insurance business, in general, is so confidential and so sensitive that there are very strong rules regarding getting such data, from both the insurance men themselves and the government authorities (e.g. The Central Agency of Statistics and Public Mobilization) in Egypt.

6) The design by facets limitation, appears in the decision made by ourselves in deciding on a certain number of facets and items. The implication is that, however, only some of the aspects of the universe of content were in fact analysed, the others being left out for future research.

8.4.2 The Limitations of the Methodology Employed

1) One of the main assumptions of the Non-Metric Multidimensional Scaling (NMS) methodology is regarding the attitudinal space as being Euclidean. This constraint is a very important one, since it is connected with the implementation of NMS as a viable technique. NMS computational methods for scaling attitudes are greatly facilitated by the assumption of Euclidean space. However it should be noted that some researchers have rejected the use of Euclidean distance for scaling attitudes.

2) The main difficulties with the NMS technique are the subjective nature of the choice of the number of dimensions, and the interpretation of these dimensions. However, such difficulties are not unique to NMS. Analogous problems occur with similar multivariate analysis techniques. All such methods require good judgement and the use of external information in their interpretation in order to be utilized effectively.

3) With regard to the Multiple Classification Analysis technique (MCA), other users have recommended a minimum category size of anywhere between 25 and 50 observations. Failure to meet the minimum size requirement can cause the adjusted coefficient to be misleading. In addition, the Beta (β) coefficient included in the output of the MCA program must be interpreted with caution, and it is useful only as an approximate measure of the relationship between a predictor and the dependent variable, while holding constant all other predictors.

8.5 Areas for Further Research

This study is an exploratory one as well as a continuation of past research on life insurance purchasing behaviour. Several areas remain either unexplored or in need of further study. For example, much needs to be learned about the relationship between social responsibility and the demand for life insurance (with special reference to the type of insurance purchased); the effect of religion on purchasing life insurance (particularly in a Muslim country such as Egypt) and also to what extent the other financial institutions savings can compete quantitatively with the life insurance savings (i.e. to compare the quantitative development of individuals' savings with other financial institutions against that with life insurance).

Further research in other areas of life insurance could be undertaken by using both the NMS and MCA techniques, suggested from the faceted design of this research (see Chapter 4):

1) In this research we have investigated the importance and effectiveness of different elements of life insurance purchasing behaviour variables, as evaluated by the individual customer (insured and non-insured). It is interesting to compare these attitudes with those other referents such as: firm's management (for the purchase of group insurance), customers abroad and particular segments of customers (e.g. students, university staff or special occupation groups, etc.).

2) The universe of content of attitudes in the present study was investigated with regard to life insurance <u>purchasing</u> decisions. A similar investigation to explore the attitudes with regard to the voluntary <u>termination</u> decisions (i.e. withdrawal and surrender) would be very interesting.

Appendix (1a)

The University of Sheffield

Division of Economic Studies

Accounting: Business Studies: Economics

Crookesmoor Building
Conduit Road
Sheffield S10 1FL
Tel: (0742) 78555

TO WHOM IT MAY CONCERN

Re: Mr. Ǧalal HARBY, (Ph.D. student)

I am writing to ask for your cooperation in a study Mr. Harby is undertaking on the life insurance market in Egypt. Mr. Harby is particularly interested in the variables determining the life insurance buying decision and the impact of inflation on insurance buying in Egypt.

Mr. Harby is collecting data from a large number of insured and non-insured people and he will be doing this via personal interviews on randomly selected sample of respondents. I should be grateful if you could please see Mr. Harby at a convenient time and assist him in any way you can. The data collected from your company will be treated confidentially and will be analysed in aggregate in order not to divulge its source.

The Central Agency for Public Mobilisation and Statistics in Egypt, as well as the Egyptian Insurance Companies are aware of Mr. Harby's study and they are cooperating on his research.

Please accept my assistance for your help to Mr. Harby on his study.

A Meidan

Dr. Arthur Meidan,
Senior Lecturer,
(Mr. G. Harby's Ph.D. Supervisor)

Appendix (1b)

الجهاز المركزى للتعبئة العامة والاحصاء

الموضوع

تليفون :

رقم القيد : و/أم/ع/٤٠١٠/٢٢٢

التاريخ : ١٩٨٤/٢/٢٣ (ع)

٢٦

السيد / مديرعام الادارة العامة للبعثات

تحية طيبة وبعد ،

بالاشارة لكتابكم رقم ٥٢٣ المؤرخ ١٩٨٤/٢/٥ ومرفقاته بشأن طلب الافاده بالرأى نحو امكانية حصول السيد / جلال عبد الحليم حربى - المدرس المساعد بكلية التجاره / جامعة القاهرة وعضو البعثة الحكومية بالمملكه المتحده - على بعض البيانات اللازمه لدراسته لدرجة الدكتوراه فى مجال التأمين تحت موضوع "بحث محددات سلوك شراء تأمينات الحياه فى ظل حالات التضخم" دراسة تطبيقية لقرارات الشراء فى سوق تأمين الحياه المصرى وذلك أثناء قيامه بمهمه علميه بأرض الوطن لمدة ثلاثة أشهر اعتبارا من أول فبراير سنة ١٩٨٤ .

- البيانات المطلوبه هى :

١ - بيانات تاريخية من سجلات وثائق التأمين على الحياه لعينة حجمها ٣٠٠ مفرده من جمله الوثائق تشمل مبلغ التأمين والقسط ونوع الوثيقة ومدة التأمين من شركتى مصر للتأمين والشرق للتأمين .

٢ - بيانات شخصية عن حاملى الوثيقة تشمل العمر والوظيفة والمستوى الثقافى وحجم الاسره والدخل السنوى .

الرجا التكرم بالاحاطه بأن الجهاز المركزى للتعبئة العامة والاحصاء يوافق على حصول المبعوث المذكور على البيانات المطلوبه والمتاحه للنشر العام فقط من الشركتين المذكورتين عاليه بشرط موافقتهما وتحت اشراف مكتب الأمن بكل منها على أن تحجب أسماء المؤمنين كلية .

وتفضلوا بقبول فائق الاحترام ،،

مصطفى سالم جعفر
رئيس الادارة المركزية
لشئون مكتب رئيس الجهاز

Appendix (2a)

QUESTIONNAIRE

Q1 Do you have at present a life insurance policy? yes/no
If yes - the sum insured is ....

Q2 How would you rate your own overall knowledge about life insurance (e.g. type of policies, cost and policy benefits)?
My knowledge is:

(1) very high	(2) high	(3) average	(4) low	(5) very low

Q3 How important are these sources of information to you in purchasing life insurance?

	(1) very important	(2) important	(3) average importance	(4) not important	(5) not important at all
life insurance agent					
advertising - TV					
magazines/newspaper ads					
friends/relatives					
point of sales (company offices)					
workplace					

Q4 How would you rate the importance of each of the reasons below for purchasing life insurance?

	(5) not important at all	(4) not important	(3) average importance	(2) important	(1) very important
protection of dependents					
retirement income, old age protection					
childrens' education					
daughters' marriage costs					
begin a new business after retirement					

Q4 continued

	(5)	(4)	(3)	(2)	(1)
saving for emergencies (i.e. illness, accidents etc.)					
return on investment					

Q5 In your opinion how would you rate the importance of each of the following aspects of having a life insurance policy?

	(1) very important	(2) important	(3) average importance	(4) not important	(5) not important at all
a good method of saving (i.e. small amount, systematic, compulsory saving					
safety for money					
high return on investment					
un-fixed return (i.e. according to invesment results)					
provision for inflation (i.e. adjustments of premiums and benefits to take care of price rises)					
policy prizes (bonuses)					

Q6 How do you rate the importance you attach to these financial facilities and benefits in buying life insurance?

	(1) very important	(2) important	(3) average importance	(4) not important	(5) not important at all
profit sharing					
tax allowances					
borrowing against the cash value of the policy					
surrender values					

Q7 When taking a decision to buy a life insurance policy, how important is the influence of these sources?

	(5) not important at all	(4) not important	(3) average importance	(2) important	(1) very important
husband/wife					
children					
insurance agent					
relatives/friends					
others					
none of the above (i.e. your own decision)					

Q8 How do you rate the importance of these functions (or advices) of the life insurance agent in taking a decision to buy life insurance?

	(1) very important	(2) important	(3) average importance	(4) not important	(5) not important at all
providing more detailed information about life insurance product in general (i.e. type of policies, prices and benefits)					
helping recognise the future financial problems					
helping evaluate life insurance needs (i.e. type of insurance in light of financial circumstances					
keeping in touch so that life insurance programme will be updated (i.e. taking care of any changes that might happen in circumstances or a new product developing)					

Q9 What do you think of life insurance advertising you have seen in the media?

	very	slightly	same	slightly	very	
attractive	....	....	....	....	....	unattractive
not understandable	....	....	....	....	....	understandable /clear
sufficient	....	....	....	....	....	insufficient

Q10 When you buy life insurance, how important is it to take into your consideration the effect of inflation (price rises) upon the purchasing power of money?

very important	important	average importance	not important	not important at all

Q11 In saving through the other financial institutions (i.e. stocks, investment certificates, government bonds, real estate, etc.), how do you rate the importance of these reasons (objectives) for your savings?

	(1) very important	(2) important	(3) average importance	(4) not important	(5) not important at all
return on investment					
protection of dependents					
saving for emergencies (i.e. illness, accidents, etc.)					
retirement income, old age protection					
begin a new business after retirement/buying druables					
childrens' education					
daughters' marriage costs					

Q12 How do you rate the importance of these aspects desirable in saving in general (through other financial institutions except life insurance)?

	(5) not important at all	(4) not important	(3) average importance	(2) important	(1) very important
high return on investment					
safety for money					
a good method of saving (i.e. easy to get it in cash on request)					
protection against inflation because of the increasing of interest rates					
un-fixed return on investment (i.e. according to investment results)					
investment prizes (bonu (bonuses)					

Q13 Family composition:

	No.
family size	....
newly married (no children)	....
married with dependent children	....
boy(s)	....
girl(s)	....
boy(s) and girl(s)	....

Q14 Respondent's age group

20-25 ....

-30 ....

-35 ....

-40 ....

-45 ....

over 45 ....

Q15 Occupation ....

Q16 Household's current income £M (per month)

-100 ....

101-200 ....

201-300 ....

301-400 ....

401-500 ....

501-600 ....

601-700 ....

701 and over ....

Thank you for your co-operation

Appendix (2b)

Questionnaire (in Arabic)

استمارة استطلاع رأى

ارشـــادات :

١ – المرجو وضع علامة ✓ أمام الاجابة التى تتفق ورأيك الشخصى فى كل سؤال من الأسئلة الآتية .

٢ – البيانات مجرد استطلاع رأى عام وغير مطلوب معرفة أسماء أو عناوين شخصية .

السؤال الأول : هل لديك وثيقة تأمين على الحياة ؟

الاجابـــة : نعم ☐ لا ☐

فى حالة الاجابة بنعم ما هو مقدار مبلغ التأمين ______________

السؤال الثانى: ما هو تقديرك الشخصى لمعلوماتك العامة عن التأمين على الحياة (بمعنى مدى معرفتك لانواع الوثائق المختلفـــة ، المزايا التى تمنحها كل وثيقة).

الاجابـــة : معلوماتى العامة :

عالية جدا ☐ عاليـــة ☐ متوسطـــة ☐ منخفضـة ☐ منخفضة جدا ☐

السؤال الثالث : هذه بعض مصادر الحصول على معلومات عن التأمين على الحياة فى رأيك الشخصى ما مدى اهمية كل مصدر بالنسبة لك ؟

الاجابـــة	مهم جدا	مهـــم	متوسط الاهمية	غير مهم	غير مهم على الاطلاق
منتج التأميـــن					
اعلانات التليفزيون					
الجرائد والمجلات					
اقارب أو أصدقاء					
مكاتب شركات التأمين					
مكان عملـــك					
مصادر أخـرى					

(٢)

السؤال الرابع : فيما يلى بعض الأسباب التى من أجلها يشترى التأمين على الحياة ما هو تقديرك الشخص لاهمية كل منها ؟

الاجابة	مهم جدا	مهم	متوسط الاهمية	غير مهم	غير مهم على الاطلاق
حماية الاسرة ضد خطر الوفاة المبكرة للعائل					
ضمان دخل مناسب عند الاحالة للمعاش					
المساعدة فى مصاريف تعليم الاولاد فى المستقبل					
المساهمة فى تكاليف زواج البنات					
ضمان مبلغ معين لبدء مشروع (عمل جديد) بعد التقاعد					
الحصول على عائد على الاموال المستثمرة					

السؤال الخامس : ما هو رأيك الشخص فى أهمية المفاهيم الاتية المرتبطة بشراء التأمين على الحياة ؟

(٣)

الاجابـــــــة	مهم جدا	مهـــم	متوسط الاهمية	غير مهم	غير مهـم على الاطلاق
طريقة مثلى للادخـار الاجبارى المنتظم					
امان للاموال المستثمرة					
عائد مرتفع على الاموال المستثمرة					
عائد غير ثابت (بمعنى طبقاً لنتائج الاستثمـار المحققة)					
الاحتياط للتضخم (بمعنى ضرورة تعديل فى الاقساط والمزايا لمراعاة الزيادة المستمرة فى الاسعار)					

السؤال السادس :يتيح شراء :لتأمين على الحياة التمتع ببعض المزايـــــا والتسهيلات المالية الاتية ، ما مدى اهمية كل من هـــــذه المزايا بالنسبة لك ؟

الاجابـــــــة	مهم جدا	مهـم	متوسط الاهمية	غير مهم	غير مهـم على الاطلاق
المشاركة فى الارباح التى تحققها الشركة					
جوائز السحب علـى الوثائـــق					
الاعفاء الضريبى					
الاقتراض بضمان الوثيقة					
قيم التصفيـة					

(٤)

السوءال السابع : عند اتخاذ قرار شراء التأمين على الحياة ما مدى أهمية رأى المصادر الاتية فى اتخاذ ذلك القرار ؟

	مهم جدا	مهم	متوسط الاهمية	غير مهم	غير مهم على الاطلاق
الزوج / الزوجة					
الاولاد					
منتج التامين					
الاقارب او الاصدقاء					
مصادر أخرى					
قرار شخصى ولادخل لاحد فيه					

السوءال الثامن : ما هو رأيك الشخصى فى أهمية الدور الذى يجب أن يقوم به منتج التامين على الحياة ؟

الاجابة	مهم جدا	مهم	متوسط الاهمية	غير مهم	غير مهم على الاطلاق
تقديم معلومات مفصلة عن تأمينات الحياة					
المشاركة فى مناقشة والتعرف على المشاكل المالية المستقبلة للاسرة					
المساعدة فى تحديد مبلغ التامين					
المساعدة فى اختيار نوع التامين المناسب طبقا للظروف المالية والاجتماعية					

(٥)

تابع السؤال الثامن	مهم جدا	مهم	متوسط الاهمية	غير مهم	غير مهم على الاطلاق
البقاء على اتصال مستمر بالعميل لمتابعة أى تغيير فى الظروف المالية او الاجتماعية التى قد تتطلب تغيير فى نوع أو حجم التأمين المناسب .					

السؤال التاسع : ما هو رأيك الشخصى فى اعلانات التأمين على الحياة فى الوسائل المختلفة للاعلان(تليفزيون - مجلات ،جرائد، .. الخ) من حيث ما يلى :

	جدا	الى حد ما	متوسطة	الى حد ما	جدا	
جذابة	—	—	—	—	—	غير جذابة
مفهومة	—	—	—	—	—	غير مفهومة
كافية	—	—	—	—	—	غير كافية
واضحة	—	—	—	—	—	غير واضحة
مفيدة (مقنعه)	—	—	—	—	—	غيرمفيدة (غيرمقنعة)

السؤال العاشر : بسبب ظاهرة التضخم(الارتفاع المستمر فى الاسعار) هل ترى من الاهمية الأخذ فى الاعتبار تلك الظاهرة عند التقدم لشراء تأمين الحياة .

الاجابة	مهم جدا	مهم	اهمية متوسطة	غير مهم	غير مهم على الاطلاق
	☐	☐	☐	☐	☐

السؤال الحادى عشر: فى حالة استثمار أموالك خارج التأمين على الحياة ، ما مدى اهمية انواع الاستثمار التالية بالنسبة لك ؟

الاجابة	مهم جدا	مهم	متوسط الاهمية	غير مهم	غير مهم على الاطلاق
شهادات الاستثمار بانواعها					
حسابات ادخار بالبنوك والبريد					
اسهم وسندات					

تابع السؤال الحادى عشر :

	مهم جدا	مهم	متوسط الاهمية	غير مهم	غير مهم على الاطلاق
عقارات					
تجارة حرة					

السؤال الثانى عشر: فىحالة استثمار أموالك فى واحد أو أكثر من مجالات الاستثمار السابق ذكرها . ما مدى اهمية الاهداف التالية التى تسعى لتحقيقها من وراء هذا الاستثمار؟

الاجابة	مهم جدا	مهم	متوسطالاهمية	غيرمهم	غير مهم على الاطلاق
عائداكبر علىالاستثمار					
حماية أفراد الاسرة ضد خطر الوفاة المبكرة للعائل ـ					
ادخار للطوارىء(مرض أو حوادث)					
ضمان دخل مناسب فى حالة التقاعد او الاحالةللمعاش					
ضمان مبلغ معين لبدء مشروع او عمل جديد بعد التقاعد					
المساعدة فى مصاريف تعليم الاولاد					
المشاركة فى نفقات زواج البنات					
شراء مسكن اوسلعةمعمرة (سيارة ـ ثلاجة)					

(٧)

السؤال الثالث عشر : للاستثمار في الاوعية الادخارية الاخرى (غير التأمين على الحياة) مزايا وخصائص معينة ترتبط بهذا الاستثمار ما مدى اهمية كل ميزة أو خاصية بالنسبة لك مما يلي :

	مهم جدا	مهم	متوسط الاهمية	غيرمهم	غير مهم على الاطلاق
عائد اعلى على الاستثمار					
أمان للاموال المستثمرة					
سهولة التحويل الى نقدية عند اللزوم بدون خسائر					
حماية ضد خطر التضخم (الارتفاع المستمر في الاسعار) بسبب ارتفاع سعر الفائدة الممنوحة					
عائد غير ثابت (طبقا لنتائج الاستثمار المحققة)					
جوائز الاستثمار					

السؤال الرابع عشر : حجم الاسرة — عدد

متزوجون حديثا بدون أطفال ______

متزوجون وهناك أطفال :

أولاد فقط ______

بنات فقط ______

اولاد وبنات ______

السؤال الخامس عشر : فئة العمر

٢١ – ٢٥	٢٦ – ٣٠	٣١ – ٣٥	٣٦ – ٤٠	٤١ – ٤٥	٤٦ فاكثر
☐	☐	☐	☐	☐	☐

(ﻫ)

السؤال السادس عشر : المهنـــة ________________

السؤال السابع عشر : مستوى التعليـــم

غير متعلم	دون المتوسط	متوسـط	عالـى
☐	☐	☐	☐

السؤال الثامن عشر : متوسط الدخل الشهرى للاسرة :

– ١٠٠	١٠١ – ٢٠٠	٢٠١ – ٣٠٠	٣٠١ – ٤٠٠	٤٠١ – ٥٠٠
☐	☐	☐	☐	☐
٥٠١ – ٦٠٠	٦٠١ – ٧٠٠	اكثر من ٧٠٠		
☐	☐	☐		

مع خالص الشكر على تعاونكم .

الباحـث
جلال عبد الحليم حربـى
مدرس مساعد بكلية التجارة جامعة القاهرة
وعضو البعثة الحكومية بانجلترا

Appendix (3)

Application of Wilcoxon-Test for Testing the Hypothesis that Attitudes Towards Life Insurance Purchasing Behaviour Variables are Similar for Those Insured and Non-Insured Typologies

Variables	Eculidean Distance (Insured)	Euclidean Distance (Non-insured)	Difference	Rank	Signed Rank
1	110	117	-7	-8	-
2	74	96	-22	-24.5	-
3	90	118	-28	-30.5	-
4	92	91	1	2	2
5	104	126	-22	-24.5	-
6	81	111	-30	-32	-
7	112	156	-44	-35	-
8	64	72	-8	-11	-
9	97	78	19	20.5	20.5
10	109	109	0		-
11	72	100	-28	-30.5	-
12	101	79	22	24.5	24.5
13	113	132	-19	-20.5	-
14	137	124	13	16	16
15	94	102	-8	-11	-
16	105	79	26	29	29
17	125	132	-7	-8	-
18	125	165	-40	-34	-
19	96	73	23	27	27
20	119	118	1	2	2
21	87	62	25	28	28
22	126	104	22	24.5	24.5
23	91	97	-6	-6	-
24	101	89	12	14.5	14.5
25	75	73	2	4	4
26	84	77	7	8	8
27	76	108	-32	-33	-
28	87	96	-9	-13	-
29	145	87	58	36	36
30	66	78	-12	-14.5	-
31	82	90	-8	-11	-
32	91	75	16	18	18
33	93	79	14	17	17
34	108	129	-21	-22	-
35	117	116	1	2	2
36	128	131	-3	-5	-
37	80	63	17	19	19
				T = 292	

Appendix 3 (continued)

$$Z = \frac{T - \frac{N(N+1)}{4}}{\sqrt{\frac{N(N+1)(2N+1)}{24}}}$$

Therefore,

$$Z = \frac{292 - \frac{\overset{*}{36} \times 37}{4}}{\sqrt{\frac{36(37)(73)}{24}}} = \frac{-41}{63.65} = -.64$$

Table A (in Siegel, 1956) gives Z = .2611 for two-tailed p = 2(.2611)

= .5222

In this case one should accept the Null hypothesis since P(.522) does not occur in the region of rejection (.05) and the decision is: there is no significant difference in attitudes towards life insurance buying variables between insured and non-insured typologies in Egypt.

* Note that the N = 36 as there is one difference has no sign; variable 10.

Appendix (4a)

Application of Wilcoxon-Test for Testing the Hypothesis that the Importance of Life Insurance Savings is Equal to the Importance of the Other Financial Institutions Savings (Insured Typology)

Variables	Euclidean Distance (Life Insurance Saving)	Euclidean Distance (Other Financial Institutions Saving)	Difference	Rank	Signed Rank
Protection of Dependents	64	89	-25	-6	6
Retirement Income	97	86	11	4	-
Children's Education	109	50	59	11.5	-
Daughters' marriage costs	72	99	-27	-7	7
Beginning a new business after retirement/ buying durables	101	90	11	4	-
Saving for emergencies	113	57	56	10	-
Return on investment	137	39	98	13	-
A good method of saving	94	84	10	2	-
Safety for money	105	116	-11	-4	4
High return on investment	125	66	59	11.5	-
Unfixed return	125	82	43	9	-
Provision for inflation	96	54	42	8	-
Prizes (bonuses)	119	111	8	1	-
				T = 17	

Table G gives value of T (since $N < 25$), we have found that:

T for $N = 13$ is 17. Therefore we reject the Null hypothesis H_0-B in favour of H_1-B and conclude there is a significant difference in the importance attached to life insurance savings and that attached to saving with the other financial institutions for the insured people.

Appendix (4b)

Application of Wilcoxon-Test for Testing the Hypothesis that the Importance of Life Insurance Savings is Equal to the Importance of the Other Financial Institutions Savings (Non-Insured)

Variables	Euclidean Distance (Life Insurance Saving)	Euclidean Distance (Other Financial Institutions Saving)	Difference	Rank	Signed Rank
Protection of Dependents	72	69	3	1	-
Retirement Income	78	112	-34	-5.5	5.5
Children's Education	109	64	45	9	-
Daughters' marriage costs	100	66	34	5.5	-
Beginning a new business after retirement/ buying durables	79	96	-17	-4	4
Saving for emergencies	132	55	77	12	-
Return on Investment	124	63	61	10	-
Good method of Saving	102	62	40	8	-
Safety for money	79	83	-4	3.5	2.5
High return on Investment	132	56	76	11	-
Unfixed return	165	82	83	13	-
Provision for Inflation	73	77	-4	-2.5	2.5
Prizes (bonuses)	118	83	35	7	-
				T = 14.5	

Table G gives values of T (since N < 25). The table gives T = 17 for N = 13. Therefore one should reject the Null hypothesis H_0 in favour of H_1 at .05 level of significance. The decision is to accept the alternative hypothesis that there is a significant difference in attitudes towards the importance attached to life insurance savings and the importance attached to saving with the other financial institutions for the non-insured people.

Appendix (5)

MCA Output

MEAN	.41800000E+01
SUM OF U	.62700000E+03
SUM OF Y SQUARED	.40350000E+04
STANDARD DEVIATION	.30807260E+01
TOTAL SUM OF SQUARES	.14141400E+04
EXPLAINED SUM OF SQUARES	.85623815E+03
RESIDUAL SUM OF SQUARES	.55790185E+03

PREDICTOR 2 AGE

CLASS	NO OF CASES	SUM OF WEIGHTS	PER CENTS	CLASS MEAN	DEVIATION FROM GRAND MEAN	COEFFICIENT
1	23	23	15.3	.47391E+01	.55913E+00	.22253E+00
2	64	64	42.7	.46094E+01	.42938E+00	.15573E+00
3	63	63	42.0	.35397E+01	-.64032E+00	-.23944E+00

ETA-SQUARE .31694209E-01 BETA-SQUARE .44570664E-02
ETA .17802867E+00 BETA .66761264E-01

UNADJUSTED DEVIATION SS .44820049E+02
ADJUSTED DEVIATION SS .63029159E+01

PREDICTOR 3 FAMILY SIZE

CLASS	NO OF CASES	SUM OF WEIGHTS	PER CENTS	CLASS MEAN	DEVIATION FROM GRAND MEAN	COEFFICIENT
1	19	19	12.7	.36842E+01	-.49579E+00	.12264E+01
2	41	41	27.3	.44878E+01	.30780E+00	.32890E+00
3	45	45	30.0	.52444E+01	.10644E+01	.23943E+00
4	21	21	14.0	.32857E+01	-.89429E+00	-.10561E+01
5	24	24	16.0	.28333E+01	-.13467E+01	-.10576E+01

ETA-SQUARE .84758705E-01 BETA-SQUARE .60712497E-01
ETA .29113348E+00 BETA .24639906E+00

UNADJUSTED DEVIATION SS .11986068E+03
ADJUSTED DEVIATION SS .85855971E+02

PREDICTOR 4 INCOME

CLASS	NO OF CASES	SUM OF WEIGHTS	PER CENTS	CLASS MEAN	DEVIATION FROM GRAND MEAN	COEFFICIENT
1	56	56	37.3	.18214E+01	-.23586E+01	-.19860E+01
2	45	45	30.0	.40667E+01	-.11333E+00	-.19747E-01
3	24	24	16.0	.62500E+01	.20700E+01	.19120E+01
4	25	25	16.7	.76800E+01	.35000E+01	.26486E+01

ETA-SQUARE .50998184E+00 BETA-SQUARE .34226011E+00
ETA .71413013E+00 BETA .58503001E+00

UNADJUSTED DEVIATION SS .72118571E+03
ADJUSTED DEVIATION SS .48400372E+03

PREDICTOR 5 OCCUPATION

CLASS	NO OF CASES	SUM OF WEIGHTS	PER CENTS	CLASS MEAN	DEVIATION FROM GRAND MEAN	COEFFICIENT
1	52	52	34.7	.43269E+01	.14692E+00	-.24233E+00
2	34	34	22.7	.41176E+01	-.62353E-01	-.24627E+00
3	16	16	10.7	.81875E+01	.40075E+01	.21983E+01
4	14	14	9.3	.42143E+01	.34286E-01	.55250E-02
5	28	28	18.7	.22500E+01	-.19300E+01	-.43984E+00
6	6	6	4.0	.15000E+01	-.26800E+01	-.32661E+00

ETA-SQUARE .28683414E+00 BETA-SQUARE .62576427E-01
ETA .53556899E+00 BETA .25015281E+00

UNADJUSTED DEVIATION SS .40562364E+03
ADJUSTED DEVIATION SS .88491828E+02

PREDICTOR 6 EDUCATION

CLASS	NO OF CASES	SUM OF WEIGHTS	PER CENTS	CLASS MEAN	DEVIATION FROM GRAND MEAN	COEFFICIENT
1	36	36	24.0	.23611E+01	-.18189E+01	.98518E-02
2	41	41	27.3	.43659E+01	.18585E+00	-.82176E-01
3	73	73	48.7	.49726E+01	.79260E+00	.41306E-01

ETA-SQUARE .11765246E+00 BETA-SQUARE .28642936E-03
ETA .34300504E+00 BETA .16924224E-01

UNADJUSTED DEVIATION SS .16637704E+03
ADJUSTED DEVIATION SS .40505121E+00

PREDICTOR 7 FAMILY LIFE CYCLE

CLASS	NO OF CASES	SUM OF WEIGHTS	PER CENTS	CLASS MEAN	DEVIATION FROM GRAND MEAN	COEFFICIENT
1	20	20	13.3	.35500E+01	-.63000E+00	-.14039E+01
2	26	26	17.3	.37692E+01	-.41077E+00	-.49996E+00
3	40	40	26.7	.49750E+01	.79500E+00	.13142E+00
4	64	64	42.7	.40469E+01	-.13313E+00	.55969E+00

ETA-SQUARE .27394912E-01 BETA-SQUARE .47135654E-01
ETA .16551408E+00 BETA .21710747E+00

UNADJUSTED DEVIATION SS .38740240E+02
ADJUSTED DEVIATION SS .66656414E+02

Appendix 6(a)

Lower Half Matrix of Kendal Correlation Coefficients Among the Various Variables Influencing Life Insurance Purchasing Decisions (Insured Typology)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1																																					
2	-30																																				
3	-03	03																																			
4	34	-25	20																																		
5	23	-18	14	44																																	
6	30	5	-03	24																																	
7	25	07	-10	18	27	50																															
8	06	00	14	08	-10	05	04																														
9	02	-02	-01	10	-01	14	10	21																													
10	00	-10	00	10	08	00	01	00	27																												
11	02	-15	04	12	11	01	-09	52	09	32																											
12	13	-13	07	14	08	18	14	19	19	31	34																										
13	00	03	19	05	16	06	14	-03	08	15	01	24																									
14	10	00	-26	-14	-02	15	26	-17	12	12	-03	23	23																								
15	-15	08	27	02	-10	-12	-28	15	-01	00	09	03	-04	-29																							
16	-11	19	16	01	-05	00	-02	14	12	04	-09	05	04	01	22																						
17	-20	05	03	-02	-01	04	08	07	11	21	01	20	11	20	-04	11																					
18	-12	02	01	01	09	11	09	01	17	15	-02	20	17	21	03	15	57																				
19	08	-16	17	10	18	10	-12	07	00	09	25	19	-09	-15	11	-01	21	33																			
20	-14	09	10	-07	-08	06	-01	00	06	01	01	15	10	10	13	26	06	13	-06																		
21	-03	09	15	-06	-12	-06	-19	08	-06	-15	-02	-02	-06	09	36	19	-10	22	50	32																	
22	27	-16	00	23	15	01	-04	-11	-18	-11	02	-17	-01	-14	-05	-12	-28	-22	03	-07	-09																
23	-06	01	19	01	-04	-10	-11	04	-12	-07	04	08	10	-13	23	-05	-14	-15	08	14	23	12															
24	04	07	08	12	12	13	08	04	02	18	13	19	09	07	18	05	04	05	11	17	20	8	24														
25	04	02	08	09	-01	8	-07	26	9	9	18	15	-07	-23	24	08	-06	00	12	10	23	17	14	22													
26	10	03	05	09	-01	05	07	08	-08	04	21	15	-26	-16	16	10	-03	-06	26	12	19	10	11	20	42												
27	-03	31	06	15	15	19	22	12	15	12	07	30	06	07	-04	16	07	13	05	14	05	-07	14	13	19	29											
28	-02	04	04	06	21	17	23	01	06	08	06	20	05	01	-12	09	14	23	11	09	-08	-04	02	07	04	13	51										
29	07	11	-21	-11	08	11	18	-25	-21	-15	-13	-07	-04	16	-21	-06	02	-04	-06	-09	-12	02	-15	-15	-24	-09	00	16									
30	-08	14	-13	-07	-12	-07	01	10	-05	-09	02	09	-11	-07	10	06	-01	03	-06	01	19	-18	-04	-06	-01	11	06	07	07								
31	01	01	11	01	07	10	15	13	04	00	-07	11	01	02	13	12	03	09	02	06	17	-05	08	15	11	01	18	18	01	04							
32	09	03	03	-02	-04	16	07	09	-11	-24	-08	-06	-11	-09	07	05	-10	09	08	00	22	12	16	06	19	13	-06	00	08	09	22						
33	05	06	09	10	05	15	12	23	04	-01	12	14	-14	-02	07	13	09	10	31	01	14	-04	02	12	17	15	03	12	-01	07	21	35					
34	12	-05	-08	06	-04	12	20	12	01	06	06	10	-05	07	-14	00	07	01	-03	-02	-05	07	-11	08	05	09	12	25	15	10	22	22	26				
35	14	01	-08	03	-04	19	15	12	01	05	00	06	-07	08	-14	-05	06	-01	-02	-08	-06	07	-08	05	03	03	10	22	23	07	20	23	21	84			
36	02	03	-07	08	00	11	16	01	-02	03	02	17	03	15	-18	-04	09	11	-13	04	-06	01	02	14	-10	-09	05	14	10	14	06	-01	05	44	45		
37	34	-22	04	30	21	19	13	15	01	00	34	12	-05	-16	06	01	-10	-05	12	03	04	19	07	03	21	07	05	07	-01	10	02	05	17	01	00	-02	

Note: The decimal point has been omitted for the lack of space, and its position is after two figures from the right.

Appendix (6b)

Lower Half Matrix of Kendal Correlations (Tau) Among the Various Variables Influencing Life Insurance Purchasing Decisions (Non-in sured Typology)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1																																					
2	13																																				
3	05	02																																			
4	16	-02	35																																		
5	17	06	-06	22																																	
6	25	16	05	25	28																																
7	29	-01	04	25	k7	52																															
8	21	08	20	11	15	33	24																														
9	13	26	11	15	06	25	17	55																													
10	09	13	27	16	02	18	07	27	37																												
11	08	09	12	03	11	08	-03	13	27	48																											
12	-08	14	02	02	18	10	-02	07	19	16	38																										
13	-07	12	-05	-06	-07	-02	-12	12	14	23	31	43																									
14	-05	06	-01	03	-07	13	19	06	14	-08	07	22	27																								
15	-06	06	10	09	03	11	14	08	20	18	10	13	10	14																							
16	03	08	06	04	04	12	05	06	16	14	14	12	21	11	38																						
17	-09	01	03	07	-12	04	13	03	06	-03	00	04	12	28	21	27																					
18	-08	02	02	04	-06	01	06	-06	-10	-03	-04	02	18	25	09	08	41																				
19	13	03	06	11	01	13	13	22	16	06	10	13	08	34	05	03	16	28																			
20	-07	01	00	-03	-04	11	05	15	16	15	14	16	17	15	18	25	20	08	36																		
21	02	04	06	04	11	13	10	08	13	07	13	20	10	05	36	18	-05	04	37	35																	
22	13	00	04	08	18	27	10	18	12	09	10	17	12	14	10	12	-02	-06	14	29	29																
23	04	05	11	01	00	04	-03	12	08	13	13	15	18	09	08	16	01	05	15	22	26	36															
24	03	05	06	02	09	10	-01	15	10	-02	04	16	15	05	03	15	01	00	17	17	23	17	27														
25	17	11	00	10	05	11	07	11	11	11	16	10	09	11	-03	06	09	07	18	01	05	09	07	12													
26	04	03	05	09	01	08	07	14	11	10	13	21	16	09	13	22	28	11	17	08	12	12	14	14	52												
27	11	20	02	00	-07	09	02	22	07	03	15	08	08	07	02	19	12	08	09	12	-07	04	12	04	23	13											
28	18	04	-01	11	16	18	23	16	09	02	08	05	07	11	-01	11	06	01	05	06	03	06	-01	13	25	11	20										
29	03	00	-05	01	00	18	19	11	35	-10	-14	04	-14	-02	-06	01	-03	-03	-01	11	-06	01	-14	-08	-31	-15	00	06									
30	16	-01	09	11	08	16	17	31	08	04	00	05	-02	17	-02	-06	-03	-01	08	11	06	19	08	04	19	09	17	14	11								
31	02	08	13	13	03	18	18	-01	13	12	08	18	03	18	16	17	15	05	10	14	07	13	03	-01	11	08	20	13	-03	20							
32	14	10	00	12	12	26	26	19	31	04	08	03	-05	15	10	05	01	-10	11	11	20	24	06	02	12	01	14	14	06	28	32						
33	20	-02	06	18	10	20	22	16	22	06	13	10	02	23	04	08	-01	-07	12	11	08	17	11	11	22	10	19	23	01	40	22	39					
34	20	04	03	14	09	22	23	07	03	02	11	-03	01	19	01	06	08	06	15	04	-04	05	-11	-05	13	00	17	22	08	16	17	18	21				
35	23	-01	02	20	07	18	29	04	05	06	16	00	09	24	02	07	08	01	09	18	05	13	00	04	12	03	17	21	00	15	13	17	26	63			
36	14	10	-03	05	02	17	18	12	06	04	05	-03	05	14	02	09	09	-02	09	12	00	15	-02	04	05	-01	22	11	03	01	14	21	04	50	56		
37	13	-01	-02	-01	04	09	19	17	53	06	03	03	09	-02	03	-06	01	04	19	03	14	19	05	01	12	03	-04	-03	06	23	02	17	10	06	-04	03	

Note: The decimal point has been omitted for the lack of space, and its position is after two figures from the right.

Appendix (7)

List of Visits and Contacts Made for the Preparation of Computing Issues

1984 May - Visit to the London School of Economics in order to discuss the application and to run the SSA-I computer program.

- Visit to the London Business School for the purpose of computing issue.
- Visit to the University of London, Institute of Education (Department of Child Development and Educational Psychology) to meet Ms Marianne Jaeger, who advised contacting the University of Surrey, Guildford, (Department of Applied Psychology), to meet Professor David Canter.
- Travel to Egypt in order to collect the required data, where several contacts had been made with senior managers of the Egyptian Insurance Companies.

September - Several visits to the University of Surrey (Department of Applied Psychology) to meet Professor Canter and Mr Ian Donald in order to run the SSA-I and MSA computer programs. It was recommended the possibility to run the MINISSA computer program through the University of Manchester Computing Centre (UMCC) where we finally did manage to run both the MINISSA and MCA computer programs from the University of Sheffield Computing Services with the help of Mr Savas.

Appendix (7) (continued)

1984 December - Attending the First International Conference on Facet Theory held at the University of Surrey, Guildford.

REFERENCES

Aaker, D.A. (1971), "Multivariate analysis in marketing, theory and application", Wadsworth Publishing Company.

Abelson, R.P. (1955), "A technique and model for multidimensional attitude scaling", Public Opinion Quarterly, Winter, pp. 405-418.

Albaum, M.L. (1970), "Rationality and substitutionality in life insurance buying", prepared for the Annual Meeting of the American Risk Insurance Association.

Anderson, D.R. and Nevin, J.R. (1975), "Determinants of young marrieds' life insurance purchasing behaviour: an empirical investigation, Journal of Risk and Insurance, Vol. XLII, No. 3 (September), pp. 375-387.

Andrews, F., Morgan, J. and Sonquist, J. (1967), "Multiple classification analysis", Institute for Social Research, The University of Michigan, Ann Arbor, Michigan.

Andrews, F. et al. (1973), "Multiple classification analysis: a report on a computer program for multiple regression using categorical predictors", 2nd edition, The Institute for Social Research, The University of Michigan, Ann Arbor, Michigan.

Babbel, D.F. (1979), "Measuring inflation impact on life insurance costs", Journal of Risk and Insurance, Vol. XLVI, No. 3 (September), pp. 425-440.

Babbel, D.F. (1980), "A mathematical note on inflation, regulation, and the cost of life insurance", Journal of Risk and Insurance, Vol. XLVII, No. 1 (March), pp. 152-156.

Babbel, D.F. (1981), "Inflation, indexation and life insurance sales in Brazil", Journal of Risk and Insurance, Vol. XLVIII, No. 1 (March), pp. 111-135.

Babbel, D.F. (1980), "Inflation and indexation in Brazil, the influence on life insurance", Ph.D. thesis, University of California, U.S.

Bamira, J. (1975), "A statistical analysis of the buyer behaviour variables affecting the ownership of life insurance", Ph.D. thesis, University of Columbia.

Barnett, N.L. (1971), "Developing effective advertising for new products", in Aaker, D.A., Multivariate analysis in marketing: theory and application, Wadsworth Publishing Company.

Belth, M. (1973), "Life insurance: a consumer's handbook", Indina University Press.

Berekson, L.L. (1972), "The role of anxiety and fear as determinants of attitudes toward life insurance and predictors of life insurance purchasing behaviour", Ph.D. thesis, University of California, Los Angeles.

Berekson, L.L. (1972), "Birth order, anxiety, affiliation and the purchase of life insurance", Journal of Risk and Insurance, Vol. 39, No.1 (March), pp. 93-108.

Blalock, Jr. and Blalock, A.B. (1968), "Methodology in social research", McGraw-Hill, Inc.

Bomhoff, E. (1980), "Inflation, the quantity theory and rational expectations", North-Holland Publishing Company.

Borg, I. (1978), "Some basic concepts of facet theory" in Lingoes, J.C. (ed) Geometric representation of relational data: readings in multidimensional scaling, Ann Arbor: Mathesis Press.

Burnett, J.I. and Palmer, B.A. (1984), "Examining life insurance ownership through demographic and psycographic characteristics", Journal of Risk and Insurance, Vol. LI, No. 3 (September), pp. 453-467.

Canter, D. (1977), "Children in hospital: a facet theory approach to person/place synomorphy", Journal of Architectural Research, Vol. 6 (2), pp. 20-32.

Canter, D. (1982), "A multivariate model of housing satisfaction", International Review of Applied Psychology, Vol. 31, pp, 185-208.

Canter, D. (1983), "The potential of facet theory for applied social psychology", Quality and Quantity, 17, pp. 35-67.

Canter, D. (1984), "Facet theory", prepared for the 1st International Conference and Workshops on Facet Theory in Action, University of Surrey, Guildford, 12th and 13th December.

Christopher, M. (1973), "Non-metric scaling: The Principles and Marketing Possibilities", European Research, Vol. May.

Clayton, G. and Osborn, W. (1965), "Insurance company investments", George Allen and Unwin Ltd.

Coombs, C.H. (1964), "A theory of data", New York, John Wiley and Sons, Inc.

Davis, J.H. (1972), "A study of students' attitudes at the University of Alabama in Tuscaloosa concerning life insurance", Ph.D. thesis, University of Alabama.

Degerman, R. (1970), "Multidimensional analysis of complex structure, mixtures of class and quantitative variation", Psychometrika, Vol. 35, No. 4, December.

Diacon, S.R. (1980), "The demand for life insurance", Ph.D. thesis, University of Nottingham.

Doehlert, D.H. (1968), "Similarity and preference mapping: a color example", Fall Conference American Marketing Association, series No. 28.

Dougall, H. and Corrigan, F.J. (1978), "Investments", Prentice-Hall.

Doyle, P. (1973), "Nonmetric multidimensional scaling: a user's guide", European Journal of Marketing, Vol. 7, No. 2, pp. 82-88.

Doyle, P. and Fenwick, I., (1974) "Store image and store choice", Working Paper, University of Bradford, UK.

Doyle, P. and Hutchinson, P. (1973), "Individual differences in family decision making", Journal of Marketing Research Society, Vol. 15, No. 4, pp. 193-206.

Doyle, P. and McGee, J. (1973), "Perceptions of and preferences for alternative convenience foods", Journal of Marketing Research Society, Vol. 15, No. 1.

Duker, J.M. (1969), "Expenditures for life insurance among working-wife families", Journal of Risk and Insurance, Vol. 36, December.

Elizur, D. and Guttman, L. (1976), "The structure of attitudes toward work and technological change within an organization", Administrative Science Quarterly, 21, pp. 611-622.

Emory, C.W. (1976), "Business research methods", Richard D. Irwin, Inc.

Ferber, R. and Lee, L.C. (1980), "Acquisition and accumulation of life insurance in early married life", Journal of Risk and Insurance, Vol. 47, No. 4 (December), pp.713-734.

Ferrell, O.C. (1972), "An empirical investigation of attitudes towards life insurance product, price, and promotion", Ph.D. thesis, Florida State University.

Fortune, P. (1972), "Inflation and saving through life insurance: comment", Journal of Risk and Insurance, Vol. 39, No. 2 (June), pp. 317-326.

Goode, W.J. (1952), "Methods in social research", McGraw-Hill.

Green, P.E. and Carmone, F.J. (1964), "Multidimensional scaling: an introduction and comparison of nonmetric unfolding techniques", Journal of Marketing Research, Vol. VI, August.

Green, P.E. and Carmone, F.J. (1970), "Multidimensional scaling and related techniques in marketing analysis", Allyn and Bacon, Inc.

Green, P.E., Frank, R.E. and Robinson, P.J. (1976), "Cluster analysis in test market selection", Management Science, Vol. 13, No. 8, April.

Green, P.E., Maheshwari, A. and Rao, V.R. (1969), "Self-concept and brand preference: an empirical application of multidimensional scaling", Journal of Market Research Society, Vol. 11, No. 4.

Green, P.E. and Rao, V.R. (1972), "Applied multidimensional scaling: a comparison of approaches and alogarithms", Holt Rinehart and Winston Inc.

Green, P.E. and Tull, D.S. (1966), "Research for marketing decisions", Prentice-Hall Inc.

Green, P.E. and Tull, D.S. (1978), "Research for marketing decisions", 4th edition, Prentice-Hall, Inc.

Green, P.E., Wind, Y. and Jain, A.K. (1972), "Benefit bundle analysis", Journal of Advertising Research, Vol. 12, No. 2, April.

Greene, M.R. (1963), "Attitudes toward risk and a theory of insurance consumption", The Journal of Insurance, Vol. 30, June, pp. 165-182.

Greene, M.R. (1964), "Insurance mindedness - implications for insurance theory", Journal of Risk and Insurance, Vol. 31, March, pp. 27-38.

Greene, M.P. and Trieschmann, J.S. (1981), "Risk and Insurance" South Western Company.

Gregg, D.W. and Lucas, V.B. (1973), "Life and health insurance handbook", 3rd edition, Richard D. Irwin, Inc.

Guttman, L. (1954), "An outline of some new methodologies for social research", Public Opinion Quarterly.

Guttman, L. (1959), "A structural theory for intergroup beliefs and action", American Sociological Review, 24, pp. 318-328.

Guttman, L. (1959), "Introduction to facet design and analysis", Proceedings of the 15th International Congress of Psychology.

Hammond, J.D., Houston, D.B. and Melander, E.R. (1967), "Determinants of household life insurance premium expenditures: an empirical investigation", Journal of Risk and Insurance, Vol. XXXIV, No. 3, (September), pp. 397-408.

Hartford, G. (1963), "Life insurance in focus: factors related to lapsation", Life Insurance Management Association and Underwriter Training Council, U.S.

Headen, R.S. and Lee, J.F. (1974), "Life insurance demand and household portfolio behaviour", Journal of Risk and Insurance, Vol. 41, pp. 685-698.

Hinshaw, R. (1972), "Inflation as a global problem", The Johns Hopkins University Press.

Hofflander, A.E., and Duvall, R.M., (1967), "Inflation and sales of life insurance", Journal of Risk and Insurance, Vol. 34, No. 3 (September), pp. 355-361.

Howard, J.A. and Sheth, J.N. (1969), "The theory of buyer behaviour", John Wiley and Sons.

Huebner, S.S. and Black, K. (1982), "Life insurance", 10th edition, Prentice-Hall, Inc.

Jackson, D.N., and Messick, S.J. (1963), "Individual differences in social perception", British Journal of Social and Clinical Psychology, Vol. 2, pp. 1-10.

Johnson, R.M. (1971), "Market seqmentation - a strategic management tool", Journal of Marketing Research, Vol. 3 (February), pp. 13-18.

Katona, G. (1960), "The powerful consumer", McGraw-Hill Book Company.

Katona, G. et al. (1965), "1964 survey of consumer finances", Ann Arbor: Survey Research Center, Institute of Social Research, University of Michigan.

Kensicki, P.R. (1974) "Consumer valuation of life insurance: a capital budgeting approach", The Journal of Risk and Insurance, Vol. 41, No. 4 (December), pp. 655-665.

Kerlinger, H.R. (1973), "Foundation of behavioural research", Wineton, Inc.

Kinglsye, W.E. (1971), "Consumerism implications from MAP research programme", Speech to meeting of the Midwest Training Director's Association, West Lafayette, Indiana.

Kinnear, T.G. and Taylor, J.R. (1979), "Marketing research: an applied approach", McGraw-Hill.

Kotler, P. (1980), "Marketing management", 4th edition, Prentice-Hall Inc.

Kreinin, M.E., Lansing, J.B. and Morgan, J.N. (1957), "Analysis of life insurance premiums", The Review of Economics and Statistics, Vol. XXXIX, pp. 46-54.

Kruskal, J.B. (1964), "Multidimensional scaling by optimizing goodness of fit to a non-metric hypothesis", Psychometrika, Vol. 29, No. 1.

Kruskal, J.B. (1964), "Non-metric multidimensional scaling: a numerical method", Psychometrika, Vol. 29, No. 2, pp. 105-129.

Levy, S. and Guttman, L. (1975), "On the multivariate structure of well-being", Social Indicators Research, 2, pp. 361-388.

Liensner, T. and King, M. (1975), "Indexing for inflation", Heinemann Educational Books, London.

Lingoes, J.C. (1973), "The Guttman-Lingoes nonmetric program series", Mathesis Press, Ann Arbor, Michigan.

Lingoes, J.C. (1965), "An IBM-7090 program for Guttman-Lingoes Smallest Space Analysis - 1 (SSA-1)", Behavioural Science, Vol. 10.

Lingoes, J.C. (1979), "Geometric representation of relational data", Ann Arbor, Mathesis Press.

McGill, D.M. (1967), "Life insurance", Richard D. Irwin, Inc.

McGrath, J. (1967), "A multifacet approach to classification of individual group and organization concepts", in Indik and Berrien peopel groups and organizations: Teachers College Press, New York.

Mantis, G. and Farmer, R. (1968), "Demand for life insurance", The Journal of Risk and Insurance, Vol. XXXC, No. 2, pp. 247-256.

Mehr, R.I. and Gustavson, S.G. (1984), "Life insurance, theory and practice", 3rd edition, Business Publications, Inc.

Meidan, A. (1975), "When to use nonmetric multidimensional techniques in marketing research", European Research, March, pp. 58-65.

Meidan, A. (1975), "Facet design; the implication for marketing research", DER Market, No. 53.

Meidan, A. (1982), "Marketing strategies: organisation and performance control in insurance", The Journal of Risk and Insurance, Vol. XLIX, No. 3, (September), pp. 388-403.

Meidan, A. (1984), "Insurance marketing", (ed) Graham Burn, UK.

Melichar, E. (1965), "Least-squares analysis of economic survey data", Proceedings of the business and economic statistics section, American Statistical Association, pp. 1-13.

Melville, G.L. (1970), "The unit-linked approach to life insurance", Journal of Institute of Actuaries, Vol. 96.

Moffet, D. (1979), "An analysis of the demand for life insurance: mathematical foundations", Journal of Risk and Insurance, Vol. XLVI, No. 2, (June), pp. 87-112.

Murray, M.L. (1972), "Empirical utility function and insurance consumption decisions", Journal of Risk and Insurance, Vol. 34, No. 1, (March).

Myers, J.H. (1970), "Finding determinant buying attitudes", Journal of Advertising Research, Vol. 10.

Myers, J.H. and Alpert, J. (1968), "Determinant buying attitudes: meaning and measurement", Journal of Marketing, Vol. 32.

Myers, J.H. and Gutman, J. (1975), "How to analyse consumer surveys", Journal of Advertising Research, Vol. 15.

Neumann, S. (1967), "Inflation and life insurance: the impact of inflation on consumer savings through life insurance", Ph.D. thesis, University of California, Los Angeles.

Neumann, S. (1968), "Inflation and sales of life insurance: comments", Journal of Risk and Insurance, Vol. XXXV, No. 4 (December), pp. 629.635.

Neumann, S. (1969), "Inflation and saving through life insurance", Journal of Risk and Insurance, Vol. XXXVI, No. 4 (December), pp. 567-582.

Nicosia, F.N. (1966), "Consumer decision process", Englewood Cliffs, Prentice-Hall.

Oppenheim, A.N. (1966), "Questionnaire design and attitude measurement", Heinemann, London.

Payne, R. et al. (1976), "Organizational climate and job satisfaction: a conceptual synthesis", Organisational Behaviour and Human Performance, 16, pp. 45-82.

Pedhazur, E.J. (1982), "Multiple regression in behavioural research", Holt, Rinehart and Winston.

Perry, M. and Perry, A. (1974), "The case of avocado", European Research, January, pp. 10-36.

Phillips, B.S. (1976), "Social research", 3rd edition, Macmillan.

Ralls III, R.H., (1971), "A time series analysis of the nature of the demand for life insurance", Ph.D. thesis, The Faculty of the School of Government and Business Administration, U.S.

Robertson, T.S. et al. (1984) "Consumer behaviour", Scott, Foresman and Company.

Roskam, E. and Lingoes, J. (1970), "MINISSA: a Fortran IV (G) program for the Smallest Space Analysis of square symmetric matrices", Behavioural Sciences, 15, pp. 204-205.

Runkel, P. and McGrath, J. (1972), "Research on human behaviour: a systematic guide to method", Holt, Rinehart and Winston, New York.

Shepard, R.N. (1962a), "The analysis of proximities: multidimensional scaling with an unknown distance function", Psychometrika, Vol. 27, pp. 125-139.

Shepard, R.N. (1962b), "The analysis of proximities", Psychometrika, Vol. 27, pp. 219-246.

Shepard, R.N. and Change, J.J. (1964), "Stimulus generalization in the learning of classifications", Journal of Experimental Psychology, Vol. 65, pp. 94-102.

Shepard, R.N. et al. (1972), "Multidimensional scaling theory and applications in the behavioural sciences", Vol. I, II, Seminar Press.

Sheth, J.N. (1968), "Applications of multivariate methods in marketing", Fall Conference Proceedings, American Marketing Association, Series No. 28.

Sheth, J.N. (1971), "The multivariate revolution in marketing research", Journal of Marketing, Vol. 35, January.

Shye, S. (1978), "Theory construction and data analysis in the behavioural sciences", Holt, Rinehart and Winston, New York.

Siegel, S. (1956), "Nonparametric statistics for the behavioural sciences", McGraw-Hill.

Simpson, T.M. et al. (1969), "Mathematics of finance", 4th edition, Prentice-Hall, Inc.

Skelly, F. (1969), "The anxieties of reluctant buyer", Life Association News, January.

Skinner, S.J. and Dubinsky, A.J. (1984), "Purchasing insurance - predictors of family decision-making responsibility", Journal of Risk and Insurance, Vol. LI, No. 3 (September), pp. 513-523.

Stefflre, V.J. (1968), "Market structure studies: new products for old markets and new markets for old products", in Bass, F.M. et al., Applications of the sciences in marketing management, Wiley Marketing Series.

Stouffer, S.A. et al. (1950), "Measurement and prediction, studies in social psychology in world war II, Vol. 4, Princeton University Press.

Sudman, S. (1976), "Applied sampling", Academic Press, Inc.

Suits, D.B. (1957), "Use of dummy variables in regression equations", Journal of American Statistical Association, 52, pp. 548-551.

Survey Research Center (1952), "Life insurance ownership among American families", Institute for Social Research, University of Michigan.

Survey Research Center (1957), "Life insurance ownership among American families", Institute for Social Research, University of Michigan.

Torgerson, W.S. (1965), "Multidimensional scaling of similarity", Psychometrika, Vol. 30, pp. 379-393.

Turner, R.E. (1971), "Market measures from salesmen: a multidimensional scaling approach", Journal of Marketing Research, Vol. VII, May, pp. 165-172.

Wheatley, J.J. (1971), "A note on college student attitudes toward life insurance", The Journal of Risk and Insurance, Vol. XXVIII, No. 1, (March), pp. 123-128.

Williams, C.A. and Dickerson, O.D. (1966), "Game theory and insurance consumption", The Journal of Risk and Insurance, Vol. XXXIII, No. 3, (September), pp. 411-423.

Williamson, T.E. (1973), "An investigation and analysis of selected factors influencing college students as buyers and non-buyers of life insurance", Ph.D. thesis, the University of Arkansas.

Winklevoss, H.E. (1974), "Inflation based variable life insurance models", The Journal of Risk and Insurance, Vol. XLI, No. 4 (December), pp. 601-619.

Young, F.W. (1968), "Computer programs: TORSCA-9, a Fortran IV program for non-metric multidimensional scaling", Behavioural Sciences, Vol. 13, pp. 343-344.

Young, F.W. (1970), "Non-metric multidimensional scaling: recovery of metric information", Psychometrika, Vol. 35, 4, December.

Young, F.W. and Torgerson, W. (1967), "TORSCA - a Fortran IV program for Shepard-Kruskal (MDS) analysis", Behaviour Sciences, Vol. 13.

Young, G. and Householder, A. (1938), "Discussion of a set of points in terms of their mutual distances", Psychometrika, Vol. 3, pp. 19-22.

BIBLIOGRAPHY

The bibliography list below represents some additional publications which have been consulted for this study.

Abbot, L., "Economics and the modern world", Harcourt, Brace and Company, 1960.

Adams, J.F., "Consumer attitudes, judicial decision, government regulation, and the insurance market", Journal of Risk and Insurance, Vol. 43, 1976.

Athearn, J.L., "Risk and Insurance", West Publishing Company, 1981.

Belineau, B.C., "Theoretical and empirical aspects of implicit information in the market for life insurance", Journal of Risk and Insurance, Vol. LI, No. 2, (June), 1984.

Brown, A.S. et al., "Valuation of individual investment-linked policies", Journal of the Institute of Actuaries, Vol. 105, 1978.

Burdus, J.A., "Attitude models, the dream and the reality", European Research, May, 1970.

Campbel, R.A., "The demand for life insurance: a pure application of the economics of uncertainty in a world of stochastic income", Ph.D. thesis, University of Pennsylvania, 1977.

Carlson, J.A. and Parkin, M., "Inflation expectation", Economica, Vol. 42, May, 1975.

Carroll, J.D. and Chang, J., "Analysis of individual differences in multidimensional scaling via an N-way generalization of Eckart-Young decomposition", Psychometrika, Vol. 35, No. 3, 1970.

Carter, R.L., "The economics of insurance", Journal of the Chartered Insurance Institute, Vol. 65, 1968.

Carter, R.L., "Economics and insurance", 2nd edition, PH Press Limited, 1979.

Clark, R.L. and McDermed, A.A., "Inflation, pension benefits, and retirement", Journal of Risk and Insurance, March, 1982.

Cowell, D.W., "The marketing of services", Managerial Finance, Vol. 5, No. 3, 1980.

Coxon, A.P.M., "The user's guide to multidimensional scaling", Heinemann Educational Book, 1982.

Criswell, J.E., "Insurance strategies of West Kentucky farmers", Ph.D. thesis, The University of Minnesota, 1966.

Cummins, J.D., "An econometric model of the life insurance sector of the United States", Ph.D. thesis, University of Pennsylvania, 1973.

Darden, D.K., Darden, W. and Kiser, G.E., "The marketing of legal services", Journal of Marketing, Vol. 45, Spring, 1981.

Day, A.E. and Hendershott, P.H., "Household demand for policy loans", Journal of Risk and Insurance, Vol. 44, 1977.

Dodds, J.C., "The investment behaviour of British life insurance companies", Croom Helm, London, 1979.

Dorfman, M.S., "An analysis of the product performance of the life insurance industry", Ph.D. thesis, University of Illinois, 1971.

Ehrlich, I. and Becker, G.S., "Market insurance, self-insurance and self-protection", Journal of Political Economy, Vol. 80, No. 3, 1972.

El-Habashi, M.H.H., "The use of mathematical programming and related techniques by life assurance companies in selecting investment portfolios", Ph.D. thesis, University of Sheffield, 1977.

Ferber, R. and Verdoorn, P.J., "Research methods in economics and business", Macmillan Company, 1962.

Formizana, R., "An empirical analysis of life insurance company dividend decision", Ph.D. thesis, University of North Carolina, 1976.

Frank, S., "Optimal life insurance decisions for a rational economic man", Ph.D. thesis, Harvard University, 1972.

Ghee, W.K. and Bird, M.M., "Insurance purchasing in the small manufacturing firm", Journal of Purchasing, May, 1972.

Goldsmith, A., "Household life cycle protection: human capital versus life insurance", Journal of Risk and Insurance, September, 1983.

Grant, A.T. and Kingsnorth, G.A., "Unit Trusts and equities linked endowment assurances", Journal of the Institute of Actuaries, Vol. 93, 1967.

Green, P.E., Carmone, F.J. and Robinson, P.J., "A comparison of perceptual mapping via confusions data and direct similarity judgments", Fall Conference Proceedings, American Marketing Association, Series No. 28, 1968.

Green, P.E. and Carroll, J.D., "Mathematical tools for applied multivariate analysis", Academic Press, 1976.

Green, P.E. and Maheshwari, A., "Common stock perception and preference: an application of multidimension scaling", The Journal of Business, Vol. 42, 1969.

Haldeman, W.K., "An analysis of buying whole life insurance versus the purchase of term insurance ind investing the difference in premiums in stocks", M.B.A. thesis, Florida Atlantic University, 1971.

Hitchocock, D.F., "A comparison of methods for determining the true price of life insurance", Ph.D. thesis, University of California, Los Angeles, 1969.

Kahane, Y. and Moshe, P.M., "Financial analysis of underwriting results. a corrected approach to loss ratio analysis, with a special reference to inflation", Journal of Risk and Insurance, Vol. LI, No. 4 (December), 1984.

Kassarjian, H.H., "Consumer behavior: a field theoretical approach", Fall Conference Proceedings, American Marketing Association, Series No. 28, 1968.

Keintz, R.J., "An analysis of real estate investment trusts formed by life insurance companies, Ph.D. thesis, University of Wisconsin, 1974.

Kensicki, P.R., "Replacement of life insurance: a financial approach", Journal of Risk and Insurance, March, 1974.

Kimball, R.H., "A critique of market share as a measure for individual life insurance sales", Ph.D. thesis, New York University, 1970.

Klock, D.R. and Bunham, I.W., "Life insurance agents and executives: a test of incongruent perceptions", Journal of Risk and Insurance, 1974.

Leach, C., "Introduction to statistics. A nonparametric approach for the social sciences", John Wiley and Sons, 1979.

Lee, M.W., "Optimal life insurance: comment", Journal of Finance, Vol. 30, No. 3, 1975.

Lee, J. and Whitaker, W., "Competition among life insurance product lines: determinants of demand", Mississippi Valley Journal of Business and Economics, Vol. VII, No. 1, Fall, 1971.

Lewis, M.A., "Development of life experience subgroups for the prediction of life insurance sales success", Ph.D. thesis, University of Georgia, 1974.

Lima, A.K., "Inflation and the demand for life insurance", Ph.D. thesis, Stanford University, 1980.

Lin, C., "A price index for life insurance", Ph.D. thesis, Indiana University, 1969.

Mason, R.O. and Hofflander, A.E., "Management information system in insurance", Journal of Risk and Insurance, March, 1972.

Meidan, A., "Nonmetric multidimensional analysis of export marketing management", Ph.D. thesis, University of Bradford, 1974.

Meidan, A., "Smallest Space Analysis of student's attitudes on marketing education", European Journal of Marketing, 11, 1, 1977.

Miller, W.N., "Variable life insurance product design", Journal of Risk and Insurance, Vol. 38, No. 3, 1971, pp. 527-542.

Mindak, W.A., "Fitting the semantic differential to the marketing problem", Journal of Marketing, April, 1961.

Mossin, J., "Aspects of rational insurance purchasing", Journal of Political Economy, Vol. 76, No. 4, 1968.

Mott, G., "Investment appraisal for managers", Macmillan Press Limited, 1982.

Moutinho, L., "An investigation of vacation tourist behaviour in Portugal", Ph.D. thesis, The University of Sheffield, 1982.

Naylor, M., "The truth about life insurance", George Allen and Unwin Limited, 1971.

Niehans, J., "Interest rates, forced saving and prices in the long run", Review of Economic Studies, Vol. 32, 1965.

Parker, P.W. and Gibbs, P.M.D., "Accounting for inflation. Recent proposals and their effect", Journal of the Institute of Actuaries, Vol. 101, 1974.

Poppleton, S. and Lubbock, J., "Marketing life assurance", European Jounal of Marketing, 11, 6, 1977.

Rao, T.R., "Consumer's purchase decision process, stochastic models", Journal of Marketing Research, Vol. VI, August, 1969.

Redinbaugh, L.D., "Changes in marketing strategies and tactics of life insurance companies", Ph.D. thesis, University of Nebraska, 1970.

Rejda, G.E., "Principles of insurance", Scott, Foresman and Company, 1982.

Rohda, R.R., "Variable life insurance product design comments", Journal of Risk and Insurance, March, 1972.

Rose, T.L., "Life insurance product development", Ph.D. thesis, University of Illinois, 1978.

Schott, F.H., "Investment implications of the actuarial design of life insurance products: comment", Journal of Risk and Insurance, March, 1972.

Shaljean, J.A., "Life insurance bonuses, and equity-linked contracts", Journal of the Chartered Insurance Institute, Vol. 65, 1968.

Smith, M.B., "Comment on the implications of separating opinions from attitudes", Public Opinion Quarterly, Fall, 1954.

Smith, M.L., "The life insurance policy as an options package", Journal of Risk and Insurance, December, 1982.

Smith, V.L., "Optimal insurance coverage", Journal of Political Economy, Vol. 76, No. 7, 1968.

Squires, R.J., "Unit linked assurance: observations and propositions", Journal of the Institute of Actuaries, Vol. 101, 1974.

Stouve, J.D., "Life insurance portfolio management", Ph.D. thesis, University of Houston, 1974.

Taylor, F.W., "An investigation of adequacy of life insurance benefits as measured by an economic indemnity model", Ph.D. thesis, University of Southern California, 1973.

Taylor, J.R., "The meaning and structure of data as related to scaling models", Fall Conference Proceedings, American Marketing Association, Series No. 28, 1968.

Van de Geer, J.P., "Introduction to multivariate analysis for social sciences", Freeman and Company, 1971.

Webb, B.L., "The framework for insurance marketing changes". Journal of Risk and Insurance, Vol. XLI, No. 1, 1974.

Weissbrod, D., "Index linked life insurance in Israel and Sharir committee", Journal of Risk and Insurance, Vol. LI, No. 2, June, 1984.

Will, R.T. and Hasty, R.W., "Attitude measurement vendor conditions of multiple stimuli", Journal of Marketing, January, 1971.

William, J. et al., "The research craft", Little, Brown and Company, 1977.

Williams, C.A. and Heins, M., "Risk management", McGraw-Hill, 1981.

Wilson, R.M.S., "An overview of financial services marketing", Managerial Finance, Vol. 5, No. 3, 1980.

Wind, Y., Green, P.E. and Robinson, P.J., "The determinants of vendor selection: The evaluation function approach", Journal of Purchasing, Vol.   August, 1968.

Winter, R.A., "On the choice of an index for disclosure in the life insurance market: An axiomatic approach", Journal of Risk and Insurance, December, 1982.

Wynn, S., "World trends in life insurance", Associated Business Programs, London, 1975.

Yaari, M.E., "Uncertain life time, life insurance, and the theory of the consumer", Review of Economic Studies, Vol. 32, 1965.