FORECASTING MARKET SHARES OF DAILY NEWSPAPERS IN KENYA:AN APPLICATION OF THE MARKOV BRAND SWITCHING MODEL.

BY:

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DEDICATION

TO MY FATHER, MOTHER, BROTHERS, SISTERS, MERCY, AND MY SON, KELVIN

FOR THEIR ENCOURAGEMENT AND SUPPORT.

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ABSTRACT

The purpose of this study was to develop a model for measuring market shares of brands in a competitive market from aggregate data. The approach is to fit a markov brand switching model to secondary data. The elements of the transition matrix of the markov model are unknown,and are estimated by solving a series of simultaneous linear equations,formed from the observed brand shares of the three competitors in the daily English Newspaper market in Kenya. These are, the Daily Nation, The East African Standard and the Kenya Times.

The model developed was applied to forecast the market share of future years. The results of the study indicated that, if the present behavior of this market persists in future, and given the same operating conditions as for the period 1990 to 1991, it will be expected that the loyalty of the customers for the East African standard and the Kenya Times, will decrease consistently from period to period until at steady state when the brands will retain only 13 % and 1 % respectively, of the total market size while the Daily Nation will command 88 % of the market

The main use proposed for the derived measures of market shares is the development of marketing strategy, and not necessarily for accurate forecasts, which may never be realized because of the interactive nature of the market.

CHAPTER 1

INTRODUCTION

1.1 Background

In this era of intense competition, both world wide and domestic, business firms of all sizes and varieties have become more and more concerned with the market-share figures they achieve in the market place. Market share measures are used as market performance indices. It is clearly desirable for the individuals concerned to have thorough knowledge of the process which generates market share figures and to be able to analyze the impact of their own actions on market shares, as well as their profit implications.

Lacking such knowledge, one might be tempted to oversimplify the cause-and-effect relationships between market shares and market variables, or to equate market shares to profitability (a not unusual tendency even among seasoned businessmen) and fall into deadly traps of blindly competing for market shares for their own sake. Despite the obvious importance associated with it in many firms, the approach of many managers to market-share analysis may be described as casual[1]

The interest in market share analysis has received new impetus in recent years, especially since the liberalization of the economy and the advent of optical - scanning systems, for example, the POS (Points of Sale) systems - at the retail level (for example at Bargains Supermarket). The system puts the sales records in a computer where sales records are tabulated into item - by item

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[1]Nzonzi, S.M. " An investigation of Market Share Analysis among large and medium scale privately owned manufacturing firms located within the Nairobi Area". MBA Project, UON 1990. pp 60 -65.

sales summaries. This has opened a new source of market-share data at the retail level for manufacturers of consumer products.

In part, the pre-occupation of many managers with market shares may be the undertaking of the strategic market-planning school of marketing thought, which has been promulgated by such authors as Abell, Hammond [2] and Buzzel,[3] since the 1970's. They emphasize the importance of market shares so much that, if one accepts their tenets naively, securing market shares will be the primary objective in any firms marketing strategies. It is of utmost importance that firms match their other capabilities with the market share that they currently command and the anticipated future market shares.

Brand share measurement is among the most widely used of all business tools. It is consequently surprising that one cannot find anywhere a full discussion of why it is used, the assumptions it is founded on, and the occasions when it is likely to be reliable or those when it will lead one astray[4].In other words, although the concept of market share is widely used as a tool for evaluating the success of an organization,the literature on this topic does not indicate its advantages over the other tools of management evaluation.

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[2]Abell, D.F. and J.S. Hammond (1970), strategic Market Planning: Problems & Analytical Approaches, Englewood Cliffs, New Jersey. Prentice - Hall.

[3]Robert D. Buzzell Bradley T. Gale & Ralph G.M. Sultan (1975), Market share - A key to profitability" Harvard Business Review, Jan - Feb 97 -106.

[4] see Kuch .N " A Market Share Theorem" Journal of Marketing Research Vol.XII 1975 page 136 - 41.

Management would apply brand shares (or market shares) to:

-Appraise performance

-Express Market targets

-Assist in forecasting Sales

Although these uses have some points in common, they are essentially different.The validity of market share measurement as a standard of appraisal and as a marketing target, depends on the underlying assumptions for any standard of appraisal in some assumed target or objectives. Specifically if one judges management performance by changes in market share, he assumes the minimum target of maintaining market share.

Perhaps the main reason for using market share changes as a standard for appraising a management's performance is the belief that such measurements separate changes in sales resulting from forces outside the firm - such as general prosperity, recession, shortages of goods, changes in price throughout the industry, shifts in foreign demand, and government purchases, from those which the management of the firm can be held responsible. This is especially so if we consider a firm whose market share is increasing . Most changes that affect industry sales uniformly does not result to changes in the market shares , so that , if the management of any firm is to increase the firms market share ,they must employ better strategies that will result to a better competitive advantage than its' rival firms thus increasing its market share while that of its rival is decreased .It is the particular strategies that the management of each firm employs that

determines the position of the firm in the industry in terms of market share.

On this score, then, the market share measurement overcomes the weakness of most other bases of evaluating management performance (like total Shilling or Unit sales or total profits), since other measures might give management credit for an increase in business, even when the rest of the industry had achieved a greater increase. Consequently, these other bases would direct criticism at the management of a company whose sales decline, even if the fall is proportionately less than that of the total industry sales.

Two reasons given by most business executives to justify the use of market share measurement for appraising performance are first; the tendency to project changes into the distant future; a drop in market share (even when unaccompanied by a decline in total sales), seems to conjure up the specter of bankruptcy; and second the tendency to interpret a decline in market share as evidence of having been bested by competitor in open and fair combat and consequently proof of personal failure.

The use of market share measurement as a basis of evaluating management performance implies that a firm should be able to keep pace with all its rivals. This assumption is however rarely legitimate. There is a strong reason to question whether any firm is expected to keep pace with its rivals, whether the pace is clocked in terms of sales or any other measure.

Perhaps the most glaring deficiency of market share performance as a standard for the evaluation of management performance lies on its implied assumptions of ignorance about the firm and its industry. Thus, using market share as the basis of evaluation, we are likely to rate a particular firms' management as successful if they are able to increase or maintain a high market share for their organization ,compared to a management of a company whose market share tend to decrease or fluctuate highly. But such an approach fails to consider the differences inherent in organizations and industry in which the two operate. Some of these differences are the fact that each organization may be in a different stage of growth, some are large with more resources for expansion programs.In these instances, market share may not be a good tool for evaluating and comparing the performance of these firms.

If measurement of market share is to serve as a standard by which management's performance may be appraised reliably and objectively, it must meet several tests[5];

(i) It must be possible to compute the market shares accurately, or at least make computations that are comparable over a moderately long time.

(ii) The standard must be consistent with the basic objectives of the firm, that is, changes in market share must reliably indicate changes in the firm's basic "success" prospects of future prosperity.

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[5] Ibid.

(iii) The standard preferably should direct attention to sources of difficulty or of success; and it should suggest appropriate remedial action when management has been performing badly.

A review of the literature indicates that stochastic models are widely used for market share analysis[6]. These Models allow for a multitude of the factors that affect consumer behavior by means of response uncertainty. That is, market responses are regarded as outcomes of some probabilistic process. The impact of all factors not explicitly considered in the model is accounted for in the stochastic nature of the response.

In a given model these exogenous factors might include the firm's marketing mix, competitive activity and customer characteristics. Thus, the problem of describing and predicting consumer response is reduced to the problem of specifying and estimating a probability law for the response of interest.

Stochastic models are used as constructs for organizing and interpreting market data. The use of constructs by managers and market researchers is, of course, nothing new, even though their use may not be explicitly recognized as such. Take for example, the case of ordinary monthly sales data. These data are aggregates of raw sales data and are used for sales comparisons between months. But consider how little information is actually conveyed by a rise or drop in

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[6] Stochastic is synonymous with "chance","random"or "probabilistic".

sales, other than just a signal that "something has happened". These raw figures yield little idea of what has happened, where, and why; nor do they provide a very useful picture of what is likely to happen if present competitive conditions persist. A stochastic model that is a valid approximation of the market process generating sales will yield more useful insights into the behavioral dynamics of the change that has been detected, and a deeper understanding of how consumers respond.

Stochastic models may be used to make conditional predictions such as the ultimate market share for a brand or the time it will take the brand to achieve its ultimate market share[7]. The predictions depend upon market conditions remaining constant. In most actual situations, competitive conditions in the market place will cause the market to alter course before it ever gets to equilibrium, but these conditional predictions are nevertheless useful diagnostic indicators of where the market is heading under current conditions. Most stochastic models will yield information of this kind.

Stochastic brand share models attempt to describe the process of choosing one brand over another[8]. In general, brand share models do not concern themselves with the time of actual purchase, but rather with the shares of brands given that a purchase has been made.[9] Three basic

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[7] R.M. Cunningham,"Customer loyalty to store and brand",Harvard Business Review,XXXIX (nov.-Dec.1961) pp. 127-37.

[8] R.E. Frank , Brand choice as a probability process" Journal of Marketing Research ,II (Nov,1965) pp 347-67)

[9] Montgomery and Urban "Management Science in Marketing" Prentice - Hall International Series in Management new Jersey 1969 pp 55.

types of stochastic models have been applied to the consideration of brand shares; Zero-order, Markovian, and learning models. Each presumes a different consumer behavior process. Markovian models assume that, only the most recent purchase affects the current brand choice decision and thus its share. These models can enable us to analyze the daily newspapers market as a system to generate vital information for decision makers. The aim in this study is to try to predict the future behavior of the system. A detailed discussion of the suitability of the markov model for this study is given in chapter two of this study.

The daily newspapers market in Kenya is composed of three main competing brands. Specifically these are Daily Nation, published and circulated by the Nation Printers and Publishers ltd; The East African Standard (formerly The Standard) published and circulated by The Standard Limited, and the Kenya Times, published and circulated by the Kenya Times media Trust Ltd. The Taifa Leo is also a daily publication but in Kiswahili language.

A survey by way of a questionnaire to the Marketing Managers of the companies that publish the daily newspapers revealed that, the Nation Newspapers Ltd considers market share determination as a very important exercise for its brands (Daily Nation,Taifa Leo and the East Africa) all of which are treated as separate product lines. The companies approach to market share analysis is through the comparison of their annual forecasted sales to the total Industry forecasted sales. The method of regression analysis is mostly used to arrive at the sales forecast.

The Standard Ltd on the other hand, though considers market share analysis important, does not undertake the exercise frequently.The company does not determine the current market share of their brand annually but usually, after every two to three years, an attempt is made to determine the market share of their brand and the future trend. The approach mostly used by the company is to compare their annual sales to the Industry annual sales in units.

A survey on the market by the Research Bureau (E.A) ltd in 1986 revealed that, the Daily Nation is the most widely read newspaper among african adults. It had a penetration of 63% of the urban africans, but in comparison with other English Newspapers its penetration is substantially lower in rural areas (26%). The Standard had greater penetration among Europeans and Asian readers (62% and 43% respectfully) than all the other daily english publications. Among the urban Africans, everyday reading of the East African Standard showed the same bias towards men, and the upper social class, as was found for the Daily Nation. The reading frequency of the Kenya Times was substantially low among both the urban and rural Africans with only 7% of the members surveyed admitting they read the paper six days in a week.

In general, the survey concluded that, the readership of the daily newspapers is biased towards the Daily Nation, with The East African Standard providing stiff competition, as it had high penetration in some rural regions, and among the Asian and European communities. However, this survey did not give an indication of the market shares commanded by each brand in the market at the aggregate level. It concentrated on particular segments of the readers and the

penetration of each brand, in each segment, thus there's still the need for a measure at the aggregate level for each brand's market share.

1.2 Statement of Problem

The importance of market share measurement has been emphasized in the literature. Yet, according to Gale (1972), market share data is not generally available. This is mainly due to the difficulties in the market share determination (Chatfield 1976). The literature has models for market share determination, together with the strategies related to market share. However, due to the difficulties in the application of the models in real business, a gap exists between the theoretical literature and its application[10].

Due to lack of empirical studies, it is not clear whether the importance of market share measurement is appreciated by the Kenya Daily Newspaper publishers. In fact, it is not clear whether these firms determine their current, optimal, and future market shares. An investigative study undertaken by Nzonzi, S.M. (1990), revealed that only 17.6% of the firms in the Kenyans' print industry recognize the importance of market share analysis. This however represents a very low percentage, which inturn can be construed to mean most of the firms in this industry do not know their current optimal and future market shares.

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[10] Bell,D & Ralph,L.K et al, " A Market Share Theorem" ,Journal of Marketing Research,XII (May) pp 139-41

The producers of goods and services strive to match the producers (supply) to the demand. This is because if there occurs a mismatch between the two, for example, the supply falls short of the demand, the producer loses revenue by way of unexploited sales opportunity while if supply surpasses demand, the producer will incur higher costs of production on goods that cannot be disposed. This will reduce the producers profit margin or result to a loss.

The newspaper production is one industry which must strive to observe this economic argument, given the fact that, its market is very dynamic and the product's life cycle is quite short (i.e. one day). Newspapers that are not sold at the end of each day are usually useless and cannot be sold, but are returned to the Company. There are high levels of returns of Newspapers that are not sold by the Newspapers vendors in this market in Kenya. Companies in the industry (Nation Newspapers Ltd, The Standard Ltd and the Kenya Times Media Trust Ltd) are striving to equate their supply to demand and reduce the high level of returns.

The major cause of the mismatch are the inability to make accurate projections of the brand demand (or its brand share). If accurate projections can be obtained, the resources can be mobilized to meet the demand of each brand. For example, if brand share can be projected with some measure of accuracy, say, for the next five years, then funds can be sought to prepare for such now. An effective projection or forecasting model is necessary to enable adequate planning and co-ordination. The forecasting of market share particularly in the newspaper market would go a long way towards helping to match the resources to the anticipated demand.

Axenfeld (1985), established that in those industries where market shares are relatively stable, and firms are able to compute their projection of market shares,these may be an extremely useful forecasting, device. This is done by projecting a firm's past market shares to obtain a sales forecast of the firm. This can also be done by using the market share prediction models.

There are rampant cases of consumers in the newspaper industry missing the particular brand of the daily newspapers they are used to reading. This phenomenon is mostly common in the rural areas, and some towns that are far from the city (Nairobi). Also other residents within some Nairobi suburbs experience this problem. In other areas, the problem is one of over distribution of some brands of newspapers, and , this results to high returns of unsold copies.

All these problems points to the fact that, the firms in this market do not know the market share which they command, or if they do, their measures are not correct, or they have no predictions of their shares in future periods. These measures could be important for determining the demand for their brands, and thus match their resources with the anticipated market share.

It is against this background that this study is deemed necessary to try and derive a measure of the market share of the brands in this market and predict future shares.

1.3. Objective of the Study

The objective of this study is to apply a Stochastic Model, specifically the markov brand switching model in the derivation of market shares for the brands in the Daily Newspapers market and use it to predict future brand shares for any given future year.

1.4 Importance of this study.

The study is important for a number of reasons;

(a). It will provide the individual firms that operate in the daily English newspaper market with an estimate of their brand's share, currently and also with the forecasted future brand shares. This will enable them to plan for the future of these brands, and formulate better marketing plans and strategies.

(b) The study is also important to the shareholders as it generates information that they can use to evaluate management's effectiveness and efficiency. Effective management should be able to sustain or increase the brand share relative to competing brands'.

(c) Through the expected recommendations of the study, the business community will benefit from the information on brand share analysis using the markov model, which they can replicate in their respective markets.

(d) The study is also important for academic purpose since it will contribute to the body of knowledge already existing in this particular field of study.

(e) Another important contribution of this method of analysis to brand shares, is that, it can be a good basis for comparing the different marketing strategies. That is, the manager may evaluate different marketing strategies in terms of how they are believed to affect the transition matrix elements, and the corresponding steady state implications. Thus, the manager is able to obtain some feeling for how long, on the average, the customers will remain loyal to his brand. Strategies can also be devised on the basis of assessment of what brands customers are being won from, and lost to, and the size of the group that remains loyal to a given brand.

CHAPTER 2

LITERATURE REVIEW

2.1 Measuring Brand Share

Market shares can be measured in either of two general ways:

(i) By comparing one's own sales with known industry Sales. When the product is a consumer product, such data almost invariably describes sales to middlemen rather than to consumers, with the resulting design of delayed recognition of the dis-intended, or swollen inventions in the channels if the consumer market is lagging. This of course can cause management complacency, when decisive action is called for.

(ii) By survey's of Consumer Purchases (Paul Sarvey)

This method requires very great effort and outlay if reliable information is desired for fluctuations in market share in the individual segments.

Many firms can compute market shares by using several different types of basic information. For instance market shares may be computed in physical units without respect to the shilling sums involved.

Difficulties in measuring market share measurement must make allowances for unusual sales conditions at the very beginning and end of the time period under scrutiny. This is especially so when one is measuring market share during a short period, like a month or a quarter of an year (and more specifically when measurement is being made in limited geographic areas), large deliveries on the first and last days of the month are not usual and tend to distort month to month comparisons with market shares in the preceding year.

Other difficulties arise because the market share measurement might be made at different points in the Industry structure, specifically, it would be possible to measure market shares by distributors' sales to retailers and similarly, market shares might be measured by manufacturer's sales to wholesalers. Rarely would one obtain the same market share results by these different methods; one measure might show an increase during a period in which another indicate a decline. To that effect, conclusions based on one measure could be incorrect for a considerable period.

Thus, it appears that difficulties of timing and stage of industry at which sales are to be measured can produce measurements of market share that are misleading, and whenever serious difficulties of measurements exist, one can be certain that even serious errors in interpretation may arise.

To overcome these difficulties this study will use the annual circulation figures of the three brands of newspapers that compete in the daily newspapers market. These annual figures will

provide data that is more reliable than the monthly figures which would be affected by the sales level changes. The figures also represent the sales of the publishers to the distributors, which ultimately implies these are the sales to the final consumers for these products.This helps to overcome the difficulties of timing as the publishers and retailers sales are equal.

Diagnostic Tool

Does market share measurement meet the test of indicating sources of difficulty or the factors making for success? Doubts have been cast on the correlation between changes in the market share and management excellence, but suppose we consider the situation in which the market share of a firm has declined and nothing other than management weakness can explain the decline. Can management infer anything about the specific errors that require correction from an examination of the change in the market share? Clearly there is nothing in the knowledge that a firm has lost ground relative to the rest of its industry to indicate why this happened. At best, market share movements can signal that something is wrong, but they do not indicate the causes of the trouble.

Indeed, market shares offer only one advantage over other standards, namely, they "automatically" adjust for conditions that are common to the industry as a whole[11]. However, this automatic adjustment is not an accurate one, for it implies that outside forces impinge equally on all firms, which we know is not generally the rationale. Market shares pose difficulties in

[11] See Also footnote 1 and 5

measurement that weaken their reliability; weakness as, they do not indicate the condition that must be rectified. On balance, then, measurement of market shares provides a faulty standard by which to judge the excellence of management.

Given that firms compete for market share, an assumption relating a firm's market share to its own marketing expenditure and that of its competitors is needed in order to model marketing competition. The products of the different firms are assumed to command different levels of consumer preference. Market share measures have been found to be particularly useful in the estimation of market sensitivity, with respect to marketing expenditure. Most of the previous research in this field has assumed that market shares are given by the functional form model suggested by Mills (1961). This model belongs to the class of "Market share attraction" models, which are theoretically appealing because they are logically consistent; that is, they yield market shares that are between 0 and 1, and that sum to one across all the firms in the market. On the basis of comparative empirical results for two markets, Nart and Weverbergh (1981) tentatively concluded that the market share attraction models have better prediction power than the more classic market share specifications. The model argues that a firm's market share is equal to the ratio of its attraction to the total attraction of all firms.

Dan Horsky put the factors influencing market share into three categories.[12] Firstly, advertising expenditure, both present and past. Secondly the brand's other marketing activities such as

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12. Given M and Horsky D. "Application of a composite stochastic model of brand choice" Journal of Marketing Research Vol. XVI (May, 1979). PP. 46-71.

pricing, product quality, new variety introductions, distribution and dealer activities. Lastly, industry factors, such as the products primary demand and competitors' activities. He argued that variables contained in the first and second factors are controllable to a great extent by the firm while variables of the last factor are not. A company, therefore, should fall back into these factors especially the first two if the present or predicted share is not as expected. This requires adjustments on the factors and their accompanying variables.

Empirical evidence shows a link between market share and profitability and return on investment (ROI). Scheror (1974), contended the market share effect is "robust" across a wide range of variables definitions, sampling frames and controls for accounting method variation.[13] Henderson argued that[14], "in a competitive business, market share determines relative profitability and, when it does not do so, it is nearly always because the relevant market sector is misdefined." Buzzell, Gale and Sultan, studied 57 companies and found a positive relationship between market share and ROI[15]. As market share increases, a business is likely to have higher profit margin, a declining purchase - to - sales ratio, a decline in marketing costs as a percentage of sales, higher quality and higher priced products. The authors listed economies of scale, market

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13. Scheror F.M. (1974) "Economies of Scale & Industries Concentration", in industrial concentration: the new learning Harvey Goldschmid et al, Eds. Boston, Little, Brown & Co. In Jacobson R. Distinguishing among competing Theories of market share effect" Journal of Marketing Oct-1988 Vol. 52 NO.4. PP. 62-121.
14. Henderson, Bruce (1979) "Henderson on corporate strategy" Cambridge MA Abt Books in Jacobson R. "Distinguishing among competing Theories of market share effect" Journal of Marketing Oct-1988, Vol. 52, No.4, Pp. 62-121.
15. Buzzell R.D. & Gale B.T. "The PIMs principle" The Free Press, New York (1987) in Jacobson R. "Distinguishing among Competing Theories of Market Share Effect" Journal of Marketing Oct-1988, Vol.52, No.4., PP. 29-42.

power and quality of management as the reasons why market share is positively related to ROI. They conclude by advising firms to analyze their own positions in order to achieve the best of costs and benefits of the different strategies. Bruzzel and Gales (1987) contention that market share accounts for 14% of the variation in ROI seems to illustrate the consequences of ignoring the problems created by their unobservable serial correlation. From the PIMs project it was found that on average a difference of 10 points in market share is accompanied by a difference of about 5 points in percentage ROI. Smallwood and Condisk[16] argue that a higher market share brand commands a higher price and receives a return on premium relative to low share brands.

Reacting to the above mentioned positive relationship between market share and ROI, Remmelt and Wensley[17] argued that the association between market share and profitability is "an empirical regularity in need of theory. "Gale and Branch[18] concluded that it is infact the role of market share in reducing cost rather than creating market power that generates the associated market share and profit. Jacobson (1988) argued that market share is posited to be the

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16. Small Wood D. & Coblisk J (1979) "Product quality in markets where consumers are imperfectly informed" Quarterly Journal of Economics, 93 (February) in Jacobson R. "Distinguishing among competing Theories of market share effects" Journal of Marketing Oct-1988, Vol. 52, No.4, PP. 43-61.
17. Rumelt R.R. & Wensley R. (1980) "In search of the market share effect", working paper MGL-61, University of California, Los Angels in Jacobson R. marketing Oct-1988, Vol.52, No.4.
18. Gale B.T. & Branch B.N. (1982) "Concentration vs Multi share: which determines performance and why does of matter? Antitrust Bulletin, 27 (spring) in Jacobson R. "Distinguishing among competing theories of market share effect" Journal of marketing Oct-1988, Vol.52, NO.4.

consequence of efficiency rather than its cause and that market share is not a sufficient condition for market power. Schmalensee (1987) stated that most studies of scale economies concluded that United States manufacturing firms generally need relatively small market share to be at minimum efficient scale. Porter (1980), Fisher, McGoar and Greenwood (1983) and Densetz (1973) have also questioned the relationship.

2.2 .Usefulness of Market Share Information to Management.

Three uses of market share data has been cited in the literature. Oxenfeldt (1989) identified these as performance evaluation, market target expression and assistance in sales forecasting.

Oxenfeldt argued that market share measurement seems to place reasonable demands of the management. In effect, this standard compares the performance of the management of a firm with the average performance of managers of all other companies in the industry taken in combination, rather than, say, the performance of the very best. The argument is weak since every firm is not affected equally by all "outside forces" such as entry or exit of other firms from the industry. Changes in foreign market, source of supply, differences in rates of regional growth, the strength of local enterprises, the action of local government and so on affect some companies more than others. Oxenfeldt further argued that, since firms have different strengths and weaknesses due to the above reasons, one may expect the use of market share measurement for appraising managerial performance to result in mistaken evaluations of individuals. Further it is likely to result in unwarranted actions to maintain market shares in the face of inescapable

declines and complacency because of slight market share gains when very great increases in market share were readily attainable.

The main argument by Oxenfeldt was that market share changes as a standard for appraising a management's performance is the belief that such measurements separate changes in sales resulting from forces outside the firm - such as general prosperity, recession, shortage of food, changes in the price throughout the industry, shifts in foreign demand, and government purchases from those for which the management of the firm can be held responsible. This use of market share is justified since other measures such as total profits and unit sales, among other, have the weakness in giving management praise for an increase of business, when the rest of the industry has achieved a greater increase. The converse is true.

For market share to serve as an objective and reliable standard to appraise management's performance, Oxenfeldt says that it should meet the following test:

(a) Must be computable accurately

(b) The standard preferably should direct attention to sources of difficulty or of success; and it should suggest appropriate remedial action when management has been performing badly.

(c) The standard must be consistent with the basic objectives of the firm.

Lastly, Oxenfeldt established that in those industries where market shares are relatively stable and firms are able to compute their shares and determine how stable they are, the projection of market shares may be an extremely useful forecasting device. This is done by projecting a firm's past market shares to obtain a sales forecast of the firm. This can also be done by using the market share prediction models.

2.3 The Market Share Management Strategies

Paul Bloom and Philip Kotler (1975), argued that an organizational goal should not be maximize market share but rather to attain optimal market share. A company attains its optimal market share in a given market or product or brand when a departure in either direction from the share would alter the company's long-run profitability or risk (or both) in an unsatisfactory way. They further argued that large companies attract attention and hence unfavorable pressure from actual and potential competitors, consumer organizations, government agencies and so on hence the risk of adverse exposure. This brings out the importance of determining the optimal market share of a company which can guide it in the determination of the relevant and appropriate marketing strategies. These strategies should lead to the attainment of this optimal market share. The determination of the optimal market share requires the estimation of the relationship between market share and profitability, estimation of the amount of risk associated with each share level and determining the point at which an increase in market share can no longer be expected to bring enough profit to compensate for the added risk to which the company would expose itself. This is a non-trivial task. Risk changes with market share levels. Risk is high for low market

share companies and declines as share increases, and then increases again at very high market share levels. Risk (of being thrown out of market) is high at low market share levels because a business is subject to competitive forces by stronger competitors, cannot afford adequate marketing research and promotional spending and is vulnerable to sudden changes in consumer tastes or spending. Risk starts to fall with increased market share because an organization can engage in more market research, operate better information systems, recruit more experienced marketing personnel and spend more in promotion. Risk of adverse exposure is high at very high share levels because the government, consumers, and competitors will single the business out for specific attack.

Depending on its position relative to its optimal market share and according to Blow and Kotler (1975) a high share company may adopt share building strategies like product innovation, mass marketing, distribution innovation, promotional innovation, market penetration, new market strategy, geographical expansion, discover and promote new uses of the product, and encouragement of more usage per occasion. High-share company also adopts share maintenance strategies given that they have reached their optimal share levels. These include market fortification, confrontation strategy (such as pre-emptive defense, counter offensive defense and mobile defense - that is attack and stretch to new territories as defense centers) and contraction strategy (that is withdraw from some territories to strengthen attack in other territories).

In case of actual market share higher than the optimal share, high-share company can adopt share reduction strategies like raising prices, cutting back advertisement and promotion, reducing service,or reducing convenience features. Instead of share reduction, a company can adopt risk (of adverse exposure) reduction strategies like public relations, competitive pacification, dependence and legislation, diversification of markets and social responsiveness.

Hamermesh, Aderson and Harris (1978) in their research on low market share but successful business Burroughs corporation, Crown Cork and Seal Co Inc and Union Camp Inc. proved wrong the traditional strategies of low market share in low growth industries should be divested and high market share business in low-growth industry should be "milked". They came out with strategies for low market share companies for success. These are to carefully segment their markets (limited number of segments where their strengths are highly valued and large competitors absent), to use market research and development funds efficiently, to think small (putting market share low on the list of objectives and diversify cautiously) and to have the chief executive's influence as pervasive.

2.4 Market Share Models.

The market share estimation or analysis models can be broadly classified into two categories. Market share attraction models and the Stochastic models. In this section a detailed discussion of each of these classification will be offered.

2.4.1 Market share attraction models

In these models, market share is related to attraction which relates only to the marketing actions and uncontrolled variables of a specific selling entity. We shall consider a market share theorem in the following section and make a build up from there.

Market Share Theorem

This theorem was proposed by Bell, Keensey and Little (BKL) (1975). These authors considered a competitive situation where purchases are made from a set of n "sellers". The "attraction" of the different sellers depend on various marketing decisions. Attraction of the i^{th} seller is denoted by a^i and the market share for i^{th} seller by m_i. The aim of BKL paper was to give the conditions of the relationship between attractions and market shares. This result to a simple linear normalization of attractions;

$$M_i = \frac{n_i}{\sum_{j=1}^{n} a_j}$$

The attraction may be a function of the seller's advertising expenditure and effectiveness, the price of the product the reputation of the company and so on. The problem here is how to find these attraction values where Barnett (1976) admits that "this is a non-trivial task". Other problems of the model are found in its assumption as identified by the critics of the model.

Assumptions of the Model.

Assumption 1

Attractions should be non-negative that is

$$a_i > 0 \quad : \sum_{j=1}^{n} a_i > 0$$

Assumption 2

Zero attraction should give zero market share, that is, when $a_i = 0$ then $m_i = 0$.

According to BKL, these two assumptions are rather inconsequential and are made to simplify the analyses. Christopher Chartfield (1976), on the other hand, feels that these two assumptions are in fact crucial to the theorem and not inconsequential. He argued that, BKL make it clear that the whole point of the report is to find conditions under which market share are given by their equation. He gives an example of a competitive situation (for example going to a dentist) where one would tend to choose the least unattractive "seller" (that is, the attractions are negative). Negative attractions, according to Chartfield, do not satisfy the BKL conditions and so do not lead to the theorem formulation.

Assumption 3

Two sellers with equal attractions have equal market shares that is, $a_i = a_j$ implies $m_i = m_j$.

Bartmett (1976) has shown that this assumption is not necessary for the market share theorem which can be proved from assumptions 1,2 and 4 only. So this assumption can be disregarded.

Assumption 4

A change in the attraction of a competitor affects the firm's market share by the same amount regardless of which competitor sustained the change, that is, $f_i(a+e_j)-f(a)$, for $j>i$ is independent of j where e_j is the j^{th} unit vector. Though this is an important assumption, it may not hold to the fact that non-linearity, asymmetry and elasticity coefficient are introduced to allow different assessments of market behavior of different products. Like BKL, Barnett offers no guidance for examples where the coefficients are produced "out of a hat".

Application Problems

BKL made it clear that they have not deduced any specific results about market behavior, but rather some mathematical rules of the game. Chatfield (1976) feels that a paper concerned with "mathematical rules of the game" must make more effort to demonstrate the practical implications if any, of the results. He charges at Barnett that he has made even less attempt to justify his mathematical manipulations where he simply says that "hopefully those trying to understand market behavior will find this information useful".

Chatfield fears that the theorem may be used in the wrong way thus being harmful. Some readers who do not follow the mathematics involved or do not realize that the theorem depends on assumptions which are not justified empirically will simply try to use it. They will realize that they do not know what the "attractions" are. In any case, attractions are not proportional to brand shares of necessity.

BKL says: "If someone asserts an attraction function depending on say advertising and price, and it turns out to be is wrong, then the calculation of market share will be wrong". They, however, do not say how one can tell that an attraction function is wrong.

Chatfield further feels that one does not need the theorem if the aim is to examine the relationship between advertising and brand shares for different brands. Chatfield concludes that "the present trend toward the use of more and more complicated mathematics, often at the expense of empirical analysis is a trend that should be resisted since mathematics however clever, is no substitute for finding generalized knowledge of market behavior of attraction forms.

In support of the BKL model, Barnett feels that through one axiom in the BKL model is stronger than absolutely necessary, this, in no way reduces the correctness of their analysis as asserted by Chatfield. Further, the criticism to the equal - attractiveness - implies-equal market share property as not having substance" is surely not wrong, for all linear-normalized models of market share have this property.

These arguments imply a debate on the theorem which has yet to be resolved. It is doubtful if such a theory can really be beneficially used without further enlightenment on its empirical application. This makes it difficult for this study to justify the use of such a theorem in the daily newspaper industry.

2.4.2 Stochastic Models of Market Share Determination and Forecasting.

As highlighted in the background, market share (or brand choice) models attempt to describe the process of choosing one brand over another. Stochastic models which are probabilistic are concerned with the choice of brand given that a purchase is to be made. David Montgomery and Glen Urban (1969) put the stochastic models of brand choice into three basic categories :- zero-order, Markovian and learning models. Donald Morrison (1965) in an article entitled "Testing Brand Switching Models" distinguished three model types, that is : learning models, first order models with heterogeneity and nonstationary Bernoulli models. Leonard Simon and Marshall Fremer (1970) advances two categories of brand choice. Markovian analysis and learning models. For the purpose of this paper and harmonizing what the authors mentioned above have said, these models and methods will be discussed under two sub- categories: learning models and Markovian models.

Learning Models

The linear learning model has its foundation in the work of Bush and Mosteller (1955) on learning theory. Kuehn (1958) was the first to recognize and explore the possibility of applying

Bush and Mosteller's work to consumer behavior. He presented evidence that consumer behavior is a learning process. The models hold that the purchase of a brand increases its probability of purchase (or the non-purchase decreases the probability of purchase) on the next shopping trip.

Assumption of learning model

Qualitatively the model assumes that every past purchase decision influences the next purchase decision and the more recent the purchase, the greater the effect.

The population is homogeneous, that is, all consumers have learning processes with the same parameter values.Bush and Monsteller assume that homogeneous population of consumers in which the current purchase decision is influenced by at least four or five most recent purchase decisions.

Lastly it is assumed that the market is composed of brand 1 and 0. The learning models predict the probability that a customer's next purchase will be brand 1 given his past history of purchase (for example, a last purchase of 0110). In this thesis, Kuehn (1962) used factorial analysis in an attempt to isolate the effects of purchases. His data consisted of purchases of frozen range juice, where brand 1 was snow crop and brand 0 was all others. The results of his analysis appeared to be consistent with linear learning model of consumer brand choice.

Application and problems

The linear learning model developed by Kuehn was not directly and stochastically tested, but his work served as stimulus to more general approaches in stochastic modeling of consumer behavior.

Carman (1966) argues that little empirical evidence has been published in support of the linear learning model, and that the results which had been published did not directly test the linear learning hypothesis. He tested the linear learning model using Dentifrice purchase panel data from the Medical Research Center of America (MRCA), consumer panel the period subsequent to the American Dental Association endorsement of Carman in 1969. Ironically, he found that the linear learning model provided a good fit for the different subgroups of the population. The coefficients of determination in the regression variables ranged from 0.67 to 0.99, and therefore the dentifrice data did not appear to be inconsistent with the linear learning model.

Carman also examined the projected equilibrium brand shares of Crest. He found that the equilibrium share were estimated to be from 28 to 68 per cent in the subgroups. This shows that the learning process itself is nonstationary. Carman's work emphasizes that stochastic models are generally amenable to statistical testing and therefore may be evaluated for their descriptive adequacy. The formulation of consumer subgroups, in order to examine the effects of heterogeneity of response on the stochastic model, is another good methodological feature of Carman's analysis.

Demsetz (1962), using an econometric model of the entire frozen arrange juice industry and Chicago Tribune panel data from 1950 through 1957, investigated the following questions:-

i) Is there a learning process operating in the market that depends solely on the age of the market?

ii) Is the learning process a function of personal product experience?

Question 1 was answered in the negative. It can only be answered in the affirmative with the additional assumption that consumers "learn" about non essential product differences and relative price does cause shifts between the two classes of brands. Answer to question 2 is in the affirmative for he found a significant negative correlation between the purchases devoted to national brands and the length of product market experience. He concluded that consumers are not "puppets" but that they learn to detect trivial brand differences. He believes that these results can be generalized to any low cost frequently purchased and relatively simple items.

Studies by Frank (1962) like those of Massy (1966) refuted a basic assumption underlying Kuehn's work, that of homogeneity of individuals. In these studies an individual type of analysis conducted on long purchase string demonstrated that individuals did not have identical transition probabilities and further that individuals differed in the order of the stochastic processes they followed. These findings were supported by Blattberg and Ser (1976).

The Markovian Models

These models are attributed to the work of a Russian mathematician by the name A.A. Markov who later gave his name to a much more humane and useful tool of probability analysis - Markov chain analysis. As Markov chain describes a sequence of random events (for example changes in consumer behavior or brand choice) in which the probability of each event occurring is entirely dependent upon the event immediately preceding. The models attempt to describe the transient and the steady -state behavior of a market in terms of the brand loyalty of consumers.

Assumptions of Markov Models.

According to Leshie W. Rodger (1984), these assumptions are as follows:-

i) Everyone responds to a given set of conditions in the same way.

ii) Purchase probabilities remained constant over time. The assumption that the probability that a housewife will buy a particular brand next time is determined entirely by the brand she last purchased, that is, conditional probability remains constant over time.

iii) No provision is made for the effect on consumer behavior of stimuli to switch brands (such as advertising or special offers).

Montgomery and Urban (1969) spelled the assumptions as:

i) First order of switching process

ii) Stationarity over the data period

iii) Homogeneity of transition matrix across brands.

Based on the above assumptions, researchers have argued that these contribute to weaken the usefulness of the Markov models, and there has been widespread debate on these assumptions which is not yet conclusive. The first analysts to examine these assumptions via statistical procedures were Styan and Smith (1964). They used the simple Markov model to analyze product switching behavior of a panel of 100 British house wives for a 26 week period between January and June, 1957 on laundry powder product. Using the x^2-test developed by Anderson and Goodman (1957) they tested the order of the Markov chain. Their aggregate data behaved according to a higher than zero-order Markov chain. But there was no sufficient data to test the first order hypothesis against second and higher order alternatives. Knowledge of this aggregate first order behavior of this product does not establish first order Markov behavior on the part of the individual households who enter this analysis. Massey (1966) found that for his small sample of coffee users, zero-order process seemed to be adequate. Patrick and Haires (1968) on the basis of their data, concluded that both zero and first-order hypothesis must be rejected. This is because the evidence is not so strong as one would wish with regard to the "true" order of the Markov process in analysis of purchases of brands. Furthermore dealing with Markov chains of higher order is not particularly easy for as the order increases, the entries for the matrix may be so few as to render the analysis meaningless.

The assumption of stationarity of the transition matrix is not conclusive. Here stationarity means that the transitional probabilities are invariant over sufficiently long periods. Few researchers maintain the assumption is absolutely realistic while others do not expect long-run stationarity.

Styan and Swith (1964) found in their work that the null hypothesis of stationarity could be rejected though their sample size of 100 families was relatively small. Massy (1966) on the other hand, found that the stationarity hypothesis was not tenable for family purchase pattern for coffee. However, this study was family specific and of limited size, 39 families. Patrick and Haines (1968) found in a more recent study that the null hypothesis of stationarity could not be rejected at the 0.5 level for any of eight brands or for the total product class.

The Markovian models require discrete time periods which are necessary for analysis. For the model to be mathematically tractable, each consumer must purchase only once in each time period. The problem here is to establish time period long enough so that every consumer in the sample will purchase once or a "no purchase" state can be established. The frequencies of purchase differ from one individual to another. Howard (1963) provided a means of dealing with unequal time intervals in a Markovian framework. He suggests the use of a semi-markov process in which inter-purchase time is random variable selected from a density function, where a separate time density function may exist for each potential transition. Unfortunately, the literature contains no report of the application of the semi-Markov process to purchase data despite the apparent superiority of the process. Kuehn and Rohloff (1967) point out that this lack of reports may be due to the difficulties faced in transforming processes indexed on real time, that is, transforming the consumer's actual behavior pattern, to time-to-time purchase.

The assumption of homogeneity means essentially that all families of one type (for example, income category or social class) who bought a certain brand i at time j have a probability of exactly P_{ij}, of repurchasing the brand and should be viewed as a random variable resulting from cumulative individual behavior patterns. Howard (1963) again describes a means for aggregating individual family purchase and thereby introducing heterogeneity. He argues that for each brand that exists at time zero we would have a separate probability distribution that describes the number of customers originally buying that brand who would purchase brand j at time n. To overcome this problem of homogeneity, Morrison (1965) offered and tested another means of introducing heterogeneity. Further, Frank and Morrison have warned of the danger of inferring individual behavior based upon aggregate transition matrices when the models used assume homogeneity of individuals in the sample market.

Although Markov analysis presents a great deal of insight into the structure of a market, data concerning brand-switching are difficult and expensive to obtain. Markov models are useful as descriptors of consumer behavior, but before conditional predictions can be generated to describe the effects of changing market variables, these marketing variables must be linked to the transition probabilities. Talser (1962) has developed a model linking price to the transitional probabilities. He used a variant of the Markov brand switching model to develop estimates of the price elasticities of branded goods. Here the brand choice transition probabilities are made functions of the competitive market variables (such as prices) that prevail in the market at the time the brand choice is made. This variable Markov model has the brand switching probabilities

which are subject to change from period to period under the impact of competitive activity. The Markov model has the advantage that it can be applied even when relatively little data (and that in aggregate form) are available.

The use of markovian models in kenya have been previously researched. Ojode, L.A. (1989), studied the use of these models to forecast standard one enrolment in Nakuru Municipality. In the findings of her study she was able to explain the transition of students enrolling for standard one, for each zone from 1963 to 1988. However, she could not give an account of why some zones attracted more enrollments than others.

Another study by Owino, J (1982) used the markovian model for education planning at the national level. The findings of his study were however not easy to apply in reality as it covered the whole country. The study however did provide important forecasts of the expected standard one enrollments compared new classrooms and other facilities available for the whole country for the year 1983.

The Markovian models are said to be easier to apply since by virtue of their analytic properties, they require less programming effort and less computer time. Furthermore, they are easy to validate (or test) and estimate by virtue of their analytical properties.

These models are readily transferred between firms and product classes, meaning that there will

These models are readily transferred between firms and product classes, meaning that there will tend to be economies of scale in model development. Further it also means that the literature of these models will tend to be more complete in terms of information needed to apply this approach as opposed to the other models described above. They also utilize readily available data, thus they are much easier and less costly to analyze for sensitivity.

discrete markov Chain, otherwise it is a continuous markov chain. In this paper the concern is with homogenous finite markov chains.

Given a set of states i=1,2...m, then P_{ij} is the percentage of time that state j is the outcome of the system in state i. The set of transition probabilities across any row (current state) is called a probability vector and represent all probabilities of moving from one state to another, in the current period, to one of the states comparing the form of the transition Matrix P:

$$P = \begin{array}{c|cccc} \textbf{From/ To} & \textbf{State at the next period} & & & \\ & S_1 & S_2 & S_j & S_n \\ \hline S_1 & P_{11} & P_{12}\cdots\cdots & P_{1j}\cdots\cdots & P_{2n} \\ S_2 & P_{21} & P_{22}\cdots\cdots & P_{2j}\cdots\cdots & P_{2n} \\ . & \cdots & \cdots\cdots & \cdots\cdots & \cdots \\ . & \cdots & \cdots\cdots & \cdots\cdots & \cdots \\ S_n & P_{n1} & P_{n2}\cdots\cdots & P_{nj}\cdots\cdots & P_{nn} \end{array}$$

The state of the system after n moves is described by numbers $\mathbf{P_{ij}(n)}$, that is, the percentage of the time that j is the outcome after **n** moves if the system starts in a state i. As n becomes large $\mathbf{P_{ij}(n)}$ approaches equilibrium, that is, all the numbers in a

transition matrix column become identical. The equilibrium P_{ij}'s may

$$\pi_j = \sum_{i=1}^{m} \pi_i P_{ij}$$

be computed from the equation;

and $$\sum_{j=1}^{n} \pi_j = 1 \quad where, \quad \pi > 0.$$

Transient Behavior and State Probabilities.

Let the probability that the system will occupy a particular state i, at period k, be denoted by q(k). This probability is the state probability. As the system must occupy only one of the n possible states at any given period, including period K,then the sum of all q values must equal 1. Thus:

$q_1(k)+q_2(k)+.....+q_n(k)=1$, for every, K.....1

that is;

$$\sum_{i=1}^{n} q_i(k) = 1 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 2$$

Where; n=number of states

K=number of transitions=0,1,2,.....

In general therefore, the state probability distribution is given by,

In general therefore, the state probability distribution is given by,

$q(k)=[q_1(k),q_2(k).....q_n(k)]$.....3

Thus, the probabilities $q_1(k)$, $q_2(k)$, and $q_3(k)$ form the components of Q(k).But in matrix notation Q(1) is the product of Q(O) and P.

Thus;

$Q(1)=q_1(1),q_2,.....,q_n(1)=Q(o)$.....4

Where P is the transition probability matrix of the system.

Similarly Q(2) = Q(1)P.....(5)

Thus, $Q(2) = Q(1)P = Q(O)P^2$

In general therefore:-

$Q(k)=Q(k-1)P=Q(k-2)p^2=.....=Q(o)p^k$.....6

A major property of Markov chains is that in the long run, the process usually stabilizes, that is, the system exist in the steady state or in equilibrium. This phenomenon of equilibrium probabilities is expressed as:

Q(k)=q(k-1)=q(k)P.....7

But,

$Q_1=Q_0P$.....8

Which implies that, state probabilities at equilibrium remain the same from period to period.

Thus;

$$Q = (q_1, q_2, \ldots\ldots, q_n) \begin{pmatrix} P_{11}, P_{12}, \ldots\ldots\ldots P_{1n} \\ P_{21}, P_{22}, \ldots\ldots\ldots P_{2n} \\ \ldots\ldots\ldots\ldots\ldots \\ \ldots\ldots\ldots\ldots\ldots \\ P_{n1}, P_{n2}\ldots\ldots\ldots P_{nn} \end{pmatrix}$$

The key feature of a Markovian model is its ability to capture probabilistic dependencies between successive events. Determining the steady - state behavior of a Markovian system involves solving a set of Linear equations. Consequently the matrix multiplication in equation (8) above, then result in a system of n, simultaneous linear equations as follows:

$q_1 = P_{11}q_1 + P_{21}q_2 + \ldots\ldots\ldots\ldots\ldots + P_{n1}q_n$.

. ...

$q_n = P_{1n}q_1 + P_{2n}q_2 + \ldots\ldots\ldots\ldots\ldots + P_{nn}q_n$

The limitations of this model are[19]:-

(a) For accurate equilibrium (equation 4), the P_{ij}'s must be well determined.

(b) The size of n for P_{ij} (n) to be close to p_j may be quite large; the p_j's are useful only if the requisite size of n is reasonable for the problem at hand.

(c) Difficulties usually arise in the application of Markov chain analysis regarding the development of transition matrix. Historical data can serve this purpose in some cases,

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[19] Springer,H.C et al. "Probabilistic Model Volume Four of the Mathematics for management Series" Richard D Irwin Inc.Homewood Illinois pp. 234 - 65.

while in others, the subjective beliefs of management may be used.

A major property of markov chains process is thus:- "The future, given the present, is independent of the past".

Based on the arguments developed from the previous studies that were reviewed, and which suggests that, brand choice is substantially a stochastic process, it is desirable that the model to be developed in this study captures this characteristic.Each company's market share in a given period depends on the choice of the customers in that period. It is true that purchase probabilities for an individual for any particular brand can be expected to change overtime in any period, and from period to period.This dynamic nature of the customers in the newspaper market, is the necessary condition under stochastic process or system, thus, the markov brand switching model is best placed to capture the behavior of the daily newspaper market system. Such a model will provide a method for revising the individual's set of purchase probabilities to show changes induced by the passage of the time, new purchase experiences, and the purchasing pressure from promotion campaigns by the publishers.Thus, since the situation in the newspapers industry fits the characteristics of a stochastic process as described earlier in this paper,it is appropriate to use a markov brand switching model for accurate prediction of the future behavior of this system.

Market share (or brand share) measurement and analysis endeavor to evaluate the performance of a particular brand in comparison with the total market and competition. Deducing from the above, market share determination and prediction refers to the process of establishing a company

brand's share of the market or its likely share in the future. The methods of doing so are, therefore, implied. The determination of the future market share helps in establishing a firm's appropriate marketing strategies.

The rationale for the determination of the current, future and optimal market share of a products brand stems from the importance and use of the market share data and information. Most of the debate has centered on whether a company should always go for high market share, like the market leaders and challengers or be contented with the low market share as the market followers and market nichers do or whether the whole idea should be optimize its market share. Each of these market share objectives have different effects on profitability, return on investment (ROI) and risk.

CHAPTER 3

RESEARCH DESIGN.

3.1 The population.

The population of the study consist of all circulation figures of the brands of Daily English Newspapers that are published and circulated on a daily basis in the Kenyan market. Specifically these brands are; The "Daily Nation", published and circulated by Nation Printers and Publishers Ltd, The "East African Standard", (formerly The Standard) published by The Standard Ltd and "Kenya Times", published by the Kenya Media Trust Ltd. There are other newspapers and magazines that are published on a periodic basis, these includes, the Finance, Weekly Review, The People, East Africa and Law Monthly. These are not considered in the study.

The actual circulation annual figures for these papers were obtained for the years between 1980 and 1994. This comprised the population of the study.

3.2 The Sample

The sample of the study will be composed of the circulation figures of these brands (Daily Nation, East African Standard and Kenya Times), for the period 1991 to 1994. This period of 4 years was chosen for the following reason.

The period provides sufficient data for the method of analysis and for building and verifying the model. This is because for a markov model, the most recent data is all that is important in

determining the future behaviour or states of the system as was explained in chapter two. In line with this it would not be necessary to use the data for the years 1980 to 1990.

Also due to the recent liberalization of the printing industry which started in 1991, the freedom of the press have been substantially increased compared to the years before the liberalization. Thus, the best data that can be used to study the current behavior, and trend in the market is not the data for the years before the change but the data after change.

The Sunday Nation, The Friday Nation and the Sunday Standard are considered as Newspapers on their own and are registered as so. Thus, to the publishing companies these may not be included in the daily newspaper market, as they are periodic in nature but for this study they are considered as daily newspapers and thus will be included in the study. This is because, these publications serve as the newspapers for these days, only that they carry additional, special features, and analysis of news, besides reports of the daily news. There are other publications circulated on a daily basis but are not included in the study. These may not have a significant influence on the market shares of the big three english newspapers since, by their nature, they are specialized publications, in the sense that, they target certain groups of readers. For example, the Taifa Leo is specifically meant for those who probably may not be comfortable reading english news publications.

3.3 Data collection method.

The main data was collected from a secondary source, that is, the circulation figures of the Daily Newspapers for the year 1983 to 1994. A letter was sent to the publishing companies [Appendix (i)] requesting for this data. The data collected and recorded by these companies was on a monthly basis (as indicated by the data collection sheet, Appendixes (ii)). These records are computed by the circulations departments of these companies. Usually the daily circulation figures are sent (by phone), by the distribution agents throughout the country indicating the number of copies sold and returned.

A questionnaire to the marketing Managers of the publishing companies appendix [(iii)] was administered to gather information that will help in the recommendations and conclusions.

3.4 Data Analysis.

Data will be analysed by building a markov brand switching model for the newspaper market. The elements of the transition matrix will be estimated by solving a series of linear equations simultaneously. Tables,graph, proportions and percentages will be used to analyse and present the data.Computer packages will also be used to tabulate the data.

CHAPTER 4

DATA ANALYSIS

4.1 Model Development

The information regarding the loyalty of customers to the respective papers was not available nor were the data regarding the actual movement of customers from one newspaper brand to the others available. It was also not possible to obtain the subjective management believe about their opinion for the extent of their customers loyalty. If such information were available, it could be used for estimating the transition elements in the transition matrix. The shortcoming of such an approach would be the use of a transition matrix based on some subjective information from the management. In the absence of all this however, it became necessary to come up with an appropriate transition matrix for each brand compared to its competitors .The accuracy of the transition matrix elements is of great importance if the markov model is to be used for the purpose of accurate forecasting .Primary data from the consumers of daily newspapers can be collected in a bid to estimate the elements. This approach would however require more time and financial resources. The approach used in this study is similar to that used by Whitaker (1978),in his study of consumers loyalty of the National Newspaper market in U.S.A. He formed a series of linear equations whose solution was used as an estimate of the transition matrix elements. He emphasized that for a markov chain model, the transition matrix is the core.

To build-up the transition matrix, the monthly data obtained from each company were arranged in tabular form [Appendices (iv) to (viii)] to obtain the total annual readership. The proportion

of each companys' annual sales to the total readership were then calculated for the years, 1983 to 1994 (for the Daily Nation and the East African Standard), and 1991 to 1994 for the Kenya Times (appendix viii). Then 1991 was chosen as a base year to start studying the behavior of the system for the following reasons.

There has been changes in the government policy regarding the control of the mass media, including the print media, through the liberalization programs undertaken. This liberalization of the press has brought rapid changes in the industry with new firms entering the industry. Although most of the new entrants are producing periodical magazines and newspapers their entry is no doubt likely to affect the behavior of the Daily Newspapers system. Thus to capture the recent behavior in this industry data for 1991, 1992, 1993 and 1994 would be the most appropriate for building the model.

The assumptions underlying the markov chain model in general are covered under chapter two of this study and shall be referred to in this section, where applicable. In addition, the study assumed that total readership of the daily newspaper can be accurately estimated by the circulation figures from the three English daily publications or brands, (Nation , Standard and Kenya Times).

4.2 The Model

Suppose there are two brands competing in a market. Define brand loyalty as the proportion of

consumers repurchasing the brand on the next occasion without persuasion, and let it equal d_i for the i^{th} brand. Define purchasing pressure as the proportion of consumers who are persuaded to purchase the j^{th} brand on the next occasion and let it equal w_j.

The elements of the brand switching transition matrix T, can be defined as;

$$a_{ij} = \begin{cases} d_i + (1-d_i)\, w_j & j=i \quad j= 1,2,3, .., N \\ (1-d_i)\, w_j & j\#i \quad i=1,2,3 \ldots,N \end{cases}$$

Where;

$$0 \le d_i \le 1, \quad 0 \le w_j \le 1. \quad \sum_{j=1}^{n} w_j = 1$$

The transition elements on the principal diagonal (j=i) of the matrix T, can be interpreted as the proportion of consumers, d_i remaining with the i^{th} brand, without being influenced by purchasing pressure. Elements off the principal diagonal ($j \neq i$), consist of those disloyal consumers subjected to purchasing pressure, w_j, who switch brands. This explanation is based upon the idea of consumers shifting from one brand, in one purchasing period, to the others, and it is assumed that consumers purchase the brands at equal intervals, in equal amounts, an assumption not supported by empirical evidence. This inconsistency may be significant on a purchase-to-purchase basis, however, the effect could be less serious at an aggregate level.

If the d_i and w_j are known for each brand, then the brand share of each brand in the next period is determined by the matrix operation

$$\mathbf{Y_t = Y_{t-1}\, T}$$

Where **Y** is the row vector of brand shares at time **t**.

An equilibrium will be reached when **pT = p,**

Where, **p** is the row vector of brand shares at equilibrium.

Stated in another form:

$\mathbf{Q(k_1) = (k_o)T}$. For a two brand market,

$$Q(q_{nt}\ q_{st}) \begin{bmatrix} P_{nn} & P_{ns} \\ P_{sn} & P_{ss} \end{bmatrix} = q(q_{nt+1}\ q_{st+1})$$

Where; q_n is the specific brands';(for example Daily Nations' Standards' or Kenya Times') share of the market.

q_s is the combined competitors' (East African Standard, Kenya Times) share of the market.

P_{ij} represent the probability of customers switching from brand i to brand j.

n represents the specified brand (for example in this case Daily Nation ,Standard or Kenya Times) brand.

s represents the combined competitors excluding n.

It should be noted in this case that, $q_n+q_s=1$, (assuming it is only the three brands that are competing in the Daily Newspapers market). Also the row elements of each of the transition matrix, **T**, add up to one, thus in every transition, a newspaper retains a certain proportion of its readers while the rest shifts to the other newspapers. At the same time each paper gains a certain proportion of the other newspapers' customers. Since the information on how customers shift from one newspaper to the others was not available, three models will be developed, each for every brand against its combined competitors.

In most problems the current state Q(0) and the transition matrix (**T**) are known; but the future state ,Q(k) is unknown. In our case however, **T** is unknown, but the transition from state to state for the years 1991 to 1994 can be used to estimate the transition matrix .

Wolfe and Dantzig (1962), showed that there is an interaction procedure which, when applied results in the choice of a transition probability matrix. Since a markov chain (system) can be in any one of the **M** states and associated with each state, i(i=1,2,...,M) let p_i be the set of available alternate probability vectors (k_{pi1}, k_{pi2}, ... k_{pin}). The idea is to select one vector out of p_i in such a way that, when it is used for the one-step transition probabilities out of state i in the markov chain, the ultimate gain is maximized, assuming that the system stays in operation for a sufficiently longtime. Repeating the iteration procedure for all the states, i=1,2, ...,M then a transition probability matrix for each of the three brands can be assembled.

The iteration method used in achieving this result has been shown to be a special extension of the simplex method of linear programming allowing for multiple substitution (Ghellunk, 1990). Thus, to estimate the transition matrix the researcher solved a series of linear equations formed for the transition between 1991 and 1992, for each brand against its combined competitors. Due to Shortage of data from Kenya Times it could not have been possible to develop a three by three transition matrix for the market, which could have made the analysis detailed.Thus, the study considered each brand against its combined competitors at a time.

For instance, Daily Nation against its competitors, using the equation below:

$$Q(1991)\begin{bmatrix} P_{nn} & P_{ns} \\ P_{sn} & P_{ss} \end{bmatrix} = Q(1992)$$

Let n represent the Daily Nations' share and s , the combined competitors. Thus,in the equation above and using the data in table 1 below, we calculate the daily nations' proportion of the market as in the table 1. For the transition between 1991 and 1992,

$$(0.8\ \ 0.2)\begin{bmatrix} P_{nn} & P_{ns} \\ P_{sn} & P_{ss} \end{bmatrix} = (0.78\ \ 0.22)$$

Table I : Calculation of Daily Nations' Proportion against the other brand.

a) Annual circulation in units.

YEAR	DAILY NATION	OTHERS	TOTAL
1991	7086241	1706798	8793039
1992	6668636	1919787	8588423
1993	5997894	1388435	7386329
1994	6011950	1171924	7183874

(b)Proportion of annual circulation to total readership.

YEAR	DAILY NATION	OTHERS	TOTAL
1991	0.8058921	0.1941079	1.0000
1992	0.7764680	0.2235320	1.0000
1993	0.8120263	0.1879737	1.0000
1994	0.8368674	0.1631326	1.0000

Table II. Calculation of East African Standards' Proportion against the other.

(a) Annual Circulation in units.

YEAR	E.A.STANDARD	OTHERS	TOTAL
1991	1403661	7389378	8793039
1992	1665237	6923186	8588423
1993	1231888	6154441	7386329
1994	1039193	6144681	7183873

Table II (b) Proportion of annual circulation to the total readership.

YEAR	E.A.STARDARD	OTHERS	TOTAL
1991	0.1596332	0.8403668	1.000
1992	0.1938932	0.8061068	1.000
1993	0.1667794	0.8332206	1.000
1994	0.1446563	0.8553437	1.000

Table III. Calculation of Kenya Times Proportion against the total Industry Circulation.

(a) Annual Circulation in Units.

YEAR	K.TIMES	OTHERS	TOTAL
1991	303137	8489902	8793039
1992	254550	8342873	8588423
1993	156547	7229782	7386329
1994	132731	7051143	7183874

(b) Calculation of the proportion to the total circulation.

YEAR	K.TIMES	OTHERS	TOTAL
1991	0.0344746	0.9655254	1.000
1992	0.0296387	0.9703613	1.000
1993	0.0211941	0.9788059	1.000
1994	0.0184762	0.9815238	1.000

Similarly the transaction between 1992 and 1993 can be calculated as follows;

$$(0.78\ 0.22)\begin{bmatrix} P_{nn} & P_{ns} \\ P_{sn} & P_{ss} \end{bmatrix} = (0.81\ 0.19)$$

When these two matrix equations are solved a set of two simultaneous equations with two unknowns is obtained; which when solved the initial transition matrix is obtained,as shown below.

$$T=\begin{bmatrix}0.96 & 0.04\\ 0.29 & 0.71\end{bmatrix}$$

The equilibrium transition matrix for this trial transition matrix is obtained using the macro-manager computer package available at the computer lab at the university.It should be noted that the initial transition matrix is to be used for obtaining the forecasted market shares.The equilibrium market shares are obtained when the equilibrium transition matrix is multiplied with the brand shares of the initial period. This would give the same results as multiplying the initial brand shares with the initial transition matrix raised to power 32.

$$T_e=\begin{bmatrix}0.87879 & 0.12121\\ 0.87879 & 0.12121\end{bmatrix}$$

This equilibrium is attained when n = 32

The initial transition matrix's elements of the matrix T above, are the probabilities of customers switching brands. Thus, for the daily nation, the information can be summarized as below;

Table IV. Transition of Daily Nations' Customers.

FROM	TO		
		DAILY NATION	OTHERS
	DAILY NATION	0.96 OR 96 %	0.04 OR 4 %
	OTHERS	0.29 OR 29 %	0.71 OR 71 %

Similarly , when the data from table 2 & 3 above, for the East African Standard and Kenya Times respectively were used the following initial and equilibrium transition matrices were obtained;

For the East African Standard, the initial transition matrix is ,

$$T = \begin{bmatrix} 0.42 & 0.58 \\ 0.09 & 0.91 \end{bmatrix}$$

and the equilibrium matrix , obtained when n = 11 is ,

$$T_e = \begin{bmatrix} 0.13433 & 0.86567 \\ 0.13433 & 0.86567 \end{bmatrix}$$

For the Kenya Times,the initial transition matrix is,

$$T=\begin{bmatrix}0.025 & 0.975\\ 0.010 & 0.990\end{bmatrix}$$

which reaches an equilibrium when n = 4 and the transition matrix at this point is,

$$T_e=\begin{bmatrix}0.1015 & 0.98985\\ 0.1015 & 0.98985\end{bmatrix}$$

Table V. Transition of East African Standards'and Kenya Times' customers.

FROM		TO	
		E.A.STARDARD	OTHERS
	E.A.STARDARD	0.42 OR 42 %	0.58 OR 58 %
	OTHERS	0.09 OR 9%	0.91 OR 91 %
		TO	
		K.TIMES	OTHERS
	K.TIMES	0.025 OR 2.5 %	0.975 OR 97.5%
	OTHERS	0.01 OR 1 %	0.99 OR 99 %

Thus, the nation retains 96% of its customers from one transition period to another and losses 4% of its customers to the combined competitors (standard and Kenya Times) Its competitors loses 29 % of their customers to the Nation while retaining 71 %. Thus, the Nation is gains more customers than it is losing. The Standard retains 42% of its customers, while losing 58% to the competitors, who lose 9 % of their customers to the Standard while retaining 91 %. Lastly, Kenya

Times retains only 2.5% of its customers while 97.5% switch to the competition. Its competitors on the other hand are losing only 1 % of their customers to the Kenya Times while gaining 99 %. Thus, for the East African Standard and the Kenya Times, they are losing more customers than they are gaining. This means from one transition period to another their market shares will be declining. while that of the Daily Nation will be increasing. Since these transition probabilities of moving from one state to the next remain constant over time, these markov chains can be said to be homogeneous.The state space of the markov chains above is finite, (two) as such, they are also discrete markov chains.

When the system has reached a steady state there will be no change from one time period to the next. At the end of every period, the market share of each brand can be obtained by use of the equation; $\mathbf{Y_{n+1}=Y_nT}$.When $\mathbf{Y_n}$ does not alter after further multiplication by **T**, the system is said to have reached a steady state, that is $\mathbf{Y_{n+1}^*=Y^*_nT}$. Thus, the successive market shares at the end of any period **n** can also be obtained by $\mathbf{Y_n=Y_0T^n}$. One of the most remarkable results of markov theory is that if the latter equation is used instead of $\mathbf{Y_{n+1}=Y_nT}$ the steady state can be obtained as $\mathbf{Y^*_n=Y_0T^n}$, and the rows of $\mathbf{T^n}$ would all be the same as those of $\mathbf{Y^*_n}$ at steady state. This can be evidenced by looking at the output of the markov programs in appendices **ix** to **xi**, the three brands of newspapers.

What this means is that,if we have the transition matrix **T** we need not calculate **Y** if we want to find the steady state. All we need to do is to raise **T** successively to higher powers until

eventually all the rows of T^n are identical;this is called **convergence**. At this point the rows of T^n will be the values of the steady state vector and the value of n will be the number of the time periods needed to reach the steady state.

In this study,the Daily Nation takes 32 years (ie,n=32),the East African Standard 11 years (ie.,n=11), and the Kenya Times 4 years (ie.,n=4).An interesting observation to note at this point is that the Daily Nation takes the longest time periods to converge to steady state. The rate of convergence in a markov chain is determined by the transition probabilities. Considering the Daily Nations' transition matrix, the transition probabilities for instance show that, out of every 100 customers who bought this brand in 1994, 96 will repurchase the same brand in 1995, and 4 will purchase the competing brands (that is, the East African Standard and the Kenya Times). On the other hand,out of 100 customers who purchased any other newspaper except the Daily Nation in 1994, 29 will purchase the Daily Nation while 71 will purchase the competing brands.

What this implies is that both the customers of the Daily Nation and those of the competitors have a brand loyalty that is comparatively high that is 96 % and 71 % respectively. Thus, it will take a relatively longer time, for the Daily Nation against its' competitors to converge to steady state, than a system with two brands whose comparative customer loyalty is high, vis a vis low respectively.

Considering the Kenya Times and the East African Standard, we find that their transition probabilities indicate that the loyalty of their customers compared to that of the their competitors customers is low. This means that their systems will take less time periods to converge to steady state, since they are losing customers at more rapidly. Thus, if the rate of retaining customers for a particular brand is high compared to its competitors' such a market system will take a relatively longer time to converge to steady state. In this study, the Daily Nation takes the longest time period while the Kenya Times takes the least time. The customers of the Kenya Times are the least loyal while those of the Daily Nation have the highest degree of loyalty.

4.3 Model Validation

To validate the markov chain models above, we test hypotheses about the difference between two means.Using the model developed, the market shares of the three brands of newspapers are estimated for the years 1991 to 1994. For example,for the Daily Nation in 1991,we would take the observed brand share in 1990 and multiply by the initial transition matrix to get an estimate brand share for 1991.The observed market share for the Nation in 1990 is 0.85 against 0.15 for the competition.Therefore;

$$(0.85\ 0.15)\begin{bmatrix}0.96 & 0.04\\ 0.29 & 0.71\end{bmatrix}=(0.86\ 0.14)$$

This means the estimated brand shares for 1991 is 0.86 for the Daily Nation against 0.14 for its competitors combined. Similar calculations for the East African Standard and Kenya Times can

be performed. The results of these estimates are summarized in table 6 below.

Table VI. Estimated Market Shares for the Daily Newspapers for the Years 1991 to 1994.

YEAR	DAILY NATION	E.A.STARDARD	K.TIMES
1991	0.83	0.14	0.02
1992	0.85	0.14	0.01
1993	0.86	0.13	0.01
1994	0.86	0.13	0.01

The observed brand shares (Appendix viii) and the estimated brand shares of the three brands are taken as the independent samples drawn from two populations, which possess means and variances m_1 ,s^2_1 and m_2,s_2^2. Our objective is to make inferences about the differences between the two population means.

Newbold (1984), used a similar approach to validate a markov model he developed for predicting the repair time schedules for machines in an engineering firm. This study will use the same approach of comparing the means of the two samples to test the validity of the markov model. Let m_1 and m_2 be the mean brand shares for the observed and estimated brand share respectively. Then since we seek evidence to support the theory that $m_1 > m_2$, we will test the following hypothesis $H_o : m_1 = m_2$ (ie.,$m_1 - m_2 = 0$) against the alternative hypothesis $H_a : m_1 \neq m_2$ (ie.,$m_1 - m_2 \neq 0$).

To conduct this test, assume that the variability in the mean brand shares is essentially a function of the differences in the two populations, that the population distributions of these measurements are approximately normal, and that the variability for the two populations of measurements is approximately equal.

The sample means, standard deviations, test statistics and the statistical decision are summarized in table 7 below.Since the sample size is small, the researcher used the t - test. The test statistics in this case being calculated by the formulae;

$$t = \frac{M_1 - M_2}{\frac{\sqrt{(n_1-1)+(n_2-1)S^2}}{(n_1+n_2-1)}\frac{1}{n_1}+\frac{1}{n_2}}$$

The critical value for the desired level of significance is found from appendix xii, for $n_1 + n_2 - 2$ degrees of freedom. For a two sided test, the critical value is $t_{a/2}$ and H_o must be accepted when t lies within the range $-t_{a/2} < t < t_{a/2}$; otherwise it must be rejected.

For instance for the Daily Nation, using the information in table 7;

$$t = \frac{0.81-0.85}{\frac{\sqrt{3(0.0035+(3)0.09}}{6}X\sqrt{6}}$$

$$= - 0.04/0.3744 = -0.1068.$$

Statistical Decision.

Since the value of the test statistics calculated is within the non-critical value of t from the tables, the null hypothesis can not be rejected. This means that the two means are not significantly different.

Managerial Decision.

Since the forecasted value of the brand shares have equal means with the observed shares, the two samples are not significantly different at the 99 % level of confidence. This means the model is reliable and can be used for generating useful information for managerial decision making.

By comparing the calculated value of t, with the critical values for the other brands, a statistical decision is made as indicated in table 7. For all the three brands of newspapers, we would fail to reject the null hypothesis as stated above. This means that at 99 % level of confidence, there is no evidence that the two samples for all the three brands are different. This strengthens the reliability of the models for forecasting needs.

Table 7 Summary of the Means, Standard Deviations and the Test Statistics calculated for the three brands.

	D.NATION	STANDARDD	K.TIMES
O. Share Means, m_1	0.81	0.17	0.025
E. Share Mean, m_2	0.85	0.14	0.01
Estimated Share s_2^2	0.09	0.0033	0.005
Observed Share s_1^2	0.00035	0.0014	0.00025
Estimated Share s_2	0.03	0.18	0.07
Observed Share s_1	0.018	0.037	0.005
D.F.$(n_1+n_2 - 2)$	6	6	6
Table Value of t	3.707	3.707	3.707
Calculated T	-0.1068	0.8746	0.23908
Decision Regarding H_o	Fail to reject H_o	Fail to reject H_o	Fail to reject H_o

4.3.1 Results of Model Application.

The ultimate aim of developing and validating this markov model was to apply it in the prediction of brand shares for the Daily Nation, East African Standard ,and the Kenya Times for the years 1995 to 1999. These brand shares can then be used for managerial decision making , for instance, for sales forecasting, and in the formulation of marketing strategies.

The model $\mathbf{Y_t = Y_{t-1}\ T}$, where $\mathbf{Y_t}$ is the row vector of brand shares at time **t**, and **T**, the initial transition matrix, can be used to obtain the forecasted brand shares for the periods 1995 to 1999. To obtain the steady - state brand shares we multiply the initial brand shares (ie.,1991 brand shares) with the equilibrium transition matrix. For the Daily Nation, the brand share in 1991 is 0.81 against 0.19 for the competitors.The steady state share can be obtained as below;

$$(0.81\ 0.19)\begin{bmatrix}0.88 & 0.12\\ 0.88 & 0.12\end{bmatrix} = (0.88\ 0.12)$$

The forecasts can also be obtained by use of a markov computer program. The output (attached in appendices ix to xii) is summarized in table 8. These brand shares can be represented in form of bar graphs as shown in the next page. It is clear from these graphs that the Daily Nation will continue to command the greatest share of the market in the future years.

Table VIII. Forecasted Market Shares for the daily English Newspapers for the years 1995 to 1999.

YEAR	DAILY NATION	E.A.STANDARD	KENYA TIMES
1995	0.86	0.13	0.01
1996	0.86	0.13	0.01
1997	0.88	0.12	0.01
1998	0.88	0.13	0.01
1999	0.88	0.13	0.01

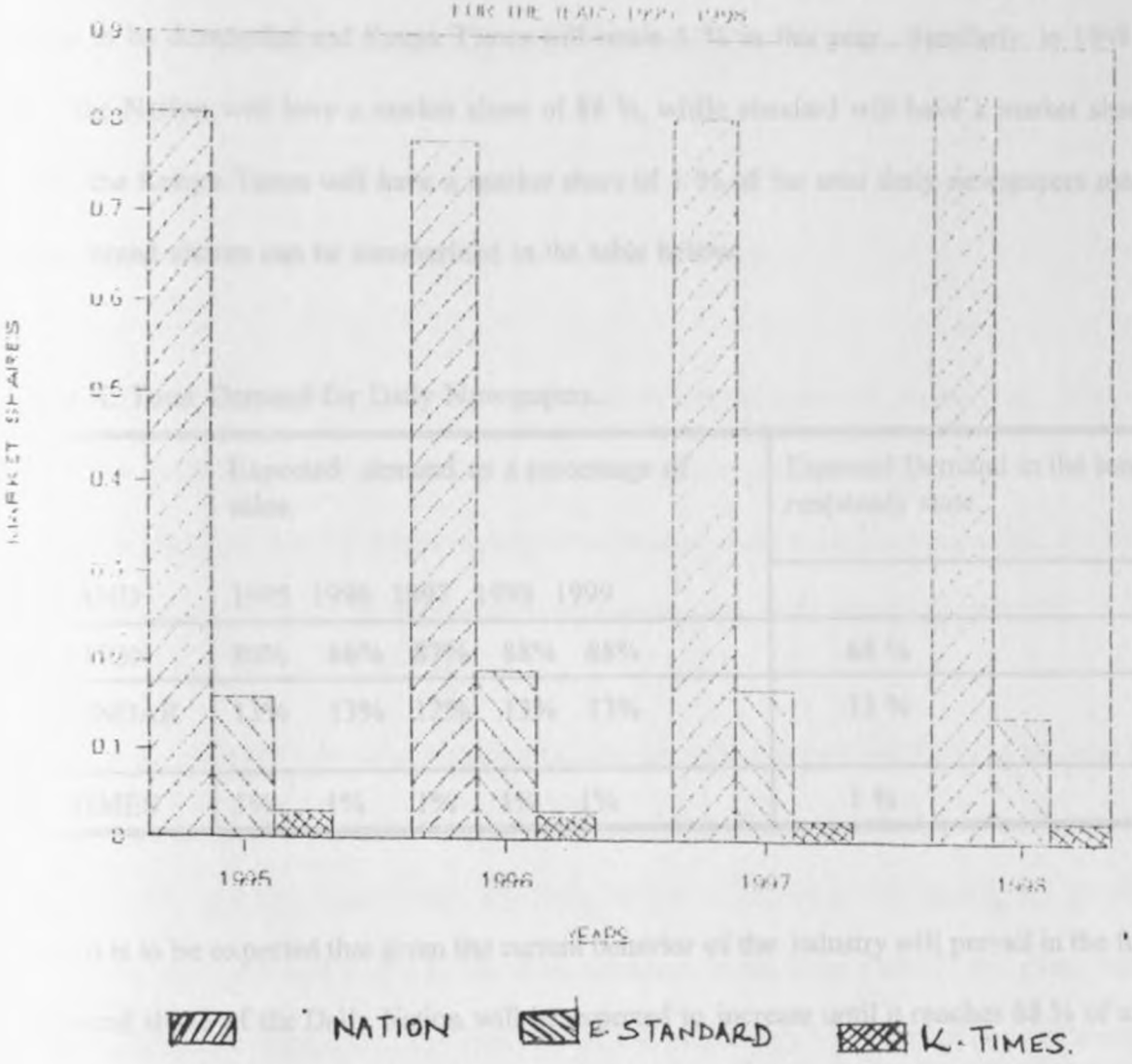
If the conditions of the Industry remain as they are, we would expect these brands to reach an equilibrium state in the following years: Daily Nation 2027 , East African Standard in the year 2006, and Kenya Times in the year 1999. The brands' shares at equilibrium are as summarized in the table below.

Table IX .Brand shares at steady state (Equilibrium Brand Shares)

YEAR	DAILY NATION	E.A.STANDARD	KENYA TIMES
1999	-	-	0.0105
2006	-	0.13433	-
2027	0.87879	-	-

Table 8 and the bar graphs, show that forecasted market shares for the three brands. In 1995 and 1996, it is expected that out of the total number of newspapers that will be sold, the Daily Nation will have a market share of 86 % ,the East African Standard will have a market share of 13 %,and the Kenya Times 1 %. In 1997, it is to be expected that the Daily Nation will increase

COMPARATIVE FORECASTED MARKET SHARE



its share to 87 % while the share of the East African Standard will decrease to 12 % of the total copies to be demanded and Kenya Times will retain 1 % in this year. Similarly, in 1998 and 1999 the Nation will have a market share of 88 %, while standard will have a market share of 11 %, the Kenya Times will have a market share of 1 % of the total daily newspapers market. These brand shares can be summarized in the table below.

Table X. Total Demand for Daily Newspapers.

	Expected demand as a percentage of sales.					Expected Demand in the long run(steady state.
BRAND	1995	1996	1997	1998	1999	
NATION	86%	86%	87%	88%	88%	88 %
STANDARD	13%	13%	12%	13%	13%	13 %
K.TIMES	1%	1%	1%	1%	1%	1 %

Thus it is to be expected that given the current behavior of the industry will prevail in the future, the brand share of the Daily Nation will be expected to increase until it reaches 88 % of all the total sales for the Daily Newspaper market ,while that of the East Africa Standard will be 13 %, and that of the Kenya Times 1%.

CHAPTER 5

SUMMARY, RECOMMENDATION AND CONCLUSION

5.1 Summary.

The major objective that this study had set out to achieve was the development of a market brand switching model for the Daily Newspaper market in Kenya.

The model was developed and applied to forecast the market shares for future years. The results of the forecasts were produced using a markov computer package (appendices vii to ix).The column marked value in the output represents the market share while states represents the brands. Customer loyalty can also be measured using the elements in the transition matrix .

For example, in 1995 it is to be expected that the Daily Nation will sell 86 % of the total Daily Newspapers that will be sold in the year, while the East African Standard and the Kenya Times will sell 13 % and 1 % respectively. The Daily Nation's customer loyalty during this period will be 97.586 %, thus it will lose 2.414% of its customers to the competitors.It will gain,48.282 % of its competitors customers. The competitors will retain only 51.718 % of their customers.

The East African Standard customer loyalty during this period will be 15 % . This brand will lose 86 % of its customers to the other brands, while it will gain 13 % of its competitors' customers. The competitors of the Standard will retain 87 % of their customers.

The Kenya Times on the other hand has a customer loyalty of 1 %, thus it will lose 99 % of its customers to its competitors, it will gain 1 % of the competitors customers. The competition will retain 99 % of its customers.

If the present behavior of this market persists in the future, and given the same operating conditions as for the period 1991 to 1994, it will be expected that, at steady state the market shares of these brands will be 88 % for the Daily Nation, 13 % for the East African Standard and 1 % for the Kenya Times.

This model is however useful for short term forecasts, for the purpose of formulating marketing strategy and forecasting sales.

5.2 Recommendations

Based on the findings of this study and the information gathered by way of the questionnaire, it is to be realized that the present situation does not favor the East African Standard and the Kenya Times. The loyalty of the customers of these publications is declining consistently, thus they should put a lot of their resources and efforts on increasing this loyalty so as to secure a greater share of the market. The major strategies that it should employ includes advertising, and improving on the quality of their newspapers, probably by adding more features, attracting more advertisements, color printing, and of course good circulation system to ensure the paper is available to all the prospective buyers.

The publishers of the Daily Nation on the other hand, should enjoy the fruits of a market leader, being a high share brand. Resources should be employed on maintaining their customers loyalty at its already high level to ensure very few of its customers, if any, will switch to buying the other brands. The company undertakes market share management strategies which are designed to help in market penetration, mass marketing, distribution innovativeness and encouraging more (regular) usage of their brand. The main objectives of these strategies are share building, share maintenance, and risk reduction.

Based on the market shares forecasted using the markov model developed, the management of these companies can use this information for the purposes of formulating good marketing decisions and better strategic plans. If the total expected demand for the whole Daily Newspaper market can be obtained or estimated then these companies can obtain an estimate of their future sales, by calculating the respective percentage given by the market share of the total industries expected demand. However since the market is very turbulent the management should use this model alongside other methods to improve on the quality and accuracy of information and of the decisions made.

The methods developed in this paper have been based on data taken from the daily newspapers market, and the results give an approximation of the brand loyalty of individual newspapers. The long term equilibrium based upon the derived brand loyalties and the market shares over the period 1991 to 1994, suggest that eventually if all things remain equal, the Daily Nation will

remain the market leader (1991 to 1994 data).

5.3 Limitations of the Study.

As it was explained earlier in this study, the model developed for the market considered the daily newspapers market as a closed one, while in actual situation it is open. The model needs to incorporate the effects of the other factors affecting sales in order to provide better estimates of the brands' market shares. This is a major limitation which is likely to affect the accuracy of the forecasts based on the model developed.

The assumptions of the markov brand switching model, (as highlighted in Chapter 2 of the Study), also acts as limitations in that, this approach to market share measurement ignores the differences inherent in organizations and Industry. These differences include the fact that each organization may be in a different stage of growth. In this case, the study results may imply for example that, since Daily Nation's Management have been able to sustain a high market share of their brand then they are better managers than those of the competition. In actual fact this may not be correct and therefore the study results cannot be used to compare the performance of the managements of the companies.

Another limitation stems from the fact that the data used to validate the model is for a relatively short time, (1991-1994). Thus,it may appear that difficulties of timing and stage of Industry, at which sales are to be measured can produce market shares that are misleading. This may also

lead to serious errors in the interpretation of the results.

5.4 Suggestion For Further Research

Any further research could address itself to:

(a) Measuring the elements of the transition matrix by way of collecting primary information from consumers on their purchasing behaviors. This is likely to lead to a better approximation of the elements of the transition matrix and thus increase the validity of the model as a whole. However this approach is likely to be expensive both in terms of time and financial resources.

(b) The research should also try and incorporate the other publications and even the electronic media. Newspapers (Daily or Periodical) that are sold in the Kenyan market compete with daily newspapers indirectly and thus should be considered when developing a model that is more realistic in terms of capturing the behavior of the whole market system. As you realize, this study concentrated only on the three daily English newspapers avoiding the other publications.

Appendix (i)

University of Nairobi,
Lower Kabete Campus,
c/o MBA Office,
P. O. Box 30197,
NAIROBI.

To Who It May Concern,

RE:MURAYA, W .K .

The above mentioned is an MBA student, and is in need of the data and any other information that can be of help in his study.Please assist him.

Any data and information given will be used for ACADEMIC PURPOSE ONLY AND WILL BE TREATED IN STRICT CONFIDENCE.

Thanks.

Yours Sincerely.

MBA Co-ordinator.

Appendix (ii)

DATA COLLECTION SHEET

No.

NAME OF THE COMPANY.....

Monthly circulation Figures.

	J	F	M	A	M	J	J	A	S	O	N	D
Year..... Daily nation Friday sunday Total												
Year..... Daily nation Friday sunday Total												
Year..... Daily nation Friday sunday Total												
Year..... Daily nation Friday sunday Total												

Appendix (iii)

Questionnaire

Name of the firm.....

Q1. In respect to the scale below, how is market share determination in your firm? (Please tick appropriately).

Very important ( ) important ( ) unimportant ( )

Q2. How many brands of newspapers do your firm publish? (Please give their names).

---------- ----------

---------- ----------

Q3. Do you treat each brand as a separate product line?

.....

Q4. How do you evaluate the market performance of these brands?

(Please tick one)

Sales Analysis ( ) Market share determination ( )

Q5. Do your company determine the current market share of its brand (or brands)

Yes ( ) No ( )

Q6. If the answer to Question (5) is no, indicate by ticking the reasons which best apply to your company.

..... (a) Determination methods difficult

..... (b) Industry sales in units and shillings not available.

..... (c) Costly to determine

..... (d) Satisfied with other measures of performance, specify which ones

.....

.....

..... (e) Market share data is unimportant to the firm

.....(f) No qualified personnel to undertake such calculations

..... (g) Others, specify.....

.....

Q7. If yes, to Question (5), What is the market share of your brand (brands)?

.....

Q8. How do you arrive at the figure given in Q7 above? (Tick appropriately).

..... (a) Using surveys of customer purchases (panel)

..... (b) Comparing our unit sales with industry unit sales

..... (c) Comparing our shilling sales with industry sales in shillings

..... (d) Others, Specify.....

.....

If(a). which consumer panel do you use?

.....

If (b), where (how) do you get the industry (unit) sales?.....

..... If(c), where (how) do you get the industry sales in shillings?

.....

.....

If (d), how do you do it?

.....

Q9. Have you been making forecasts of your market shares?

Yes ( ) No ( )

If Yes, how do the forecasted and actual market share compare?

.....

If No, what has been the basis of production growth for the brand?

.....

Q10. Who do you consider to be your major competitors (Firms)?

....

Q11. which brand is the major competitor, to your brand(s)?

.....

.....

Q12. Considering the competition, have your brand(s) been, gaining ( ) or losing ( ) market share? (Please tick appropriately).

Q13. To whom are you losing/gaining ? (Please specify in terms of brand)?

Q14. In what way(s) do you think market share determination can help you? (please, Tick whichever applies to your firm.

..... (a) Planning and control

..... (b) Making investment decisions

..... (c) Establishing of the brand switching behavior of customer.

..... (d) Help in determining the appropriate strategy to counter unfavorable and encourage favorable and switching

Other, Specify.....

.....

Q15. Tick whichever of the following activities related to market share management you undertake

(a) Product innovation limitation

(b) Mass marketing

(c) Market penetration (convince non users to use)

(d) New market penetration (market in a sequence which was not before targeted)

(e) Geographical expansion

(f) Discovering and promoting new users of the brand

(g) Encouraging more (regular) usage

(h) Distribution innovativeness

(i) Promotional innovation

(j) Market fortification.

(k) Preemptive, counter offensive, and mobile defense

(i) Contraction (withdrawing from small territories to strengthen attack in others).

(m) Raising prices

(n) Cutting back advertising and promotion.

(o) Reducing service

(p) Public relations

(q) Competitive pacification

(r) Diversification of markets

(s) Social responsibility

(t) Careful selection of limited segments Efficient use of research and development funds

(u) Putting market share low on the list of objectives

(v) Other, Specify.....

Q16. What are the aims of the activities you undertake in relation to market share? (Tick one or more applicable answer(s)).

(a) Share building

(b) Share maintenance

(c) Share reduction

(d) Risk reduction

(e) Others, Specify.....

.....

Thank you so much for your cooperation.

Appendix (iv)

Calculation of total industry circulation on sunday.

YEAR	SUNDAY NATION	SUNDAY STANDARD	K.TIMES
1983	1583418	432785	2015103
1984	1654059	393885	2047944
1985	1635026	393981	2029007
1986	1835886	384204	2220090
1987	2069851	468553	2538404
1988	2176552	566242	2742794
1989	2171591	637988	2809579
1990	2485376	652576	3137952
1991	2292662	790347	3083009
1992	2277931	947711	3225642
1993	2032571	628341	2663912
1994	2111254	515773	2627027

Appendix (v)

(a) Calculation of total daily newspapers Industry Circulation.

YEAR	DAILY NATION	E.A.STANDARD	TOTAL
1983	3206484	524571	3731055
1984	3324459	515660	3840119
1985	3442894	484850	3927744
1986	3731971	469983	4201954
1987	3939626	551361	4490987
1988	5979817	604362	6584179
1989	4160356	656489	4816848
1990	5015375	719890	5735265
1991	4793579	613314	5406893
1992	4390705	717526	5108231
1993	3965323	603547	4568870
1994	3900696	523425	4424121

(b) Proportion of each company's brand to the total Industry Circulation.

YEAR	DAILY NATION	E.A.STANDARD	TOTAL
1983	0.8594041	0.1405958	1.0000
1984	0.8657177	0.1342823	1.0000
1985	0.8765576	0.1234423	1.0000
1986	0.8881513	0.1184860	1.0000
1987	0.8772294	0.1227705	1.0000
1988	0.9082099	0.0917901	1.0000
1989	0.8637098	0.1362901	1.0000
1990	0.8744801	0.1255199	1.0000
1991	0.8863681	0.1134318	1.0000
1992	0.8595353	0.1404646	1.0000
1993	0.8679001	0.1320998	1.0000
1994	0.8816883	0.1183116	1.0000

Apppendix (vi)

Calculation of Daily Nation and E.A. Standard annual circulation in units.
a) Daily Nation.

YEAR	DAILY	SUNDAY	TOTAL
1983	3206484	1583418	4789902
1984	3324459	1654059	4778518
1985	3443894	1635026	5127920
1986	3731951	1835886	5567857
1987	3939626	2069851	6009477
1988	5979817	2176552	9156369
1989	4160359	2171591	6331950
1990	5015375	2484376	7500751
1991	4793579	2292662	7086241
1992	4790705	2277931	6668636
1993	3965323	2032557	5957894
1994	3900696	2111254	6011950

b) The East African Standard.

YEAR	DAILY	SUNDAY	TOTAL
1983	524571	432785	957356
1984	515660	393885	909545
1985	484850	393981	878831
1986	469983	384204	854187
1987	551361	468553	1019914
1988	604362	566242	1170604
1989	656489	637988	1294477
1990	719890	652576	1372466
1991	613314	790349	1403661
1992	717526	947711	1665237
1993	603547	628314	1231888
1994	523425	515773	1039193

b) The East African Standard.

YEAR	DAILY	SUNDAY	TOTAL
1983	524571	432785	957356
1984	515660	393885	909545
1985	484850	393981	878831
1986	469983	384204	854187
1987	551361	468553	1019914
1988	604362	566242	1170604
1989	656489	637988	1294477
1990	719890	652576	1372466
1991	613314	790349	1403661
1992	717526	947711	1665237
1993	603547	628314	1231888
1994	523425	515773	1039193

Appendix (vii)

Calculation of Kenya Times Annual Circulation for the Years 1991-1994.

MONTHS	YEARS			
	1991	1992	1993	1994
JANUARY	26663	22622	18493	10665
FEBRUARY	25038	21300	15292	11428
MARCH	24179	19695	15126	10524
APRIL	24185	16445	14150	12688
MAY	23789	21217	13177	10963
JUNE	23899	23132	12974	11200
JULY	24509	21074	12640	7790
AUGUST	25165	20860	13940	13000
SEPTEMBER	24624	22094	14620	12993
OCTOBER	23422	22404	12113	11800
NOVEMBER	32600	23340	13620	10335
DECEMBER	25064	20365	11402	9345
TOTAL	303137	254550	256347	132731

Appendix (viii)

(a) Comparison of the Company's total annual circulation to the total Industry circulation.

YEAR	D. NATION	STANDARD	K. TIMES	TOTAL
1983	4789902	957356	-	5747258
1984	4978518	909545	-	5888063
1985	5127920	878831	-	6006751
1986	5567857	844187	-	6412044
1987	6009477	1019914	-	7029391
1988	8156369	1170604	-	9326973
1989	6331950	1294477	-	7626427
1990	7400751	1372466	-	8873217
1991	7086241	1403661	303137	8793039
1992	6668636	1665237	254550	8588423
1993	5781904	1231888	156547	7386329
1994	6011954	1039193	132731	7183874

(b) Calculation of each brand's proportion of the annual Industry circulation.

YEAR	D. NATION	STANDARD	K. TIMES	TOTAL
1983	0.8334238	0.1665761	-	1.000
1984	0.8455273	0.1544727	-	1.000
1985	0.8536926	0.1463027	-	1.000
1986	0.8669914	0.1330085	-	1.000
1987	0.8549072	0.1450928	-	1.000
1988	0.8744926	0.1255073	-	1.000
1989	0.8302642	0.1697357	-	1.000
1990	0.8453248	0.1546751	-	1.000
1991	0.8058921	0.1596332	0.0344746	1.000
1992	0.7764680	0.1938932	0.0296387	1.000
1993	0.8120263	0.1667794	0.0211941	1.000
1994	0.8368674	0.1446563	0.0184762	1.000

Program: Markov Analysis
Problem Title: Nation Forecast Market Share.
***** Input Data *****

From/To	Value	State 1	State 2
State 1	0.78	0.960	0.040
State 2	0.22	0.290	0.710

***** Program Output *****
<<Transition Matrix for Each Period>>
<Initial Matrix> 1992

From\To	Value	State 1	State 2
State 1	0.78	0.96000	0.04000
State 2	0.22	0.29000	0.71000

<Period 1 > 1993

From\To	Value	State 1	State 2
State 1	0.81	0.96000	0.04000
State 2	0.19	0.29000	0.71000

< Period 4 > 1994

From\To	Value	State 1	State 2
State 1	0.86	0.90321	0.09679
State 2	0.14	0.70170	0.29830

<Period 3 > 1995

From\To	Value	State 1	State 2
State 1	0.86	0.90321	0.09679
State 2	0.14	0.70170	0.29830

<Period 4 > 1996

From\To	Value	State 1	State 2
State 1	0.86	0.89515	0.10485
State 2	0.14	0.76014	0.23980

<Period 5 > 1997

From\To	Value	State 1	State 2
State 1	0.88	0.88975	0.11025
State 2	0.12	0.79929	0.20071

<Period 6 > 1998

From\To	Value	State 1	State 2
State 1	0.88	0.88613	0.11387
State 2	0.12	0.82553	0.17447

<<Transition Matrix for Final Period>>

<Period 7 > 1999

From\To	Value	State 1	State 2
State 1	0.88	0.88100	0.11900
State 2	0.12	0.86277	0.13223

<<Steady State>>

States	Probability	Value
1	0.87879	0.88
2	0.12121	0.12

Program: Markov Analysis
Problem Title: East African Standard forecast
***** Input Data *****

From/To	Value	State 1	State 2
State 1	0.14	0.420	0.580
State 2	0.86	0.090	0.910

***** Program Output *****
<<Transition Matrix for Each Period>>
<Initial Matrix> 1992

From\To	Value	State 1	State 2
State 1	0.14	0.42000	0.58000
State 2	0.86	0.09000	0.91000

<Period 1 > 1993

From\To	Value	State 1	State 2
State 1	0.13	0.22860	0.77140
State 2	0.87	0.01270	0.88030

<Period 2 > 1994

From\To	Value	State 1	State 2
State 1	0.13	0.16540	0.83456
State 2	0.87	0.23250	0.87050

<Period 3 > 1995

From\To	Value	State 1	State 2
State 1	0.13	0.13772	0.86228
State 2	0.87	0.13380	0.86620

<Period 4 > 1996

From\To	Value	State 1	State 2
State 1	0.13	0.13545	0.86455
State 2	0.87	0.13415	0.86585

<Period 5 > 1997

From\To	Value	State 1	State 2
State 1	0.12	0.13470	0.86530
State 2	0.88	0.13427	0.86573

<Period 6 > 1998

From\To	Value	State 1	State 2
State 1	0.13	0.13445	0.86555
State 2	0.87	0.13421	0.86562

<<Transition Matrix for Final Period>>

<Period 7 > 1999

From\To	Value	State 1	State 2
State 1	0.13	0.13470	0.86530
State 2	0.87	0.13427	0.86573

<<Steady State>>

States	Probability	Value
1	0.13434	0.13
2	0.86567	0.87

Program: Markov Analysis
Problem Title:Kenya Times Market Forecast.
***** Input Data *****

From/To	Value	State 1	State 2
State 1	0.03	0.0250	0.9750
State 2	0.97	0.0100	0.9900

***** Program Output *****
<<Transition Matrix for Each Period>>
<Initial Matrix> 1992

From\To	Value	State 1	State 2
State 1	0.03	0.02500	0.97500
State 2	0.97	0.01000	0.99000

<Period 1 > 1993

From\To	Value	State 1	State 2
State 1	0.01	0.02500	0.97500
State 2	0.99	0.01000	0.99000

<Period 2 > 1994

From\To	Value	State 1	State 2
State 1	0.01	0.01037	0.98962
State 2	0.99	0.01015	0.98985

<Period 3 > 1995

From\To	Value	State 1	State 2
State 1	0.01	0.01016	0.98984
State 2	0.99	0.01015	0.98885

<Period 4 > 1996

From\To	Value	State 1	State 2
State 1	0.01	0.01015	0.98985
State 2	0.99	0.01015	0.98985

<Period 5 > 1997

From\To	Value	State 1	State 2
State 1	0.01	0.01015	0.98985
State 2	0.99	0.01015	0.98985

<Period 6 > 1998

From\To	Value	State 1	State 2
State 1	0.01	0.01015	0.98985
State 2	0.99	0.01015	0.98985

<<Transition Matrix for Final Period>>

<Period 7 > 1999

From\To	Value	State 1	State 2
State 1	0.01	0.01015	0.98985
State 2	0.99	0.76949	0.98985

<<Steady State>>

States	Probability	Value
1	0.02500	0.01
2	0.97500	0.99

Appendix (xii) Student t-value.

Table D. DISTRIBUTION OF *t*

Probability

n	·9	·8	·7	·6	·5	·4	·3	·2	·1	·05	·02	·01	·001
1	·158	·325	·510	·727	1·000	1·376	1·963	3·078	6·314	12·706	31·821	63·657	636·619
2	·142	·289	·445	·617	·816	1·061	1·386	1·886	2·920	4·303	6·965	9·925	31·598
3	·137	·277	·424	·584	·765	·978	1·250	1·638	2·353	3·182	4·541	5·841	12·941
4	·134	·271	·414	·569	·741	·941	1·190	1·533	2·132	2·776	3·747	4·604	8·610
5	·132	·267	·408	·559	·727	·920	1·156	1·476	2·015	2·571	3·365	4·032	6·859
6	·131	·265	·404	·553	·718	·906	1·134	1·440	1·943	2·447	3·143	3·707	5·959
7	·130	·263	·402	·549	·711	·896	1·119	1·415	1·895	2·365	2·998	3·499	5·405
8	·130	·262	·399	·546	·706	·889	1·108	1·397	1·860	2·306	2·896	3·355	5·041
9	·129	·261	·398	·543	·703	·883	1·100	1·383	1·833	2·262	2·821	3·250	4·781
10	·129	·260	·397	·542	·700	·879	1·093	1·372	1·812	2·228	2·764	3·169	4·587
11	·129	·260	·396	·540	·697	·876	1·088	1·363	1·796	2·201	2·718	3·106	4·437
12	·128	·259	·395	·539	·695	·873	1·083	1·356	1·782	2·179	2·681	3·055	4·318
13	·128	·259	·394	·538	·694	·870	1·079	1·350	1·771	2·160	2·650	3·012	4·221
14	·128	·258	·393	·537	·692	·868	1·076	1·345	1·761	2·145	2·624	2·977	4·140
15	·128	·258	·393	·536	·691	·866	1·074	1·341	1·753	2·131	2·602	2·947	4·073
16	·128	·258	·392	·535	·690	·865	1·071	1·337	1·746	2·120	2·583	2·921	4·015
17	·128	·257	·392	·534	·689	·863	1·069	1·333	1·740	2·110	2·567	2·898	3·965
18	·127	·257	·392	·534	·688	·862	1·067	1·330	1·734	2·101	2·552	2·878	3·922
19	·127	·257	·391	·533	·688	·861	1·066	1·328	1·729	2·093	2·539	2·861	3·883
20	·127	·257	·391	·533	·687	·860	1·064	1·325	1·725	2·086	2·528	2·845	3·850
21	·127	·257	·391	·532	·686	·859	1·063	1·323	1·721	2·080	2·518	2·831	3·819
22	·127	·256	·390	·532	·686	·858	1·061	1·321	1·717	2·074	2·508	2·819	3·792
23	·127	·256	·390	·532	·685	·858	1·060	1·319	1·714	2·069	2·500	2·807	3·767
24	·127	·256	·390	·531	·685	·857	1·059	1·318	1·711	2·064	2·492	2·797	3·745
25	·127	·256	·390	·531	·684	·856	1·058	1·316	1·708	2·060	2·485	2·787	3·725
26	·127	·256	·390	·531	·684	·856	1·058	1·315	1·706	2·056	2·479	2·779	3·707
27	·127	·256	·389	·531	·684	·855	1·057	1·314	1·703	2·052	2·473	2·771	3·690
28	·127	·256	·389	·530	·683	·855	1·056	1·313	1·701	2·048	2·467	2·763	3·674
29	·127	·256	·389	·530	·683	·854	1·055	1·311	1·699	2·045	2·462	2·756	3·659
30	·127	·256	·389	·530	·683	·854	1·055	1·310	1·697	2·042	2·457	2·750	3·646
40	·126	·255	·388	·529	·681	·851	1·050	1·303	1·684	2·021	2·423	2·704	3·551
60	·126	·254	·387	·527	·679	·848	1·046	1·296	1·671	2·000	2·390	2·660	3·460
120	·126	·254	·386	·526	·677	·845	1·041	1·289	1·658	1·980	2·358	2·617	3·373
∞	·126	·253	·385	·524	·674	·842	1·036	1·282	1·645	1·960	2·326	2·576	3·291

Source: R. A. Fisher and F. Yates, *Statistical Tables for Biological, Agricultural and Medical Research* (London: Oliver and Boyd, 1938), Table III, p. 26.

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