

THE UNIVERSITY OF MANITOBA

MARKET INFORMATION: NEEDS AND SOURCES
FOR THE MANITOBA GRAIN FARMER

by

© Michelle L. Timko

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IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE
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BY

MICHELLE L. TIMKO

A thesis submitted to the Faculty of Graduate Studies of
the University of Manitoba in partial fulfillment of the requirements
of the degree of

MASTER OF SCIENCE

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ABSTRACT

Market Information: Availability and Applicability
to the Manitoba Grain Farmer

by

Michelle L. Timko

Major Advisor: Dr. R.M.A. Loyns

Determining the suitability of market information and where it can be found is a problem for farm management decision makers. As suggested by this thesis, incorporating marketing as part of the farm management decision process allows us to consider two forms of market information which are applicable to decision making; macroeconomic and microeconomic. Macroeconomic information is the aggregated information available of the macroenvironmental forces that constrain and influence a farmer's decision making. Microeconomic information includes the specific information applicable to the individual firm.

The general objectives of this thesis are to examine the importance, availability and need for more information of both types. A literature review supports the need for more studies within the area of marketing information and the need for more microeconomic information. A conceptual model is designed which illustrates how these types of information fit into the decision making process. A review of grain market information sources in Canada was developed. Finally, a survey

was conducted among four distinct groups of Manitoba grain farmers to determine their perceived needs from market information. The analysis of data collected through the survey determined that both types of information are considered important by the farmer. However, those who belong to the Canola Growers favoured microeconomic in degree of importance. Both types of information were considered available by all participants. Finally, over the entire group, there was no significant difference in the need for more microeconomic or macroeconomic information. However, across groups, those within the Canola Growers cited a need for more microeconomic information while those within the Wheat Growers cited a need for more macroeconomic information.

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I am grateful to the Northern Sales Company Ltd. - C.O. Swartz Trust Fund which helped finance the Futures Market Inventory Project and to the Statistical Advisory Service, University of Manitoba who assisted with the statistical analysis of the survey. In addition, I would thank the Manitoba Canola Growers Association and The Western Canadian Wheat Growers for supplying the names for the survey samples.

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Chapter I

INTRODUCTION

1.1 PROBLEM STATEMENT

Determining what information is needed and where it can be found is a continual problem for decision makers. A study by Chamberlain (1984) found that the most important kinds of information, as rated by farmers, were respectively, production, farm business management and marketing.

Traditionally, agricultural marketing has been viewed as an event occurring after production and as a macroeconomic phenomenon. Many farmers appear to believe that their marketing decisions have been made once their grain is delivered to the elevator and that the selling of grain is equivalent to marketing. Thereby, the importance of the role of marketing information may be underestimated. In business, marketing has always been viewed as part of a systematic decision making process directed to fulfil a firm's goals. Most business texts introduce marketing this way within the first few chapters along with information's role in decision making. Information search and use in most business activity is considered part of the individual's decision making process, a microeconomic concept. Schoner and Uhl (1975) list only four simple steps in decision making; intelligence, design, choice and implementation. A more complex version by Tull and Hawkins (1976)

illustrate additional steps though the headings are still summarized into three basic areas; problem identification, selection and solution (Diagram 1).

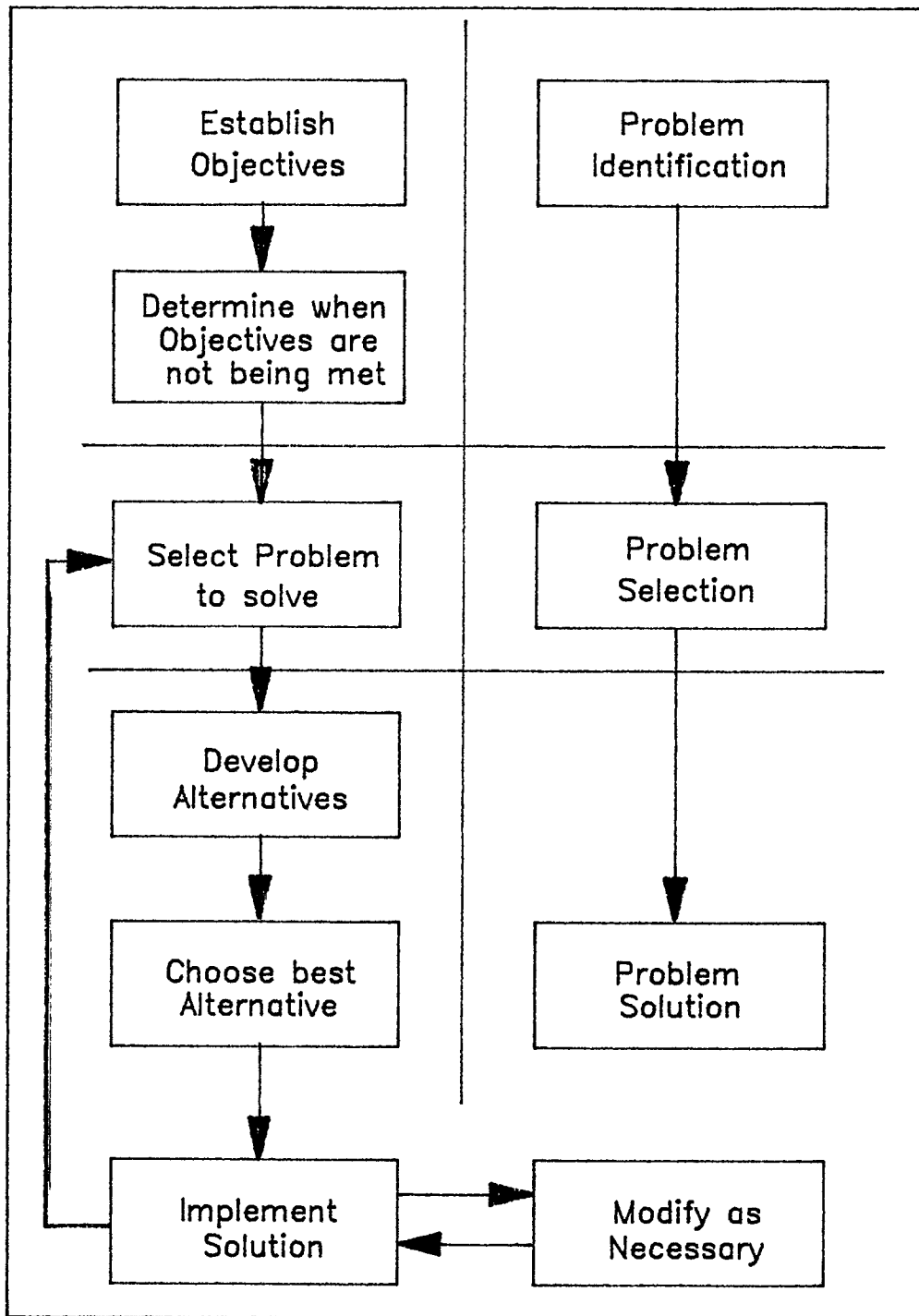
Information is the one input into decision making required throughout the process. The decision made is dependent upon accumulated information about the selected problem. Information improves the efficiency of the firm by reducing the risk and uncertainty associated with decision making. Generally, for a competitive firm facing production uncertainty, a decrease in uncertainty will increase production and input use.

Recently, agricultural marketing has been introduced as part of farm management decision making rather than as a separate discipline (Purcell 1979, Sporleder 1983, Loyns 1985), implying that marketing has microeconomic characteristics in some situations in addition to the more traditional macroeconomic perspective typical of the literature and practice of agricultural economics.

In the past, the determinants of supply and demand are the fundamental bases on which marketing information has been viewed. Actual information requirements for individual decision making have not been studied from the marketing standpoint. Hall (1977) points out that inappropriate, or lack of, market information has a more serious effect on the efficiencies of an individual producer than on the industry.

The suitability of marketing information influences the effectiveness of decisions made based on that information. This effectiveness depends "not only on information being factually correct," but on "whether it is in a form that potential users can understand, is correctly interpreted and users have the ability to profitably employ this information"

DIAGRAM 1
TULL/HAWKINS
DECISION MAKING MODEL



(Griffith 1976:p. 6). As the marketing process becomes more sophisticated and the producer becomes more distant from the final market, the need for appropriate information is essential for effective and efficient decision making. The differences in understanding of the role of marketing by the agricultural economic profession, has left a void regarding relevant studies related to marketing information from a microeconomic viewpoint. However, recently, the role of information in firm decision making has become increasingly prominent in microeconomics (Sporleder 1983). This void provides the need and opportunity to approach marketing information studies from innovative directions. Recognizing the new dimensions of marketing (micro-marketing) allows one to view marketing information requirements of individual firms.

People within the agricultural industry, either agri-business or primary production, have already indicated a need for more microeconomic marketing information. Turner (1983) comments that analysis of marketing systems is "conducted on a macro basis with too little analysis of the effect of individual sectors (p. 28)." A symposium in the U.S.A. (1985) on "The Quality and Needs for Agricultural Information and Statistical Data" concluded, in part, that there would be increased demand for basic and microlevel data.

Past literature based on primary data regarding marketing information needs and sources for individual producers is nearly non-existent. For this reason alone an academic inquiry into a new disciplinary approach to marketing may be justified. Both Freebairn (1978) and Walker (1985) emphasize that an assessment of client needs should be considered when

planning for outlook.¹ "Weakness in current programs are most evident in our ability to relate to and provide for those needs" (Walker 1985:p. 75).

Also, a basis is needed from which to evaluate effectively existing market information systems and data. First, according to Lee and Nicholson (1973) it is necessary to "investigate and determine the lack or conflict that exists because of information not being available, and secondly, determine alternative ways in which information can be made available (p. 922)."

Finally, a basis is needed from which suppliers of information can choose and market that which is relevant to the producer. Referring to agriculture, Eisgruber (1978) observes that several developments have contributed to the increased interest in the area of economics of information, one being that our profession may have relied too much on deductive analysis without proper concern for the relevance of the data base resulting in an increasing amount of work completed with increasingly irrelevant data.

This thesis hopes to address the concerns expressed regarding a lack of and the irrelevancy of studies regarding market information. A conceptual framework will be developed to provide a basis for the analysis of grain market information in Canada. In addition, primary data will be collected to empirically support the framework generated.

¹Outlook is a word used to describe information and data related to the forecasting of commodity markets. In terms of the definitions used in this thesis, Outlook is likely to be only aggregate in nature (i.e. Macroeconomic information).

1.2 OBJECTIVES OF THE STUDY

From a marketing standpoint, it appears important to establish the needs and sources of marketing information for Manitoba grain farmers. This study will attempt to determine whether there is a need for more appropriate market information for firm decision making. Assuming that market information can be defined as either macroeconomic or microeconomic, in order to achieve this general purpose, three specific objectives are:

a) to determine whether there is a priority for either type of information, microeconomic or macroeconomic, for farmers. It is hypothesized that farm management decision making requires both microeconomic and macroeconomic orientated information on the markets in which farmers operate.

b) to determine whether micro or macroeconomic information is more readily available at present. It is hypothesized that macroeconomic information is more readily available.

c) to determine whether the market information now generated is meeting farmer's needs by establishing a need for additional micro or macroeconomic information at the producer level. It is hypothesized that there is a need for more microeconomic information.

1.3 OUTLINE OF THE STUDY

Chapter One has introduced the problem statement and outlined the hypotheses of the study. Chapter Two will define some of the more important terms required for the understanding of the material to follow.

Chapter Three provides a review of some of the relevant literature from 1940 to the present day. The role of information in the decision making process is examined in Chapter Four along with the market information needs and sources in the Canadian context for grain markets. The theoretical concepts supporting the study include information economics and decision making theory in Chapter Five. Chapter Six outlines the analytical approach for the problem, conducted as a survey to grain producers within the province of Manitoba, while Chapter Seven statistically analyzes the results of the survey. Chapter 8 presents the results of a survey of information available on futures markets in Canada as one example of market information availability. The conclusions drawn and the recommendations for further study are summarized in Chapter Nine.

Chapter II
DEFINITIONS

2.1 MACROECONOMICS VS MICROECONOMICS IN AGRICULTURAL MARKETING

This thesis is premised on the distinction between basic types of information required by decision makers. The terms used to make this distinction are macroeconomic and microeconomic.

Theoretically in economics, macroeconomic is defined as dealing with relationships among and between aggregates: the supply of the total output by the entire economy and the derived demand. Macroeconomic's objective is for an effective and efficient system. Microeconomics views the supply of individual commodities by separate firms and the demand of each individual buyer. It deals with decision making of the firm which attempts to accomplish a set of objectives.

The two are not completely distinct. However, "we find that we must approach macroeconomic problems with macroeconomic tools and microeconomic problems with microeconomic tools" (Ackley/Gardner 1963). Therefore, a problem regarding information in decision making as a microeconomic concept, must be solved from this viewpoint. As described in the literature review, until recently, this has not been done. As a result, the information required for micro-marketing analysis has not been well developed for farm management decision making.

Consequently, for the purposes of this thesis, it is necessary to

define macroeconomic and microeconomics in relation to market information required in the Canadian grain industry. Macroeconomic information is the aggregated information available of the macroenvironmental forces - political, economical, climatic and legal -- that constrain and influence a farmer's decision making (Stanton/Sommers/Barnes 1985). Macroeconomic analysis deals with the absolute price. For example, it would include the aggregate supply and demand of each grain on the world or country basis, along with volume traded between countries. For agricultural marketing, Loyns (1985) refers to this generation of price by supply and demand and the factors considered in administering prices as price formation.

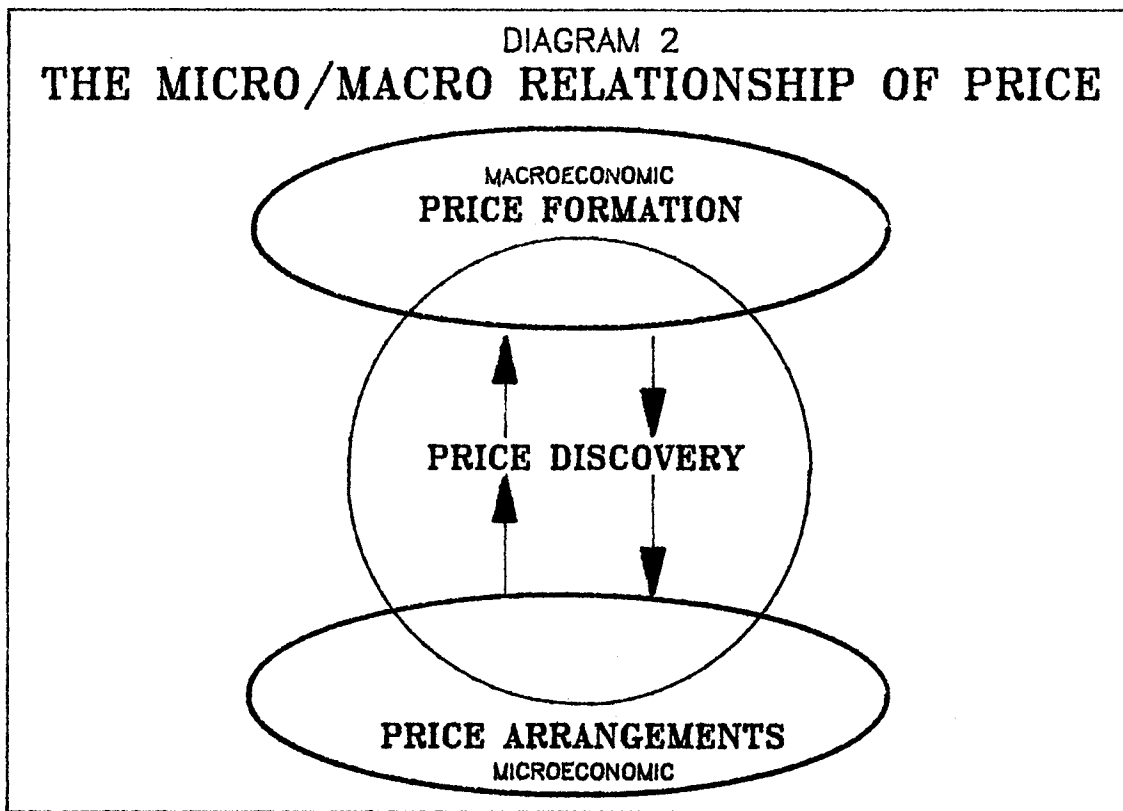
Since macroeconomics determines the price, without macroeconomic information "communication between often widely scattered buyers and seller would be distorted, consumer's preferences would not be accurately relayed back to producers, resource allocation would be sub-optimal and the whole market would suffer severe inefficiencies and inequities (Griffith 1976:p. 2)." Though a lack of market information may lead to inefficiencies in the marketing process from an industry prospective, the effect on the individual producer can be more serious (Hall 1977). Therefore, microeconomic information which includes the specific information applicable to an individual firm's decision making must also be present within the system. The exact estimates of this information will vary from producer to producer, but basic similarities are required by all. For example, each producer is concerned with his production level, his marketing options, the terms and conditions of sale for his product and the array of price alternatives he has for any one marketing

decision. As a result, individual decision making requires knowing the relative prices or returns between alternatives. Loyns (1985) labels this concept as price arrangements, a translation of "the outcome of overall price levels through the different market mechanisms into specific prices and specific terms and conditions of sale for the primary producer (p. 9)."

Again, microeconomic and macroeconomic are not always precisely defined. The grey area is where price discovery occurs (Loyns 1985). This involves the ability for the individual to realize which macroeconomic and which microeconomic information is appropriate for her/his use. The skills of the individual to manage and process the information available for decision making will help in discovering the appropriate price. The concepts of price formation, discovery, and arrangements are illustrated in Diagram 2. Price discovery is placed between formation and arrangements as it partly encompasses both price levels, microeconomic and macroeconomic. The two arrows illustrate the interaction between the two levels of price.

The differences between microeconomic and macroeconomic information in grain marketing can be demonstrated with a more specific example. As a producer, one must decide the profitability of a possible crop. Being able to compare selling alternatives early in the year could help an individual decide which option may be beneficial -- to sell the crop at harvest on-board or off-board, to store the crop and sell later, or to roll over a contract into the future. Of course, the benefits will vary with each operation because of distance to the elevator, handling charges and basis of each elevator, grain quality, terms of sale, and delivery

quotas. This is microeconomic. The information provided will determine which option is the best arrangement. The individual must choose between the selection of price arrangements given the information available. On the other hand, macroeconomically, the producer wishes to know the world or futures price of his product which is formed based on aggregate supply and demand. The factors which determine this base price are those on the aggregate level over which the individual has little control.



2.2 MARKETING INFORMATION

Marshack (1968), Chavas/Pope (1973), Gould (1974) and Preckel et al. (1987) view information as a state of knowledge which alters the probabilistic distribution of an event, influencing the decision maker's preference in economic decisions. Information is a risk reducing input.

In mathematical terms, information is used to revise the prior probability distribution to a posterior distribution (Hirshleifer and Riley 1979). "The acquisition of information need not change the properties of the distribution in the long run frequency sense, but it can change the individual's well being with respect to the decisions he makes, given the distribution of outcomes (Gould 1974:p. 66)."

Stewart (1970) defines marketing information as "the sum total of knowledge about prices, supply, demand, stocks, government policy and background factors affecting the market on which an operator in this market bases his outcomes (p. 8)." This definition appears to only include that information which is macroeconomic. However, later, Hall (1977) considers the concept of microeconomics by describing market information as an aid to the decision maker. It includes information about supply, demand, price, policy and other matters which could affect farmers with their production and marketing decisions (Hunt 1974). The model in Section 4.2.1 describes in pictorial form and Section 5.2 gives specific examples of what is included in market information for this study. It includes a wide selection of past, present and future knowledge on a macro and microeconomic level. Macroeconomic information which affects the environment in which a producer must make a decision and the microeconomic information which relate to each individual producer are considered.

2.3 INFORMATION VS DATA

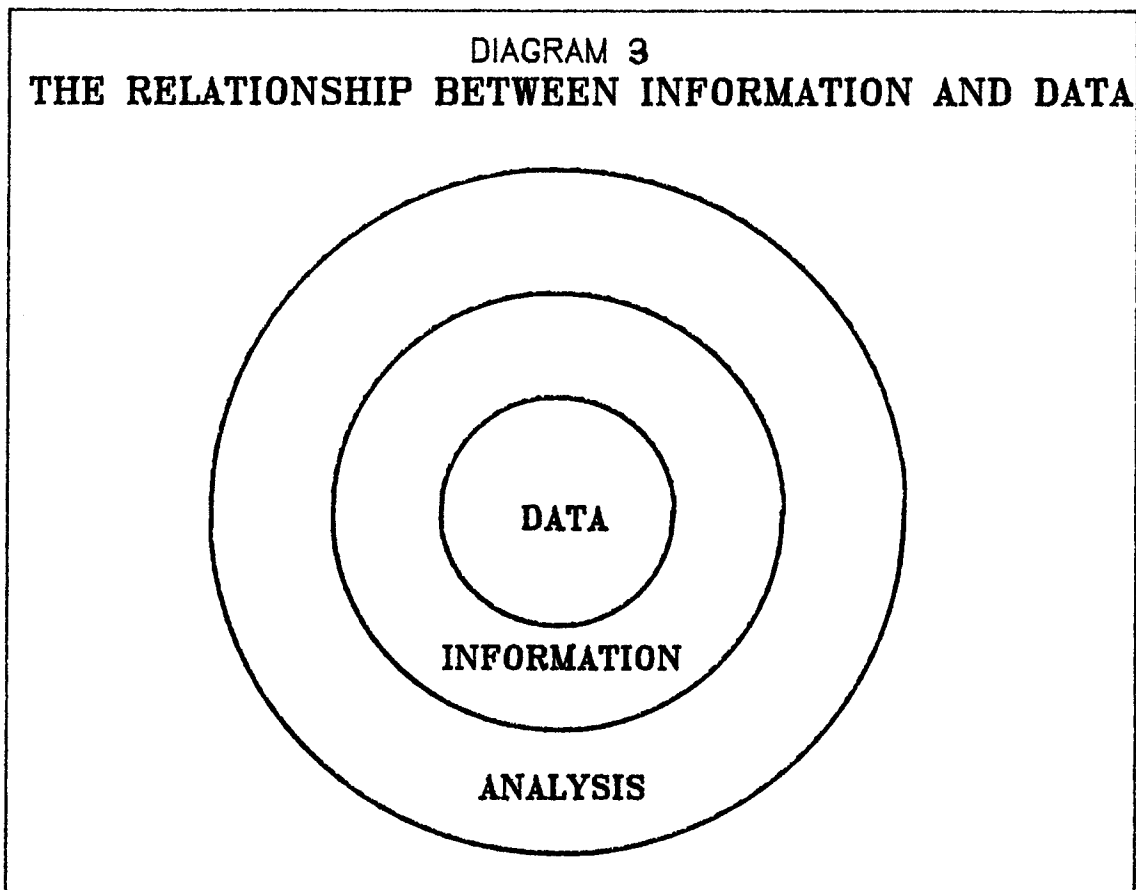
Though both information and data provide knowledge, they differ in their orientation. Data are the raw material or facts from which inferences are made: data are direct observations of an event. Information is processed material or that which has been inferred and affects the degree of uncertainty in the decision making process. As mentioned in the previous section, it should be considered a variable which affects the error term in order to decrease risk.

Information and data should be objective. However, data after analysis may partially contain subjective valuation. Beliefs, rumours, estimates and predictions are also considered information, each with different levels of credibility and objectivity. It is important to realize that not all information or data is of equal usefulness or quality. Information must be relevant and accurate. This proposition (characteristic) supports the hypothesis of this thesis. The literature review reinforces that market information is often irrelevant to the producer. This thesis, by developing a framework for the needs of grain market information in Canada hopes to determine which type of information is a priority, or seemingly more relevant, to producers.

Data, as a set of facts, is a necessary part of information in relation to grain market information. However, it may be unusable by an individual if she/he can not extract appropriate information from it. Through the process of analysis, data can become information, which itself can be analyzed (diagram 3). Too much data may distract from their informational content. The possibility exists that, to the farmer,

present marketing information provided is synonymous with data because of a lack of analytic capabilities. This is not due to ignorance, or even necessarily to a lack of training, but is dependent on the unavailability of basic data, the degree of irrelevant and incorrect data, the complexity of data to analyze, and the limitations of cost and time to perform analysis. It is hypothesized that present information which is often deemed as inappropriate, is provided at a macroeconomic level, not the micro level necessary for firm decision making.

Data and information more applicable to the decision making process by the firm should improve the firm's ability to analyze her/his alternatives, and ultimately, improve choice.

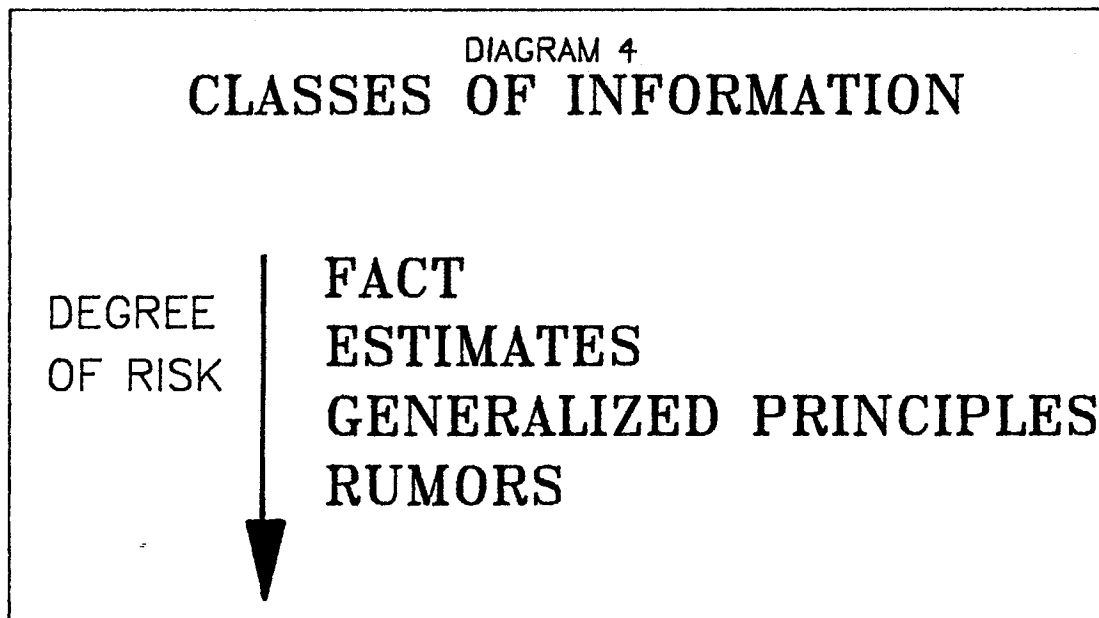


2.4 CLASSES OF INFORMATION

There are four classes of information; fact, estimates, generalized principles and rumours (Buzzel et al. 1969) which can be ranked ordinally according to the relative risk of error (Diagram 4). Data, or information which has not been analyzed, are facts. However, errors may exist in reporting and recording.

Estimates are past or present information based on inference or statistical procedure. Futuristic estimates are known as predictions or forecasts (for example, Outlook in agriculture).

Generalized principles are logically derived statements or theories accepted as true or usually true under the conditions and assumptions of their derivation.



Subjective information, that not necessarily based on inference from data or statistical procedures, but on one's personal opinion, are called rumours.

All these types of information can play a role in the decision making process. For effective decision making, it is necessary to determine, not only the type of information required, but rather the appropriate form in which the information is available and functional; macroeconomic versus microeconomic.

Chapter 111

REVIEW OF RELATED LITERATURE

Literature in the area of information and agricultural marketing is limited. This review chronologically traces the developments of market information studies in agriculture. Initially, the emphasis was macroeconomic information. However, as marketing began to be viewed as part of the farm management decision making process information was seen to be increasingly irrelevant. From this concern evolved the concept of microeconomic information.

3.1 PRE 1960

The economic situations of the 1930's demanded a macroeconomic approach to marketing. Thus, the surge of agricultural marketing studies in the 1940's dealt with aggregate solutions. This approach remained to dominate the literature until recently. No studies exist in agriculture which incorporate market information on either a macroeconomic or microeconomic level.

3.2 1960's AND 1970's

The role of marketing began to change with the introduction of information economics. However, few economists pursued the implications of imperfect information.

Stigler (1961) acknowledged information as a resource with value creating the concept that profit maximization is achieved through optimal information search. Information within agriculture was limited to price and market reporting, much of which was "highly aggregated and related to markets that were not realistic alternatives for farmers in particular areas (Clodius and Mueller 1961:p. 529)". Clodius and Mueller (1961) indicated that one problem of industrial organization that needs further study is the relationship between market information and individual performance and how changes in available market information can alter individual performance.

As an example, changes in market information regarding the 1988 rapeseed production could affect an individual's marketing decisions. Assume an individual has 5000 bu. of rapeseed. Prices are wild because of drought possibilities affecting local and world production. Producer car policy is unclear and there are chances that there will be a WSGA payout. The producer is faced with three options. Should he hold the grain, sell now, or roll a contract into the future. Information needed on which to base his decision include, clarification of producer car policy, dependable production and price forecast, and the probability of the WSGA payout. Clarification of producer car policy and elevator policies (90 day sales) could affect the space and time element of his decision, ie., where to sell and which of the three options to consider. In regards to form, the producer must determine the grade standards, his options under the Canadian Grain Act, the cost of cleaning, grain loss in cleaning and value of dockage.

Clodius and Mueller (1961) continue to argue that "one determinant

of product or service differentiation of firms is the relative degree of market information available to buyers and sellers (p. 531)." That is, whether buyers or sellers have a relative advantage. It appears that buyers tend to have accurate information where as sellers have "markedly poor information". Little change occurred over the past twenty five years. However, Phillips (1968) did recognize market information as the centrepin of the marketing system. Grossman and Stiglitz (1976) suggest prices will never reflect all information: imperfect information and uncertainty are always present.

However, by the late seventies the profession was becoming aware of the limited research on the theory of information in Agricultural Economics. Eisgruber (1978) accused economists of not developing concrete concepts and theories useful for such analysis.

The few agricultural information studies completed tended to focus on production and the value gained from additional information (Feder 1979, Funk/Tarte 1978), or in consumer economics where more information benefit the buyer of a product by improving foresight (Devine 1976). Information became an input with a cost in decision making. Marketing studies from a producer's viewpoint, on the other hand, continued to be concerned with aggregate consumption and absolute pricing. Information dissemination did not really change.

One exception to this generalization was Griffith (1976) who did assess two aspects of market information in the New South Wales Beef Industry, reporting and forecasting, concluding that improvements were necessary. He describes two pricing functions that can be used: one to help determine the general level of price and one to help set specific

carcass values. This recognizes the two forms of information present in farm management decision making, macroeconomic and microeconomic.

A year later Hall (1977) researched the cattle farmer's use of market information in the West District of Victoria, Australia. His conclusions stressed that the limited use of market information was due to presently available information which did not "appear to assist the majority of farmer's with their management or investment decisions although most thought market information should assist them with these decisions (Hall 1977:p. 66)."

Studies completed illustrated that market information did assist consumers. In April 1975 Devine conducted a study for the Food Price Review Board of Canada in which comparative prices from retail stores of a selected 65 item food basket were published in Ottawa-Hull and Winnipeg. In Ottawa-Hull, publishing the information caused prices to decline significantly. In Winnipeg, prices varied only slightly. Therefore, consumers benefited from publication of the information whether they actually used it or not. The Board concluded that "publication of comparative price information in a limited market area can, in the short term, have a positive impact on the degree of price competition in that market (Food Price Review Board 1975:p. iii)."

The findings of this experiment were incorporated into a paper by Devine and Marion (1979). More important than the immediate changes in market performance are the possible structural changes in the long run. To perform efficiently, a market's price information must be adequate and shared among the users, the same conclusion derived by Griffith (1976) in reference to producers. Devine (1976) wrote his Phd. thesis on 'The