NEAR EAST UNIVERSITY

FACULTY OF ECONOMICS & ADMINISTRATIVE SCIENCES

DEPARTMENT OF BUSINESS ADMINISTRATION

GRADUATION PROJECT(MAN 400)

OPERATIONAL DECISION MAKING

SUBMITTED TO: ALİ MALEK

SUBMITTED BY: RAGIP KANATLI 20010837

DECEMBER 2005

ABSTRACT

Decision making plays a major role for the survival of companies, firms, and enterprises in every sector and every time. Decision making is necessary since the basic operations process, what to produce, how much to produce, and so on. Production and operations management is responsible for creation goods and services. The most important and principal function of the organization is production and operations management that involved with planning, coordinating, and executing of production activities. As a result of competitive pressures and globalization, business organizations strive to create excellent products and services trough effective operational decision making.

For making effective and sound decisions, there is a decision making process. In this study, the 6 steps of this decision making process were identified one by one. Managers or decision makers should take into consideration these steps while they make decisions.

The purpose of this study is to find out how the decisions are taken in the company, what decision making processes will be observed, how to integrate scientific decision making processes to the company, and to compare the implementations of this process.

TABLE OF CONTENTS

LIST OF FIGURES

PAGE

LIST OF TABLES

PAGE

SECTION 1

SETTING THE SCENE

1.1 Introduction

This section introduces the graduation project as the broad problem area, the problem definition, and the purpose of the study.

1.2 Broad Problem Area

Decision making plays a critical role in organizations. Their success generally depends on this factor. In many organizations, managers generally face with problems and difficulties to make sound and rational decisions. To increase efficiency, productivity, and create competitive advantages for survival of the company, adapting MIS, and use some tools and techniques for scientific decision making process have vitality for the organization.

1.3 Problem Statement

Elektrokur Ltd. is a manufacturing company that produces and sells electrical products. In the company, there is a problem during the decision making process. Difficulties and problems are existing in the company related with sound decision making. So we will investigate how to make sound and rational decisions by integrating scientific decision making processes to the company.

1.4 Purpose of the Study

By this study, we will investigate Elektrokur Ltd., will try to find out how the decisions are taken in the company, what decision making processes will be observed, how to integrate scientific decision making processes to the company, and will try to compare the implementations of this process.

1.5 Conclusion

This section has introduced the graduation project as the broad problem area, problem definition, and purpose of the study.

SECTION 2

LITERATURE REVIEW

2.1 Introduction

This section is a literature survey about operational decision making. The purpose is to identify and define the main variables affecting the problem as defined in Section 1.

2.2 Operational Decision Making

It is necessary for a business to operate and manage of all business activities. Organizations comprise hundreds of decisions. At the end, all these different types of decisions have the same route which is the desire to achieve organizational goals.

While the fundamental goal of a business may well be to make a profit, the outcomes of effective decisions are not necessarily measured in terms of quality, cost effectiveness, efficiency, and productivity(Russel & Taylor, 1995).

2.3 Decision Making Process

Decision making is a fundamental process of management. Unfortunately, decisions do not always turn out as planned. Most successful decision making follows a process that consists of these steps.

1. Specify objectives and the criteria for making the decision
2. Develop alternatives
3. Analyze and compare alternatives
4. Select the best alternative
5. Implement the chosen alternative
6. Monitor the results to ensure that desired results are achieved

Success or failure in decision making often depends on how well each of these steps is handled.

The decision maker must *identify the criteria* by which proposed solutions will be judged. Common criteria often relate to costs, profits, return on investment, increased productivity, risk, company image, impact of demand, or similar variables.

The ability to satisfactorily make decisions often depends on the degree of success one has in *developing suitable alternatives*. In the search for alternatives, there is always the danger that one or more potentially superior alternatives will be overlooked. Consequently, the optimal alternative may turn out to be less than optimum. Obviously, there is a limit to the number of possible alternatives that can be identified. Much depends on the experience and creativity of the decision maker as well as on the nature of the situation. However, as a general rule, efforts

expended in carefully identifying alternatives can yield substantial dividends in terms of the overall decision. One alternative that is frequently overlooked, possibly because it seems too simple is to do nothing. The beauty of doing nothing is that no time or effort is needed, no costs are incurred, and no implementations required.

Analyzing and comparing alternatives is often enhanced by the use of mathematical or statistical techniques.

Selection of the best alternative will depend on the objectives of the decision maker and the criteria that are being used to evaluate alternatives.

Implementing a solution simply means carrying out the actions indicated by the chosen alternative. Examples include buying the machine, refusing the loan application, beginning development of a new product, and authorizing the use of overtime. Of course, if the alternative selected is to do nothing, no action will be required to implement it. But some decision makers use this approach by default: by the time they get around to making a decision, it's too late!

Effective decision making requires that the results of the decision be *monitored* to make sure that the decision has achieved the desired consequences. If it has not, the decision maker may have to repeat the entire process. Or perhaps a review of the situation may reveal an error in implementation, an error in calculations, or a wrong assumption that will allow the situation to be remedied quickly.

The decision process is not always completed in a sequential manner. Instead, there is usually certain of backtracking and feedback, especially in terms of developing and analyzing alternatives. If none of the alternatives can achieve the desired results, additional alternatives must be developed (Stevenson, 1999).

2.4 Decision Making Approaches

Two different approaches are studied in decision making. These are intuitive decision making and scientific decision making.

2.4.1 Intuitive Decision Making

In the intuitive decision making, only intuitions and experiences are considered as a measurement while problem defining, alternatives developing, and the best alternative selecting.

The most effortless way in decision making is to apply past experiences which had granted sufficient results or to follow someone else's path, which is regarded to have been successful in the question at hand. This is called "simulation". There is not any creative aspect in intuitive decision making. That a past decision yielded a successful result does not mean that repeating it would result in the same way. This is because present and future circumstances

are not the same as those of the past. Besides, that a company had been successful in a decision based on its particular conditions does not render automatic success when another company takes the same decision while as a matter of course its own conditions differ.

However, intuitive decision making approach cannot be disregarded altogether. Other companies' experiences or plans could be taken into consideration but only as one element in the decision making process. At the same time, scientific prospects should be employed in effective decision making.

2.4.2 Scientific Decision Making

Customary ways of solving problems or doing things are rejected by scientific decision making. Use of past experiences in decision making is not accepted. According to scientific decision making, companies must not rely on past decisions in this dynamic and growing industrial world. The essential aim of scientific decision making is to allow the company to improve its performance by using scientific methods. As industry grows, scientific decision making becomes more significant and influential.

2.5 Decision Theory

Decision theory represents a general approach to decision making. It is suitable for a wide range of operations management decisions. Among them are capacity planning, product and service design, equipment selection, and location planning. Decisions that lend themselves to a decision theory approach tend to be characterized by these elements:

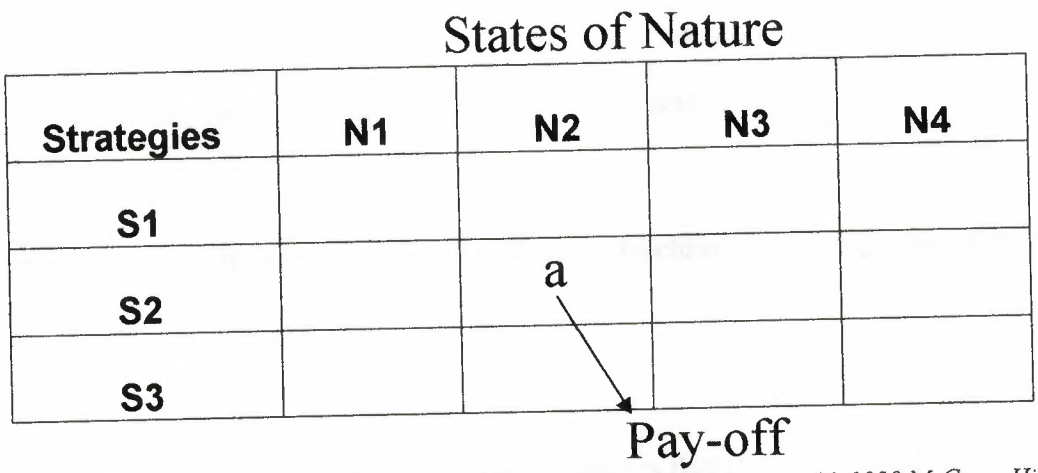
1. A possible future conditions exists that will have a bearing on the results of the decision.
2. A list of alternatives for the manager to choose from.
3. A known payoff for each alternative under each possible future condition.

In order to use this approach, a decision maker would employ this process:

1. Identify the possible future conditions (e.g., demand will be low, medium, or high; the number of contracts awarded will be one, two, or three; the competitor will or will not introduce a new product). These are called *states of nature.*
2. Develop a list of possible *alternatives*, one of which may be to do nothing.
3. Determine or estimate the *payoff* associated with each alternative for every possible future condition.
4. *If possible, estimate the likelihood of each possible future condition.*
5. Evaluate alternatives according to some decision criterion (e.g., maximize expected profit), and select the best alternative (Stevenson, 1999).

2.6 Payoff Table (Payoff Matrix)

The information for a decision is often summarized in a pay-off table, which shows the expected pay-offs for each alternative under the various possible states of nature. These tables are helpful in choosing among alternatives because they facilitate comparison of alternatives.



Source: "Production Operations Management" by William J. Stevenson, p. 66, 1999.McGraw-Hill Companies.

Figure 2.1 Payoff Table

The problem for the decision maker is to select one of the alternatives, taking the present value into account.

Evaluation of the alternatives differs according to the degree of certainty associated with the possible future conditions. Again, there are three possibilities to consider: complete certainty, risk, and uncertainty (Stevenson, 1999).

2.7 Decision Environments

Operations management decision environments are classified according to the degree of certainty present. There are three basic categories: certainty, risk, and uncertainty.

Certainty means that relevant parameters such as costs, capacity, and demand have known values.

Risk means that certain parameters have probabilistic outcomes.

Uncertainty means that it is impossible to assess the likelihood of various possible future events.

The importance of these different decision environments is that they require different analysis techniques. Some techniques are better suited for one category than for others. You should make note of the environments for which each technique is appropriate.

2.7.1 Decision Making Under Certainty

When it is known for certain which of the possible future conditions will actually happen, the decision is usually relatively straightforward: simply choose the alternative that has the best pay-off under that state of nature.

2.7.2 Decision Making Under Uncertainty

At the opposite extreme is complete uncertainty: no information is available on how likely the various states of nature are. Under those conditions, four possible decision criteria are maximin, maximax, laplace (rationality), and minimax regret. These approaches can be defined as follows:

- **Maximin**—determine the worst possible pay-off for each alternative, and choose the alternative that has the "best worst". The maximin approach is essentially a pessimistic one because it takes into account only the worst possible outcome for each alternative. The actual outcome may not be as bad as that, but this approach establishes a "guaranteed minimum".

- **Maximax**—determine the best possible pay-off, and choose the alternative with that pay-off. The maximax approach is an optimistic, "go for it" strategy; it does not take into account any pay-off other than the best.

- **Laplace**—determines the average pay-off for each alternative, and chooses the alternative with the best average. The Laplace approach treats the states of nature as equally likely.

- **Minimax Regret**—determines the worst regret for each alternative, and chooses the alternative with the "best worst". This approach seeks to minimize the difference between the pay-off that is realized and the best pay-off for each state of nature.

The main weakness of these approaches, except for laplace, is that they do not take into account all of the pay-offs. Instead, they focus on the worst or best, and so they lose some information. The weakness of laplace is that it treats all states of nature as equally likely. Still, for a given set of circumstances, each has certain merits that can be helpful to a decision maker.

2.7.3 Decision Making Under Risk

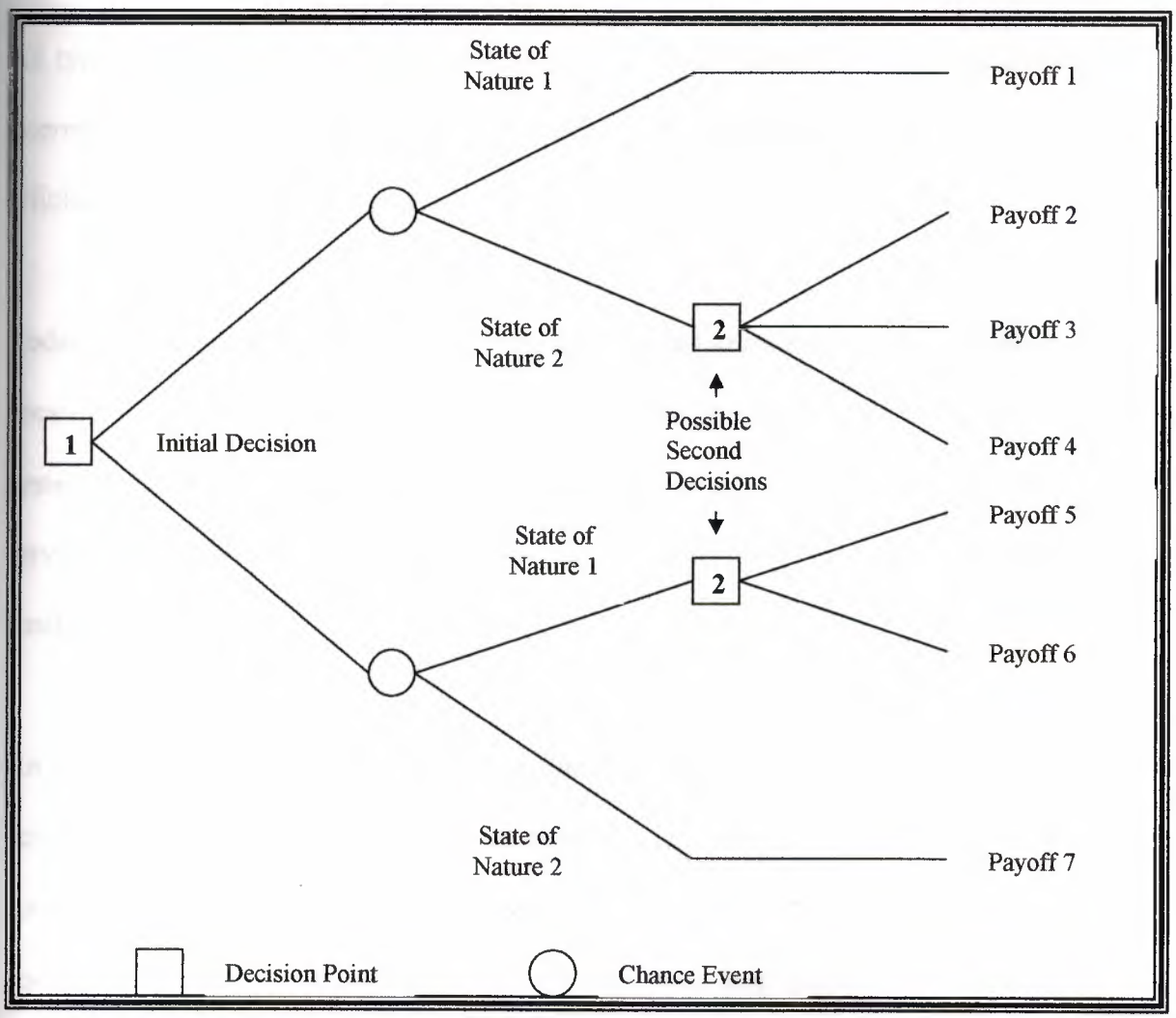
Between the two extremes of certainty and uncertainty lies the case of risk: the probability of occurrence for each state of nature is known. The expected value is computed for each alternative, and the one with the highest expected value is selected. The expected value is the sum of the pay-offs for an alternative where each pay-off is weighted by the probability for the relevant state of nature.

2.8 Decision Trees

A decision tree is a schematic representation of the alternatives available to a decision maker and their possible consequences. The term gets its name from the treelike appearance of the diagram. Although tree diagrams can be used in place of a payoff table, they are particularly useful for analyzing situations that involve sequential decisions. For instance, a manager may initially decide to build a small facility only to discover that demand is much higher than

anticipated. In this case, the manager may then be called upon to make a subsequent decision on whether to expand or build an additional facility.

A decision tree is composed of a number of nodes that have branches emanating from them. Square nodes denote decision points, and circular nodes denote chance events. Read the tree from left to right. Branches leaving square nodes represent alternatives; branches leaving circular nodes represent chance events (Stevenson, 1999).

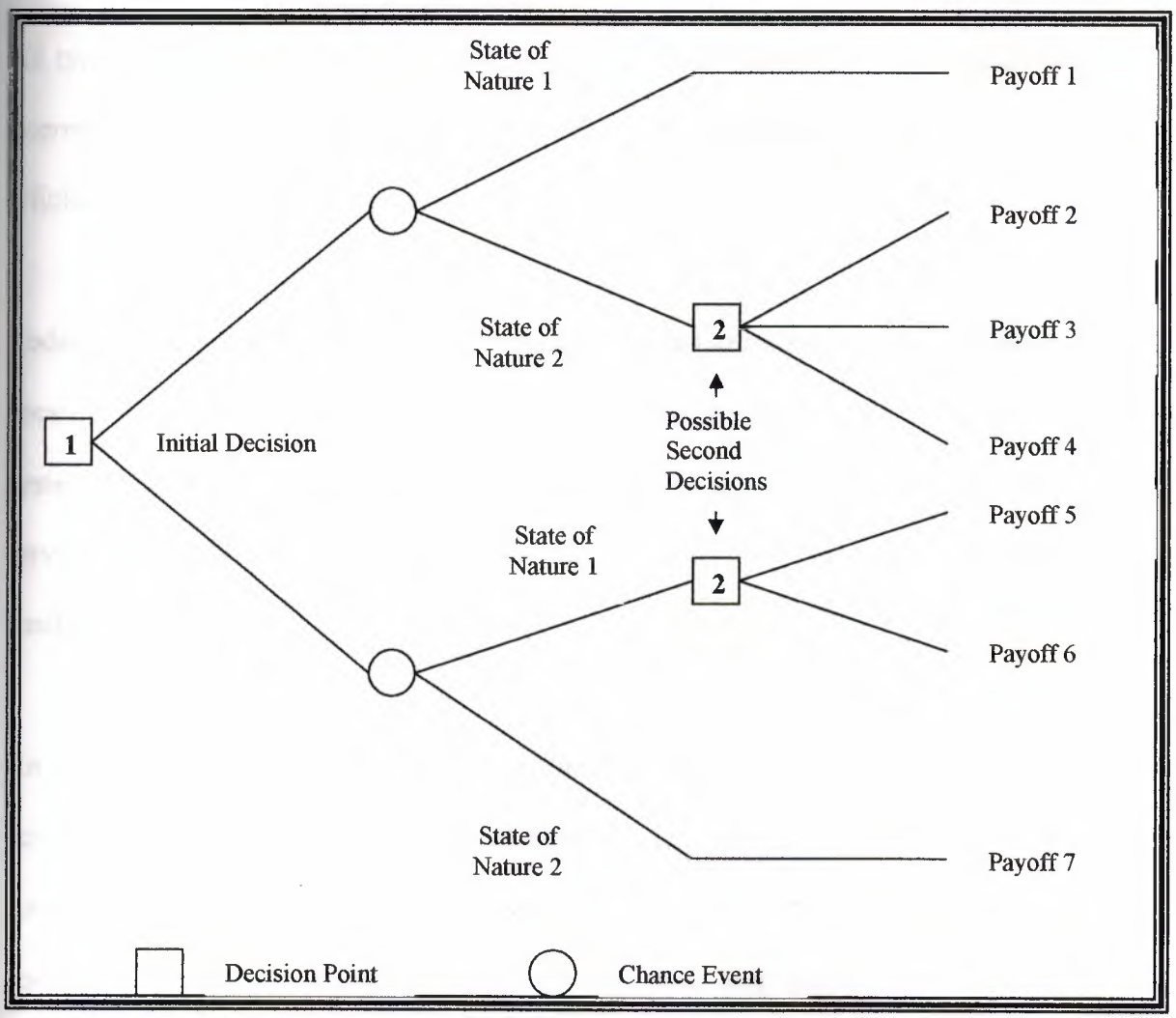


Source: "Production Operations Management" by William J. Stevenson, p. 70, 1999.McGraw-Hill Companies.

Figure 2.2 Decision Tree

anticipated. In this case, the manager may then be called upon to make a subsequent decision on whether to expand or build an additional facility.

A decision tree is composed of a number of nodes that have branches emanating from them. Square nodes denote decision points, and circular nodes denote chance events. Read the tree from left to right. Branches leaving square nodes represent alternatives; branches leaving circular nodes represent chance events (Stevenson, 1999).



Source: "Production Operations Management" by William J. Stevenson, p. 70, 1999.McGraw-Hill Companies.

Figure 2.2 Decision Tree

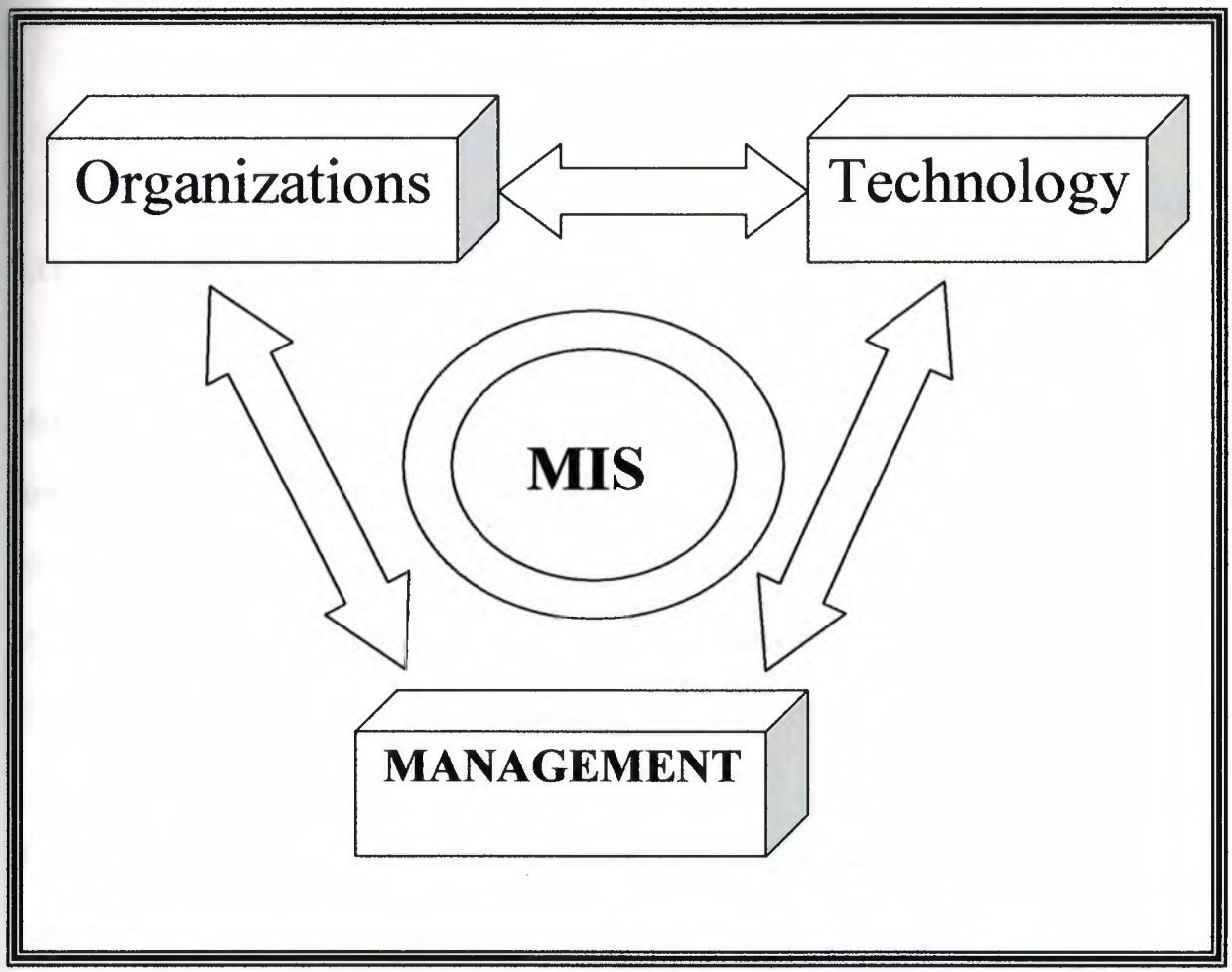
2.10 Data and Information

Information systems contain information about significant people, places, and things within the organization or in the environment surrounding it. By information we mean data that have been shaped into a form that is meaningful and useful to human beings. Data, in contrast, are streams of raw facts representing events occurring in organizations or the physical environment before they have been organized and arranged into a form that people can understand and use.

Three activities in an information system produce the information that organizations need to make decisions, control operations, analyze problems, and create new products or services. These activities are input, processing, and output. *Input* captures or collects raw data from within the organization or from its external environment. *Processing* converts this raw input into a meaningful form. *Output* transfers the processed information to the people who will use it or to the activities for which it will be used. Information systems also require feedback, which is output that is returned to appropriate members of the organization to help them evaluate or correct the input stage.

2.11 A Business Perspective of Information Systems

From a business perspective, an information system is an organizational and management solution, based on information technology, to a challenge posed by the environment. Examine this definition closely, because it emphasizes the organizational and managerial nature of information systems: to fully understand information systems, a manager must understand the broader organization, management, and information technology dimensions of systems and their power to provide solutions to challenges and problems in the business environment.



Source: Management Information Systems by Kenneth C. Laudon and Jane P. Laudon, p.11, 2002. Prentice-Hall Upper Saddle River, NJ.

Figure 2.3 Management Information Systems

2.11.1 Organizations

Information systems are an integral part of organizations. In deed, for some companies, such as credit reporting firms, without the information system there would be no business. The key elements of an organization are its people, structure, operating procedures, politics, and culture. Organizations are composed of different levels and specialties. Their structures reveal a clear-cut division of labor. Experts are employed and trained for different functions, the major business functions, or specialized tasks performed by business organizations, consist of sales and marketing, manufacturing and production, finance, accounting, and human resources.

2.11.2 Management

Managers perceive business challenges in the environment. They set the organizational strategy for responding and allocate the human and financial resources to achieve the strategy and coordinate the work. Throughout, they must exercise responsible leadership. Management's job is to make sense out of the many situations faced by organizations and formulate action plans to solve organizational problems.

But managers must do more than mange what already exists. They must also create new products and services and even re-create the organization from time to time. A substantial part of management responsibility is creative work driven by new knowledge and information.

2.12 Key System Applications in the Organization

Because there are different interests, specialties, and levels in an organization, there are different kinds of systems. No single system can provide all the information an organization needs. Systems are built to serve different organizational interests (Anthony, 1965).

2.12.1 Different Kinds of Systems

Four main types of information systems serve different organizational levels: operational-level systems, knowledge-level systems, management-level systems, and strategic-level systems.

2.12.1.1 Operational-level Systems

Operational-level systems support operational managers by keeping track of the elementary activities and transactions of the organization, such as sales, receipts, cash deposits, payroll, credit decisions, and the flow of materials in a factory. The principal purpose of systems at this level is to answer routine questions and to track the flow of transactions through the organization.

2.12.1.2 Knowledge-level Systems

Knowledge-level systems support the organization's knowledge and data workers. The purpose of knowledge-level systems is to help the business firm integrate new knowledge into the business and to help the organization control the flow of paperwork. Knowledge-level systems, especially in the form of workstations and office systems, are among the most widely used applications in business today.

2.12.1.3 Management-level Systems

Management-level systems serve the monitoring, controlling, decision-making, and administrative activities of middle managers. Management-level systems typically provide periodic reports rather than instant information on operations.

2.12.1.4 Strategic-level Systems

Strategic-level systems help senior management tackle and address strategic issues and long-term trends, both in the firm and in the external environment. Their principal concern is matching changes in the external environment with existing organizational capability (Laudon, Laudon, 2002).

2.12.2 Six Major Types of Systems

There are the specific types of information systems that correspond to each organizational level. The organization has executive support systems (ESS) at the strategic level; management information systems (MIS) and decision-support systems (DSS) at the management level; knowledge work systems (KWS) and office systems at the knowledge level; and transaction processing systems (TPS) at the operational level.

2.12.2.1 Transaction Processing Systems (TPS)

Transaction processing systems are the basic business systems that serve the operational level of the organization. A transaction processing system is a computerized system that performs and records the daily routine transactions necessary to conduct the business. At the operational level, tasks, resources, and goals are predefined and highly structured. The decision to grant credit to a customer, for instance, is made by a lower-level supervisor according to predefined criteria. All that must be determined is whether the customer meets the criteria. Managers need TPS to monitor the status of internal operations and the firm's relations with the external environment. TPS are also major producers of information for the other types of systems.

2.12.2.2 Knowledge Work Systems (KWS) and Office Systems

Knowledge work systems (KWS) and office systems serve the information needs at the knowledge level of the organization. Knowledge work systems aid knowledge workers, whereas office systems primarily aid data workers. In general, knowledge workers are people who hold formal university degrees and who are often members of a recognized profession, such as engineers, doctors, lawyers, and scientists. Their jobs consist primarily of creating new information and knowledge. KWS, such as scientific or engineering design workstations, promote the creation of new knowledge and ensure that new knowledge and technical expertise are properly integrated into the business. Data workers typically have less formal, advanced educational degrees and tend to process rather than create information. They consist primarily of secretaries, bookkeepers, filing clerks, or managers whose jobs are principally to use, manipulate, or disseminate information. Office systems are information technology applications designed to increase data workers' productivity by supporting the coordinating and communicating activities of the typical office.

2.12.2.3 Management Information Systems (MIS)

The term management information systems (MIS) designates a specific category of information systems serving management-level functions. MIS serve the management level of the organization, providing managers with reports or with on-line access to the organization's current performance and historical records. Typically, they are oriented almost exclusively to internal, not environmental or external, events. MIS primarily serve the functions of planning,

controlling, and decision making at the management level. Generally, they depend on underlying transaction processing systems for their data.

2.12.2.4 Decision-Support Systems (DSS)

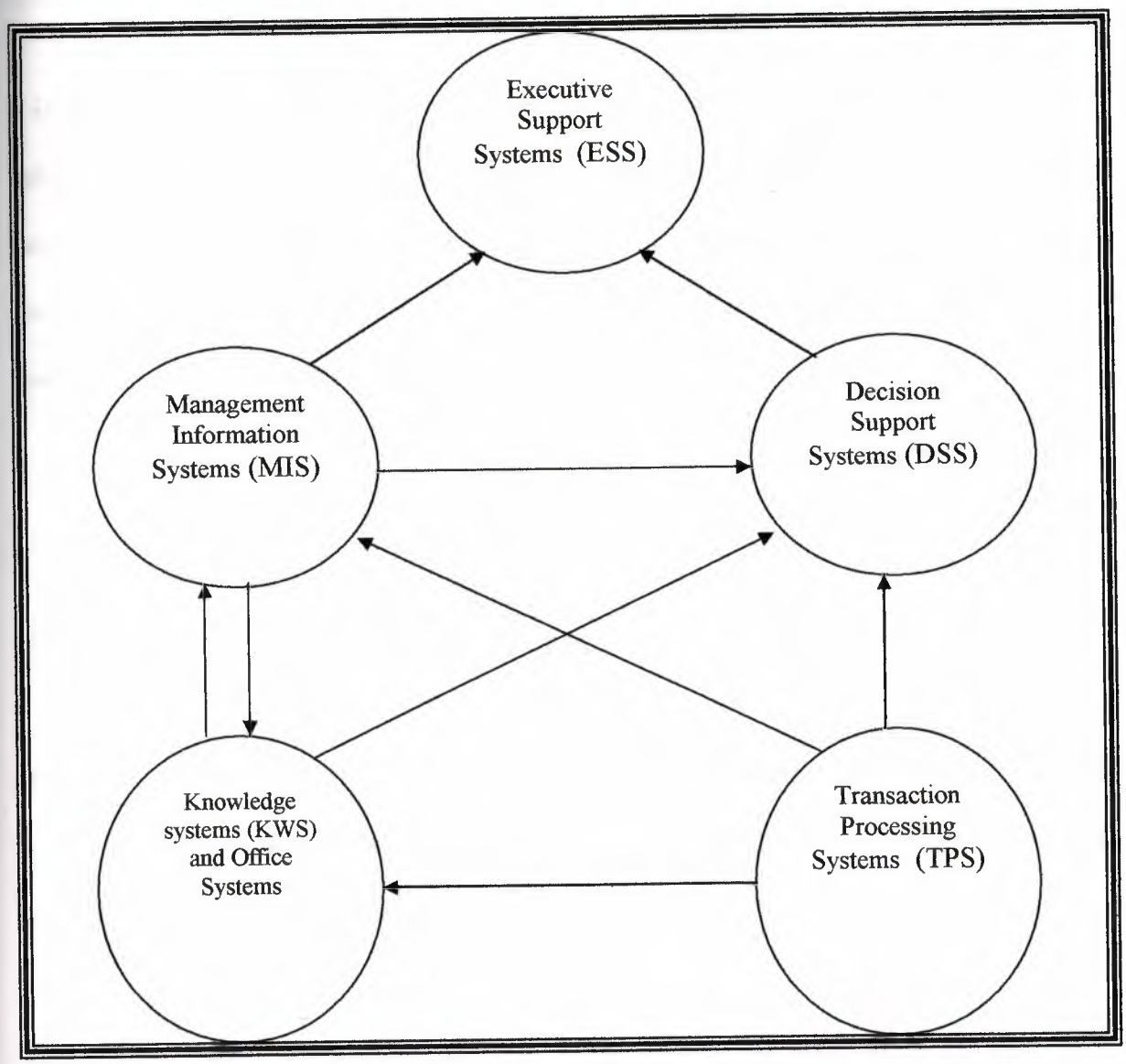
Decision-support systems (DSS) also serve the management level of the organization. DSS help managers make decisions that are unique, rapidly changing, and not easily specified in advance. They address problems where the procedure for arriving at a solution may not be fully predefined in advance. Although DSS use internal information from TPS and MIS, they often bring in information from external sources, such as current stock prices or product prices of competitors.

2.12.2.5 Executive Support Systems (ESS)

Senior managers use executive support systems (ESS) to make decisions. ESS serves the strategic level of the organization. They address non-routine decisions requiring judgment, evaluation, and insight because there is no agreed-on procedure for arriving at a solution. ESS creates a generalized computing and communications environment rather than providing any fixed application or specific capability. ESS is designed to incorporate data about external events such as new tax laws or competitors, but they also draw summarized information from internal MIS and DSS. They filter, compress, and track critical data, emphasizing the

reduction of time and effort required to obtain information useful to executives. ESS employs the most advanced graphics software and can deliver graphs and data from many sources immediately to a senior executive's office or to a boardroom.

2.12.3 Relationship of Systems to One Another



Source: Management Information Systems by Kenneth C. Laudon and Jane P. Laudon, p.46, 2002. Prentice-Hall Upper Saddle River, NJ.

Figure 2.4 Relationships between Systems

This figure illustrates how the systems serving different levels in the organization are related to one another. TPS are typically a major source of data for other systems, whereas ESS is primarily a recipient of data from lower-level systems. The other type of systems may exchange data with each other as well. Data may also be exchanged among systems serving different functional areas. For example, an order captured by a sales system may be transmitted to a manufacturing system as a transaction for producing or delivering the product specified in the order.

It is definitely advantageous to have some measure of integration among these systems so that information can flow easily between different parts of the organization. But integration costs money, and integrating many different systems is extremely time consuming and complex. Each organization must weigh its needs for integrating systems against the difficulties of mounting a large-scale systems integration effort (Laudon, Laudon, 2002).

2.13 Causes of Poor Decisions

Despite the best efforts of a manager, a decision occasionally turns out poorly due to unforeseeable circumstances. Luckily, such occurrences are not common. Often, failures can be traced to some combination of mistakes in the decision process, bounded rationality, or sub optimization.

In many cases, managers fail to appreciate the importance of each step in the decision-process. They may skip a step or not devote enough effort to completing it before jumping to

the next step. Sometimes this happens owing to a manager's style of making quick decisions or a failure to recognize the consequences of a poor decision. The manager's ego can be a factor. This sometimes happens when the manager has experienced a series of successes—important decisions that turned out right. Some managers then get the impression that they can do no wrong. But they soon run into trouble, which is usually enough to bring them back down to earth. Other managers seem oblivious to negative results and continue the process they associate with their previous successes, not recognizing that some of that success may have been due more to luck than to any special abilities of their own. A part of the problem may be the manager's unwillingness to admit a mistake. Yet other managers demonstrate an inability to make a decision; they stall long past the time when the decision should have been rendered.

Of course, not all mangers fall into this traps—it seems safe to say that the majority do not. Even so, this does not necessarily mean that every decision works out as expected. Another factor with which managers must contend is bounded rationality, or the limits imposed on decision making by costs, human abilities, time, technology, and the availability of information. Because of these limitations, managers cannot always expect to reach decisions that are optimal in the sense of providing the best possible outcome (e.g., highest profit, least cost). Instead, they must often resort to achieving a satisfactory solution.

Still another cause of poor decisions is that organizations typically departmentalize decisions. Naturally, there is a great deal of justification for the use of departments in terms of overcoming span-of-control problems and human limitations. However, sub optimization can occur. This is a result of different departments attempting to reach a solution that is optimum for each. Unfortunately, what is optimal for one department may not be optimal for the organization as a whole (Stevenson, 1999).

2.14 Decision Making and Business Problems

Each business is a unique organization and each business problem is unique for the manager of the business. Several business problems must be known and must be clearly understood. Those several problems are as follows:

2.14.1 Resources Problems

It is accepted that all resources are scare compared with the demand for them. Scare resources of a business leads to the need for decision making on how they should be allocated. The business is faced with problems about the use of time, staff, and production capacity. Resource allocation is not only about the allocation of resources to different business functions. For example, given equipment available in one of any department is limited, so the problem arises how best to use that equipment.

2.14.2 Replacement Problems

Equipments have a limited life and business has to make decision on whether or not to replace obsolescent or out of date machinery. This decision will be made by considering expected life-cycle of the product, the cost of the machine and alternative uses of the resources. Maintenance also generates replacement problems. The failure of a machine may cause delays

in the work process. On the other hand, the activity involved in repairing or replacing that machine may cause greater delays. This causes higher costs. So, the alternative must be chosen which involves the least cost to the business.

2.14.3 Location Problems

Location decisions are part of the long term planning of the business. The selection of location for an organization or a factory is essentially an important business problem. The location problem is totally arisen from cost and the availability of market. Several factors have to be taken into consideration when making a decision about where to locate a factory or an organization. Each factor has a different degree of importance in each decision. But the importance of any influence on the final location decision is depend on the type of the business, the demand of the production process and the importance of the market (Haizer, Render, 1993). Factors that influence the final location decision are:

- **Labor**—a business is interested in labor with specific skills. It can be attracted to an area because there is a high concentration of labor with those skills available.

- **Services**—the major services required by a business are power, water, drainage, and waste disposal. It is not very much important element in location decision in a modern industrialized economy because they are already available. Less industrialized parts of the world—this factor is much more important.

- **Transport**—a good transport system in the country can allow a business freedom in its location selection. Heavy transport costs for raw materials will lead a business to move closer to its supply sources.

- **Politics**—unstable government, government against to private enterprise and the treat of war are important factors to influence location decision making.

- **Image of the Area**—poor image of the area is prevent to invest there (Hammond, 1992).

2.14.4 Inventory Problems

The techniques that useful for a business in this area include costing, statistical analysis of a problem and the result of market research. Inventory is the goods held on hand for the production process or sales to final customers. It is significant low cost and customer satisfaction as much as possible with the minimum use of resources. Decision making on inventory includes determining the right quantity of various items to have on hand and their location, use and condition. Inventory problems occur when the demand is not known with certainty.

2.15 Impact of the Environment for Decision Making

There are number of external and internal organizational factors that will determine the way that organizations and individuals make decisions.

2.15.1 External Environment

External forces generally determine organizational strategic decisions. External environment consists of general external environment and specific external environment. General external environment includes those factors outside the organization which are economic conditions, political conditions, legal requirements, social influences, globalization, and technology. Specific external environment includes those factors that directly related to the achievement of an organization's goals which are suppliers, customers, and competitors.

- **Economic Conditions:** These apply to the approach in which resources are used and distributed. E.g. cost of raw materials, inflation, wage rates, etc. An organization may face with such environmental factors. For example, if inflation rate is high and wages are low. So, organizational decision making must point to such conditions.

- **Political Conditions:** These conditions include government policies and industrial policies.

- **Legal Requirements:** These are related to legislation that already exists. Legislation includes the rules by that society wishes to live, then the rules that organizations should operate.

- **Social Influences:** Social influences include the values that society holds and demographic changes in the population. Changes in both of these are relevant to the organization.

- **Globalization:** It is related to the international dimensions. Globalization issues such as cultural, economic, etc. must be taken into account when entering foreign markets.

- **Technology:** Technological improvements enable organizations to be more cost efficient, competitive, and profitable. The organization make decisions either using technology to make efficiency gains, or not.

- **Suppliers:** This element of the specific external environment refers to number of suppliers, the quality of their products or services, and the trustworthy of supplies.

- **Customers:** An organization has to understand needs and wants of its customer is important to its organizational success. Having such understanding helps the organization to make a decision on what to produce and what to change in order to remain in line with customer expectations.

- **Competitors:** Decision making is concerned with understanding what competitors are doing and how best to respond effectively. Competitive decision making should enable an organization to identify those aspects of its own strategies and those of existing and potential competitors which are strengths or weaknesses.

- **Labor Resources:** This includes labor wage rates, the supply of skilled labor, and the supply of labor generally. Labor resources help the decision making on the account of people that can be employed at a given wage rate and whether the existing labor has the required skills (Lee, Newman, Price, 1999).

2.15.2 Internal Environment

Internal forces impact on the performance of the organization. Decision making in internal environment of the organizations consist of organizing, planning, controlling, and influencing. Such internal environments that influence internal decision making are:

- **Organizational Structure:** Organizational structure facilitates decision making. The structural form of an organization represents the level of responsibility at authority. Organization's structure determines the way that individuals make decisions. This is determined according to formality that exists in the organization. According to formality, organizational structures are defined either "mechanistic" or "organic". Mechanistic structure comprises highly centralized decision making. Individuals would not be expected to make decisions that take them outside their jobs specifications. Most employees would only require making routine decisions. Mechanistic structure also includes very high levels of formalization. Conversely, organic structure having decentralized decision making and low levels of formalization. Organic organizations use less firm command and control systems. Individuals expected to make non-routine decisions. Note that, there is no one corrects organizational structure. An organization must be best fitted to factors, namely, strategy, size, technology, and environment. All of these factors must be taken into account when designing appropriate organizational structure.

- **Organizational Culture:** Organizational culture helps to find correct way to perceive and think that will influence the decision making process. Organizational culture is related to values that accepted by the organization. Organizational culture involves low level of trust in subordinates with little or no freedom in mechanistic

structure; on the contrary, it involves high levels of trust in subordinates with high degree of freedom in organic structure.

- **Organizational Climate:** Organizational climate is an aspect of organizational culture and it determines degree of individuals is motivated to work for an organization and actively participate in decision making. In other words, organizational climate is the level of moral, and strength of feelings or belongings, care and goodwill. Organizations create culture to maximize decision making at all levels. If individuals are motivated and feel valued, they make greater efforts to maximize decision outcomes.

- **Management Style:** The style of management tends to have an effect on the way in which individuals are involved in decision making. If a manager is autocratic or democratic, it will influence the decisions made in organization. In order to achieve more involvement on the part of employees, managers should give greater freedom to employees when making decisions (Lee, Newman, Price, 1999).

2.16 Conclusion

This section has reported on the literature survey carried out. The main variables affecting the problem defined are decision making process, decision making approaches, decision environments, decision theory, causes of poor decisions, and different types of information systems. These variables are further discussed in the next section.

SECTION 3

THEORETICAL FRAMEWORK

3.1 Introduction

This section sets up a theoretical framework of the problem situation using the variables as identified in Section 2.

3.2 A Theoretical Framework for Sound Decision Making

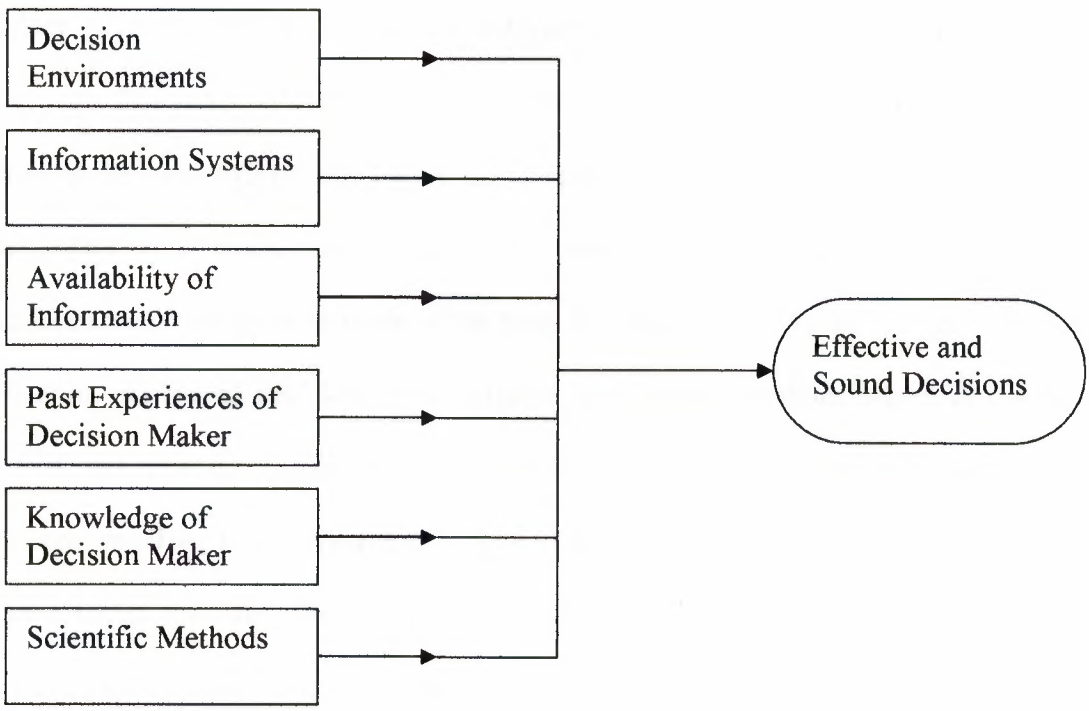


Figure 3.1 Theoretical Framework for Decision Making

At the above, illustrated a theoretical framework for decision making, and the theoretical framework includes six independent and one dependent variables. Now, if we want to describe the above figure, we should consider the independent variable and dependent variable. The independent variable is one that influences the dependent variable in either a positive and negative way. The variance in the dependent variable is accounted for by the independent variable (Sekaran, 2003).

The first independent variable is decision environments. There are number of external and internal environments that influence the managers' decisions. Managers must take into consideration these factors while they make decisions. The second variable is information systems. Today, it is widely recognized that information systems knowledge is essential for managers, because most organizations need information systems to survive and prosper. *Information systems can help companies extend their reach to faraway locations, offer new* products and services, reshape jobs and work flows, and perhaps profoundly change the way they conduct business. Also availability of information is important to make effective and sound decisions. The other independent variable that influences our dependent variable is past experiences of decision maker. But that a past decision yielded a successful result does not mean that repeating it would result in the same way. This is because present and future circumstances are not the same as those of the past. So, there is an other important variable to make effective and sound decision. This variable is scientific methods which is the most rational tool for making organizational decisions. The last independent variable that influences our problem is knowledge of decision maker about decision making tools and techniques. This is also very important aspect for making effective and sound decisions. Managers must know at least one of that decision making tools and techniques.

3.3 Conclusion

In this section, the variables of decision making as determining in section 2 were identified, and then the theoretical framework for decision making were illustrated and defined.

SECTION 4

CASE STUDY OF ELEKTROKUR LTD.

4.1 Introduction

This section introduces historical background and decision making activities at Elektrokur Ltd.

4.2 Historical Background of Elektrokur Ltd.

Elektrokur Ltd. is a family company that produces and sells electric cable, pipe, and fluorescent armature. Also they sell different kinds of illuminating lamps. Elektrokur Ltd. was established in 1977 by Derviş Tarımer. When Elektrokur Ltd. was established for the first time, they were producing only fluorescent armatures. In 1983, they started to produce electric pipe, and in 1985, they started to produce electric cable. When it was established in 1977, there was only a factory which is placed in the Organized Industrial Zone in Göçmenköy. Elektrokur Ltd. began to work with 5 employees. Now, they have 20 employees. 10 of them work in factory and 10 of them work in stores and marketing department. They have 2 stores which are placed in Göçmenköy and Famagusta. Elektrokur Ltd. produces different kinds and size of cables and pipes. These are installation cables, over plaster cables and HO5VV-F, HO5VVHZ-F cordon cables; 1 ¼, 1 ½, ¾, 5/8, and 1 inch pipes. Most sold

cables are installation cables; and pipes are ¾ and 5/8 inch pipes. Also Elektrokur Ltd. imports different kinds of illuminating lamps.

4.2.1 Products Produced in Elektrokur Ltd.

In Elektrokur Ltd., different kinds of electric cable and pipes are produced. These products are showed below.

Table 4.1 Products Produced in Elektrokur Ltd.

INSTALLATION CABLES		**OVER PLASTER CABLES**	**CORDON CABLES**	**DOUBLE IZOLE CABLES**	**PIPES**
H05V-K, H07V-K	***H05V-U, H07V-U, H07V-R***		***H05VV-F, H05VVHZ-F***		
1x1 mm	1x0.75 mm	2x1+1 ECC	2x0.75 TTR	5x2.5 TTR	⅝ inch
1x1.5 mm	1x1 mm	2x2.5+1 ECC	3x1 TTR	5x4 TTR	¾ inch
1x2.5 mm	1x1.5 mm	2x4+1.5 ECC	3x1.5 TTR	5x6 TTR	1 inch
1x4 mm	1x2.5 mm	2x6+1.5 ECC	3x2.5 TTR		1 ¼ inch
1x6 mm	1x4 mm	2x10+6 ECC	3x4 TTR		1 ½ inch
1x10 mm	1x6 mm	2x16+6 ECC	4x1 TTR		
1x16 mm			4x1.5 TTR		
1x25 mm			4x2.5 TTR		
1x35 mm			4x4 TTR		
			4x6 TTR		

4.3 Decision Making Activities at Elektrokur Ltd.

The essential goal of the company is to produce quality products at the affordable price. Initially Elektrokur Ltd. takes decisions both in long term and short term. However, most of decisions are long term in it. There are also daily decisions that take place in the majority of short term decisions.

There is a board of directors in the company. There are 5 directors who they are members of a family. Each member of the board of directors is a manager of one department of the company such as pricing, production, importing, marketing, and financing departments. Also they are company's shareholders and decision makers in the company. But general manager Derviş Tarımer makes the last decisions. Employees does not participate decision making processes.

There are some respects in the company, while production decisions are made. Production is made according to these matters. These are market and financial conditions, company-customer relations, and needs of market. Competitors of the company also have a great effect on its operational decisions. The company also considers the capacity, size, and prices of its competitors.

"Sometimes, while the board of directors makes a decision, there are some idea conflicts between the members of the board of directors." General Manager of the company, Mr. Derviş Tarımer, says in interview and he adds: "But, at the end we make a common decision for the benefit of the company." But not always can be made right decision. Sometimes decisions can be wrong. A few years ago, in the Elektrokur Ltd. are made some wrong

decisions. For instance, the company tried to produce new products, but it is not conclude successfully. Because production of this good had very high cost. Later, the company attempted to import and sell some goods, but they were not sold. As a result, the company made loss.

To make decision related with company, they use some data and information about market, technology, competitors, and etc. These data and information are kept with at hand. They don't use MIS. To collect these data and information, marketing research and technical product research are made by general manager Derviş Tarımer. But these researches are not enough.

The company uses statistical analysis technique for decision making. According to these statistical analyses, the most profitable season is spring for Elektrokur Ltd.

4.4 Conclusion

This section has introduced the historical background and decision making activities at Elektrokur Ltd.

SECTION 5

METHODOLOGY

5.1 Introduction

This section describes the steps and methods that are to be used during the investigations of the study.

5.2 The Design of Study

The purpose of the study is case study analysis. Type of investigation will be correlational. Extent of researcher interference with the study is minimal interference. Because the study is conducted in the natural environment of the organization with minimum interference by the researcher with the normal flow of work. The study setting is field experiment that will be done in Elektrokur Ltd. Unit of analysis is organizations and time horizon will be cross-sectional.

In this study, secondary data are used. According to Uma Sekaran (1993), secondary data can be used, among other things, for decision making by constructing decision theory. There are several sources of secondary data, including books and periodicals, census data, statistical, data bases the media, and etc.

this study, first of all, I made a broad literature survey about operational decision making
ıd factors that influence operational decision making. I investigate how right decisions can
e made, steps of successful decisions, and subjects that assist managers to make sound and
ght decisions. After gathering this literature survey together, I visited Elektrokur Ltd.
ompany, I made an interview with general manager, Mr. Derviş Tarımer, and I obtained
eneral information about company, production processes and operations. Last, I tried to
pply and integrate these data and information which I collect with literature survey and in
ıterview to the Elektrokur Ltd. Company.

he information about how Elektrokur Ltd. makes decisions, which makes decisions, and
esults of these decisions were obtained in the interview that was made with general manager,
Ir. Derviş Tarımer, of the company.

.3 Conclusion

his section has described the steps and methods that are to be used during the investigation
of the study.

SECTION 6

LIMITATIONS

To get information about Elektrokur Ltd. was quite difficult, especially written statements was lack of this firm so many data and applications have been derived directly from the top manager and use in this study.

SECTION 7

CONCLUSION

Production and operations management is a major function in the process of creating effective and efficient goods and services. Thus, effective operational decision making is needed to carry out operations management activities. Operational decision making is concerned with decision making pertaining to the production of goods and providing of services with high quality, at a low cost and the desired time. Success or failure of companies may depend on the quality of their decisions.

Operational decision making cover wide range of decisions, from designing a product to work performance of the people on the production floor.

Effective and accurate decisions may allow the organization an advancement and competitiveness. The organization increases its profitability when the right decision is made. It may accrue loses when wrong decisions are made. Consequently, decision making is very important for the organizations. This case study examined here, of Elektrokur Ltd., shows how right decisions result in a profit while wrong decisions result in a loss. When Elektrokur Ltd. decided to produce electric cable, predicting it will be successful, they immediately implemented this decision. It was a right decision, the result of which has been high profits for the company. In other case, the company relied on an inadequate market research. The

mpany imported, and tries to produce some goods without market research. The wrong cisions resulted in a loss for a company.

IS is also important for managers to make right decision. MIS primarily serve the functions planning, controlling, and decision making at the management level. But Elektrokur Ltd. oes not use MIS or another information system.

tuition does not take a large place in an effective decision making. However, intuitions and xperiences could be taken into consideration, but only as one measurement in the decision aking. There are useful methods and techniques that assist managers in decision making. he decision process can be used in any type of decision. The process includes definition of a roblem, listing, evaluating and selecting alternatives, and implementation of results. When ie alternatives are listed, evaluated and selected, several techniques are used. Decision theory an be useful in listing alternatives and decision tree can be useful for evaluation and selection f those alternatives.

n the company, it is not used any scientific methods, tools and techniques. Mr. Derviş arımer makes organizational and operational decisions by himself without using any cientific methods or consulting other managers. He makes decisions according to his ntuition and experiences. Sometimes, these decisions can be right, but generally, they are vrong decisions.

n production process, company is not use definite system or program. Production decisions re made according to customer demand. Production is made as much as customers demand.

Workers monitor the product stock, and when stock become less they start production to recover decreased stock. In marketing process, company has two stores that offered products to the customers. But these products in the stores are not own products that they produced in the factory. These products are generally imported ready-made products in the stores. Company's produced products are generally distributed from the factory to customers or other relevant companies.

There are number of internal and external organizational factors that determine the way that organizations and individuals make decisions. Decisions, in every organization, are affected by these factors. In fact, Elektrokur Ltd. has been affected; indeed it was hurt, by the Cyprus issue, which is, of course, an external factor.

SECTION 8

RECOMMENDATIONS

It is highly recommended to apply scientific studies and as well as several decision methods in order to make accurate and reasonable decisions in the organization. Elektrokur Ltd. has not been taking its decisions professionally. The data and other information should be continuously and scientifically gathered, evaluated, and used in decision processes in order to make sound decisions. The company did not take into consideration other alternatives when it decided to import goods. The company could have considered other alternatives that would be less costly and higher quality. Market research also takes an important role in effective decision making and here the company seems to have failed too. Also market researches should be made professionally.

Because of being small family company, there is a problem about decision making. Mr. Derviş Tarımer, who is the general manager of company, makes all operational and organizational decisions. Other managers, who are other stockholders and managers of departments of the company, are not generally participate decision making. In spite of Mr. Derviş Tarımer asks their opinion, he makes last decisions. This situation decreases their motivation and participation. I can recommend Mr. Derviş Tarımer to give authority other managers in decision making. This can increase their motivation and participation.

Also it is recommended to apply scientific decision making process and steps showed in literature survey one to one and carefully while making decisions. These steps are very important to make sound and right decisions. If one step is skipped and is not applied or

wrong applied, that decision will most probably be wrong. In order to make wrong decisions Mr. Derviş Tarımer can consult some professionals about how these steps are applied and integrate to the company.

In production process, company is not use definite system or program. Production decisions are made according to customer demand. Production is made as much as customers demand. But this situation can be risky. If production is made as much as customers demand, when mass demand was come into the company, company can be in trouble to cover this demand. Because of this situation, company must make systematical production.

While employees are taken to the job, they are not trained. Time is a resource and it is scarce. So until they learn and fit into job time goes. To prevent this, before employees are taken into job, they must be trained and taken who are successful to the job.

Also it is highly recommended to offer products more practically to the customers. In two stores of the company, imported products are generally presented to the customers. Company's produced goods are sold from the factory to the customers. To do this, company purchased some vehicles to distribute the products to the customers. This may be more practically but it is more costly. If these stores are used to present goods to the customers, it is more easily reached and less costly for customers. Of course, there is place limitation for products. To succeed this problem, the stores can be enlarged or new stores can be opened.

In the company, it is not used MIS or another information system. Company should use MIS, because MIS serve the functions of planning, controlling, and decision making at the

nagement level. So by using MIS, company can easily make planning, controlling, and

ision making.

the view of interviews, it is highly recommended that the company should make its cisions professionally and while using scientific methods and techniques. Decision theory ould be considered in the decision process, especially in the choosing the best alternative. In is way the company could improve its decision making processes and its overall erformance.

EFERENCES

- Anthony, R. N. (1965). Planning and Control Systems: A Framework for Analysis. Cambridge, MA: Harvard University Press
- Haizer, J., Render B. (1993). Production and Operations Management. Allya and Bacon
- Hammond, S. (1992). Business Studios, Longman
- Laudon, K. C., Laudon, J. P. (2002). Management Information Systems. Prentice Hall, Upper Saddle River, New Jersey
- Lee, D., Newman P., Price R. (1999). Decision Making in Organizations. Financial Times
- Russel, R. S., Taylor, B. W. (1995). Production and Operations Management. Prentice Hall
- Sekaran, U. (2003). Research Methods for Business. John Wiley & Sons
- Stevenson, W. J. (1999). Production and Operations Management. McGraw Hill Company
- Tarımer, Derviş (2005). General Manager of Elektrokur Ltd. Company.