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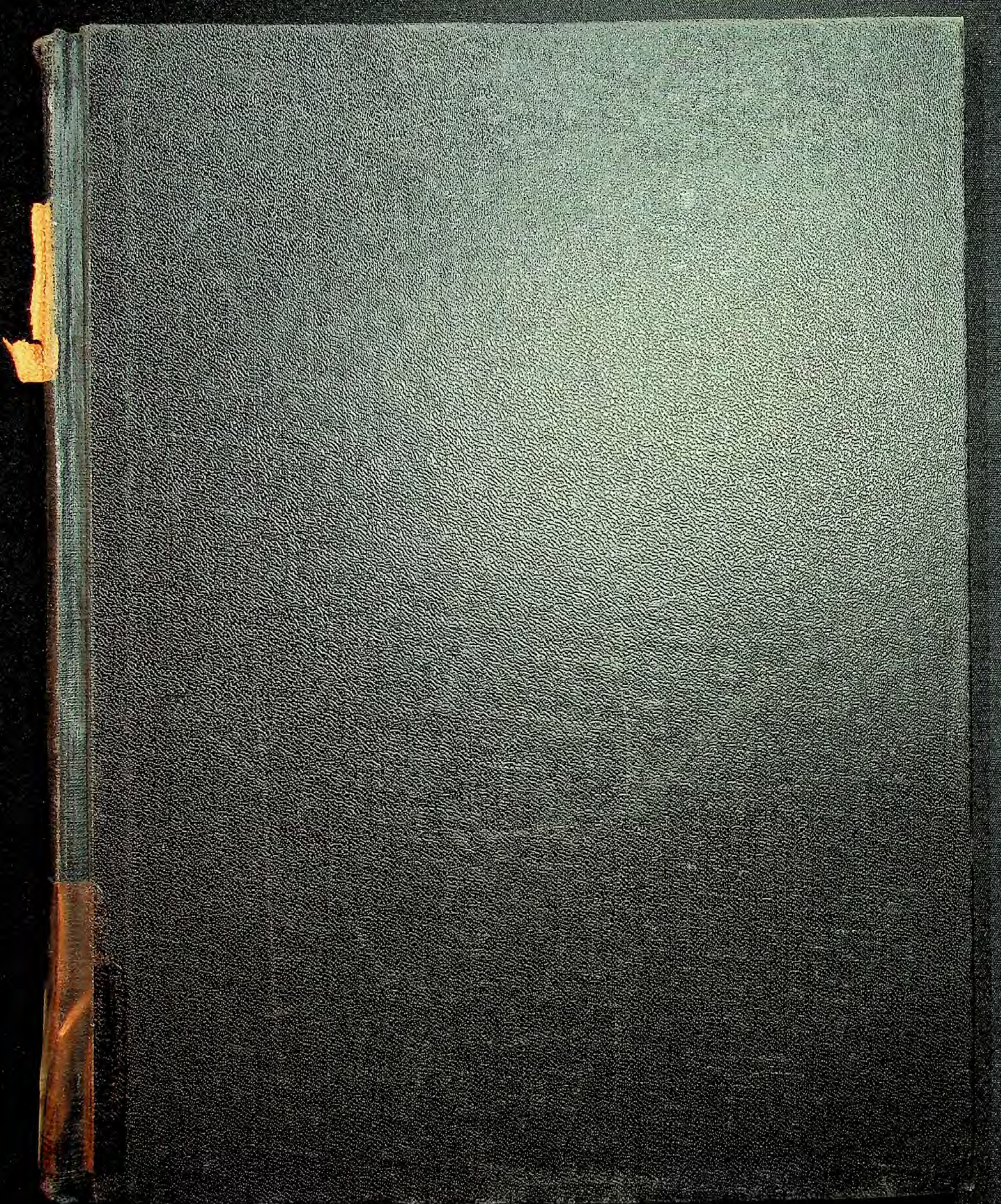
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An Evaluation of "Gaming" as a
Top Management Training
Technique in the U.A.R.
Industrial Environment

BY

OSAMA MOHAMED OLAMA

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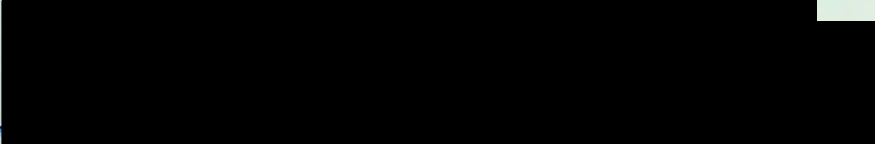
A thesis submitted to the Management Program, The Department of
Economics and Political Science in partial fulfillment of the
requirements for the M.A. Degree (Enterprise Management) at the
American University in Cairo.

Written Under the Supervision of
Professor
Farouk El-Hitami

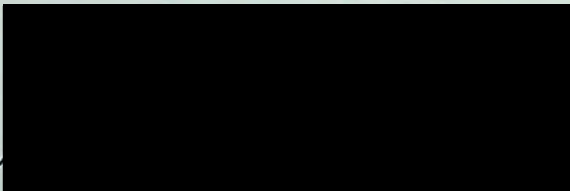
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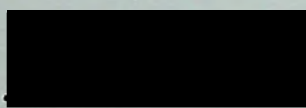
This is to certify that the Master's Thesis of
OSAMA MOHAMED ABD-EL-MONEIM OLAMA
entitled: "An Evaluation of "Gaming" as a Top
Management Training Technique in the U. A. R.
Industrial Environment", has been approved as
meeting partial requirements for the degree of
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Cairo.



Dr. M.F. El Hitami



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Members of thesis committee

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Contents

	<u>Page</u>
Acknowledgement	1
<u>Introduction:</u>	1
- Setting of the Problem	5
- The Need for the Study	5
- Objectives of the Study	6
- Thesis Organization	6
<u>Chapter One: The Evolution of the Management</u> <u>Game as a Training Technique</u> <u>(Historical Background)</u>	8
- Definition of the Business Game Method of Training	9
- Purposes of Business Games	12
- Types of Business Games	14
- The Value of the Business Game Method of Training	16
- Development of Gaming Technique	20
- Development of the Use of Gaming Technique in the U.A.R.	23
<u>Chapter Two: Problem Formulation and Research</u> <u>Design:</u>	24
- Formulation of the Research Problem	26
- Formulating the Hypothesis	26
- Definition of Terms	26
- Definition of concepts	27
- Experimental method	28
- Sources of data	28

	<u>Page</u>
- Methods of data collection	29
- Formulation of the questionnaire	30
- Categories	34
- Coding	35
- Limitations of the study	37
<u>Chapter three: How to play "Cairo 68" Business Game</u>	39
- The objective of Cairo 68 business game	40
- The structure of Cairo 68 business game	40
- Description of the game system	44
- Procedures of playing the game	45
<u>Chapter Four: Analysis:</u>	66
- Tabulation and analysis of the collected data	67
- Observation data	67
- Documents data	69
- Questionnaire data	85
- Quantity and type of data	85
- Tabulation	86
- Techniques Used in the analysis	86
- Statistical analysis of the data	87
<u>Chapter Five: Summary and conclusions:</u>	102
- Summary	103
- Interpretations	107
- Conclusions	110
- Recommendations	III
<u>Appendices:</u>	II5
- Appendix A	II6
- Appendix B	I23

Introduction

- Setting of the Problem
- The Need for the Study
- Objectives of the Study
- Thesis Organization

Top Management training is one of the main concerns of all the countries which aim at development and progress. There are several methods and techniques which have been used for training "Top Managers." One of the more recent training techniques is the "Business Game" or "Management Game."

The U.A.R. has shown a great concern in the training of top managers. As a result, several training institutes were established. One of them is the National Institute of Management Development (N.I.M.D.).

The N.I.M.D. recognizes that management development is the vital element in the economic development of the U.A.R. Consequently, it defined its objectives as follows:

- 1- To promote, carry on, and co-ordinate activities which will increase the quantity of qualified managerial personnel in the Republic.
- 2- To conduct research in the field of management or administration to create a pool of knowledge that will contribute to the development of managerial competence at all levels.
- 3- To conduct or assist in conducting personnel development programs for managers at various organization levels in the public and private sectors of the economy.
- 4- To advise and assist nations associated with the republic in matters related to the above objectives.¹

¹N.I.M.D. Bulletin 1962/1963, NIMD, 1962, P.11

As of December 1969, N.I.M.D. had offered 62 training programs mostly for top managers in the U.A.R. 2015 managers attended programs which varied in duration from one to eight weeks each.

The N.I.M.D. training programs aim to accomplish the following objectives:²

- 1- To develop a systematic method of thinking and/or problem solving.
- 2- To develop a better understanding of the administrative process.
- 3- To increase the participants' technical vocabulary.
- 4- To develop a better understanding of the relationships among people and functions.
- 5- To widen horizons concerning enterprise, industry, sector, and economy relationships.
- 6- To develop a business oriented attitude, open mindedness, creative imagination, cost consciousness.
- 7- To develop self-confidence in the value of their own judgements.
- 8- To create an incentive for self development.
- 9- To develop a better understanding of functional areas and their relationship to each other.

The N.I.M.D. offers three types of training programs.

These types are:

²Langenderfer, H.Q., and Yousri, A., Designing and Operating a Management Development Program, N.I.M.D., 1965, P.12.

- 1- General top management programs which are designed to develop top managers ability in defining organizational goals and strategies, problem diagnoses, group leadership and developing organizational, planning and control techniques.
- 2- Specialized management programs which are addressed to senior functional managers in the fields of personnel, finance, marketing, production, planning and control.
- 3- Sectorial Management programs which are designed to meet the training needs of managers in a specific sector e.g., construction sector, banking etc.¹

The N.I.M.D. adopted several modern training techniques such as: the case method, role playing, training laboratories and management exercises.

The most recent training technique adopted by the N.I.M.D. is the "Business Game." They used it for the first time, after developing a suitable game for Egyptian top managers' environment, in the "Top Management Program No.15," which was conducted during the last week of April, 1969. Then they used it again in the "First follow-up program for Top Management," which was conducted on the last week of December, 1969.

Business Games are known also as "Management Games" or dynamic management decision games. Gaming is a technique which aids in training people to think clearly about business problems

¹N.I.M.D. Bulletin, Publication Department, N.I.M.D., 1967, P.12.

by allowing the participants to get the results of the decisions that they made in a certain situation and then to take them into consideration in making later decisions. Participants tend to act as if the games represent a real business situation and that the objectives of the games are real-life objectives. As a result of the involvement, the participants should learn more than they learn from the usual static case study in which they tend to look on the solution as a one-time decision. Consequently, business games have great value in developing the managers' abilities in decision making.

Setting of the Problem:

This research is designed to evaluate the Business Game as a top manager's training technique from the participants point of view. It is an exploratory study to identify some of the problems that arise when gaming is used as training technique.

The Need for the Study:

The purpose of evaluation of a training technique is to obtain systematic and objective feedback on the effect of specific actions and techniques in order to improve training in the future, i.e., to maximize the successful aspects of the technique and minimize the unsuccessful ones, and to make accurate predictions about the future behavior of the individuals who have undergone training.

The business game "Cairo 68", was only used twice in the U.A.R., in two training programs as a top management training technique. Consequently, there is a need for evaluating this training technique in order to learn more about its effectiveness. Since the most immediate source of information about the potential value of using a certain training technique is the participant,¹ this evaluation will be from the participant's point of view.

This research will be the first one in this field in the U.A.R. There is need for such research as there is a great need for evaluating and developing training techniques for top managers in U.A.R.

Objectives of the Study:

This study is an experimental attempt to:

- 1- Explore the extent to which "Business Game Training" affects the decision making abilities of top managers in the Industrial Environment of the U.A.R.
- 2- To discover the factors that can increase, if possible, its functional effectiveness.
- 3- To suggest a more thorough method for evaluating the effect of game playing in the future.

Thesis Organization:

The thesis falls into five chapters and an introduction. The first chapter deals with the historical background. It

¹Secretariat of U.N., Methods and Problems of Evaluating Programs for the Development of Senior Administrators, U.N., 1968, P.7.

involves such topics as definition of the business game method of training, purposes, types and values of business games, and the development of thinking on this topic.

Chapter two deals with problem formulation and research design. This chapter covers the formulation of the research problem, the formulation of the hypothesis, definition of terms and concepts, methods of data collection, and the limitations of the study.

The third chapter deals with explaining how to play "Cairo 68" business game, by describing the structure, the system and the procedures of playing the game.

The fourth chapter deals with the organization and analysis of the collected data. The quantity and types of data, tabulation, the techniques used in the analysis, and the analysis of the data are covered in this chapter.

Chapter five deals with summary and conclusions. This chapter involves a summary, the conclusions which are derived from the analysis of the data, interpretation of these results, and recommendations. Suggested topics for further research will be offered.

Chapter One

The Evolution of the Management

Game as a Training Technique

(Historical Background)

- Definition of the Business Game
Method of Training
- Purposes of Business Games
- Types of Business Games
- The Value of the Business Game Method
of Training
- Development of Gaming Technique
- Development of the Use of Gaming
Technique in the U.A.R.

Definition of the Business Game Method of Training:

Games represent a form of simulation. Simulation, as it is defined by Webster, is "to assume the appearance of, without the reality." To simulate, according to Morgenthauer's definition, is "to duplicate the essence of the system or activity without actually attaining reality itself."¹ Another definition is, "to simulate means to assume the appearance of reality without the risk of reality, i.e., to copy the details of a work situation to provide an experience that approximates as closely as possible an actual experience but without the costs or disruptions that might occur if the experience took place in a real organization."² Thus, simulation may be said to be the use of a model to represent over a period of time, essential characteristics of a system or process under study. Also, simulation is a technique for constructing and operating dynamic models.

Simulation involves the use of a model of reality comprising a group of interrelated variables, and the manipulation and/or observation of the behavior of such model over a period of time. Simulation focuses on certain characteristics of a system because it is impossible to represent in the simulated situation all variables at play in reality and to assign them their proper relative weights. This, of course, is true of any model

¹Meier, R.C., Howell, W.T., and Paxer, H.L., Simulation in Business and Economics, Prentice-Hall, 1969, P.2.

²U.N. Secretariat, New Methods and Techniques of Training, Technical Paper No.5(B), U.N., Geneva, Switzerland, 19-29 August 1968, P.1.

or theory, and of the methods of science in general. The proximate test of the value of simulation is whether by such means we increase our general understanding of the real system; the ultimate test is whether simulation permits us to predict developments in the realistic situation with greater accuracy.¹

Management decision-making and business training have long been based on verbal models. It is now evident that mathematical formulations and simulations are excellent ways to improve some models upon which complex business decisions are made.

Management game is a form of simulation of a dynamic environment in which human beings make decisions at various stages. It utilizes a simulated model of an actual organization and work situation.

R.C. Meier, W.T. Newell and H.L. Pazer define gaming as "the use of a game model to permit players to make decisions and observe the behavior of a model as a result of their actions."²

James L. McKenney defines a business game as "a competitive mental activity wherein opponents compete through the development and implementation of an economic strategy. The three basic components of a simulation game are an abstraction

¹Thorelli, H.B., and Graves, R.L., International Operations Simulation, The Free Press of Glencoe, 1964, P.2.

²Meier, R.C., Newell, W.T., and Pazer, H.L., Simulation in Business and Economics, Prentice-Hall, 1969, P.4.

of an economic environment, or a model, a series of rules for manipulation of the model, or simulation, and a set of rules which govern the activity of the participants in relation to the simulation, or a game."¹

Jay R. Greene and Roger L. Sisson define the business game as "a controlled situation in which a team competes against intelligent adversaries and/or an environment to attain pre-determined objectives."²

Thus a business game is a simulated economic model representing a business situation. It is used either to improve decision making skills of the players or to improve performance of the system being simulated, or both. Two basic elements are involved: gaming and modeling. The gaming aspect comes from game theory in the sense that two or more people or groups are competitively involved in an analysis of choices and strategies in reaching a goal. If several teams participate in a single game, the decisions made by any one team will influence the positions of all other teams, these are competitive games. In those games where a team plays solely against an environment, rivalry can be had between teams by comparing their final results and their methods of attacking the problems.³ The modelling aspect means that the gaming is based on a condensed

¹McKenney, J.L., Simulation Gaming for Management Development, Harvard University, 1967, P.2

²Greene, J.R., and Sisson, R.L., Dynamic Management Decision Games, Wiley, 1959, P.1.

³Ibid, P.1

and simplified version of a real organization - either in whole or in part - in terms of goals, administrative roles, events, processes or systemes.

In the game, the players make decisions at various stages. They feed into the model information about their decisions, and the game model simulates interactions between the simulated environment and decisions of participants. Results are fed back to the players, after which they make another set of decisions and the cycle is repeated.

Games are primarily used for training, but they have important research applications as well. They, like simulation models, may be implemented by hand computations or may be programmed for a computer.

The management game involves both rational and emotional behavior, since it is an actual contest played according to a set of rules and for recognition. Although management games do not copy real life in every detail, they have enough of the aspects of reality to provide insights into the complexities and inter-relationships that would be confronted in an actual organizational environment.¹

Purposes of Games:

To define the purposes of the business games we have to distinguish between three areas of application, namely, education research and business planning.

¹U.N. Secretariat, New Methods and Techniques of Training, Technical Paper No.5(B), U.N., Geneva, Switzerland, 1968, P.1.

A- Education:

When the business game technique is used as an education device, it has to achieve one or all of the following purposes:

- 1- to increase the student's understanding of business problems at the functional level (marketing, production, ... etc.)
- 2- to broaden the grasp of, and provide some practical training in, the problems of organization, policy and decision-making processes in general.

B- Research:

Management games are used as instruments and settings for research. This is especially true in two fields, first economics and marketing, and second, organization theory and behavioral sciences.

The purposes of using management games in the field of research are:

- 1- to generate new hypotheses for research on actual organizations.
- 2- to increase our understanding of decision-making under conditions of uncertainty and risk by experimentation with varying degrees of such conditions in controlled game situations.
- 3- to check out the effect of a certain economic conditions which happened in the past, (e.g. the conditions of 1929 depression) on the behavior of administrators today.

- 4- to check out the constructs of classical economics as a prelude to the manager's ultimate application to real-life situations.
- 5- to develop certain types of personality tests based on performance in management games.
- 6- to examine alternate specific production, finance, marketing, etc., policies of a firm under game environmental circumstances which portray real life.

C- Business Planning:

Management games as instruments of business planning are likely to find even greater use in the simulation of administrative systems. The greatest and probably most lasting value of simulation by gaming in business planning is that it affords management a fast and relatively low cost opportunity to try out new ideas on a preliminary basis in a non-committal setting, and in doing so to uncover a number of unforeseen factors and ancillary ideas which should be taken into consideration in making the original proposals a more viable one when ultimately translated into practice.¹

Types of Games:

There are many types of management games differentiated by purpose, participation, structuring, complexity, scoring and method of computation.

1- Specific Purpose:

According to the game purpose we can distinguish

¹Thorelli, H.B., and Graves, R.L., International Operations simulation, The Free Press of Glencoe, 1964, P.9.

between games serving educational, research, or business planning purposes. Another useful way of distinguishing among the purposes of games is based on the subject matter. Most games concentrate on general management activities, while others are functional games; since they focus on problems of particular functional areas of an organization.

2- Level of Management:

Games may also be distinguished by the level or levels of management where decisions are being simulated. It is true that general games are also top management games, while functional games aim at middle management and the more specialized subfunctional games at the middle and junior management levels.¹

3- Individual vs. Group Decision-making:

There are games designed for each participant to represent an individual decision-making unit, e.g., the functional games. But group decision-making is the rule in the majority of games.

4- Complexity:

A game may be an individual game such as In-basket, it may involve small groups, or it may be a complex game with many players or teams of players. Also, games may be interactive such as the competitive games, while others are non-interactive where the players try to achieve the best score independently of each other.

¹Ibid., P.10.

5- Method of Computation:

Management games can be distinguished according to the method of computation which is going to be used. There are management games which are scored manually, while there are others which are scored by a computer.

As the game increases its complexity, it is preferred to be computerized. But manual games cost less to design and conduct and are easier to understand by the trainees, because the type of interaction simulated, and the computations are quite simple.

The Value of the Business Game Method of Training:

Although games are used both as educational devices and as tools for analysis and research, the greatest use of the gaming technique has been for educational purposes. The primary reason for creating business games is to permit the users to learn something from the closely controlled hypothetical situation that can be employed to advantage at some future time in an operating business.

In particular the player might gain the following benefits:¹

1- If used properly, participants become aware of the key factors to observe in actual situations and of ways to diagnose problem situation. The game can illustrate the factors most relevant to administrative actions.

¹Greene, J.R., and Sisson, R.L., Dynamic Management Decision Games, John Wiley & Sons, Inc., 1959, P.3.

2- The game will illustrate what facts are important and may give some idea of the approximate quantities involved in decision-making.

3- Playing a dynamic game also forces attention to the need to establish policies and strategies, and on longer-range planning. This is in contrast to the regular on-the-job experience, which tends to emphasize a putting-out-fires approach.¹

4- The participant will gain practice in the use of decision assisting tools such as: break-even charts, financial statements, Gantt charts, and even such devices as linear programming and statistical inventory control.

5- A game can be used to illustrate the value of analytic techniques where they exist. To do this, the game should be played through once before the student is instructed in the analytic procedure. The player will presumably make judgement decisions. After that, if the analysis and solution of the problem is taught and the game is replayed, using the optimizing method, its value is usually made quite evident.

6- Games can be used as an aid in training people in operations research.

7- Players become highly involved when participating in a business game. As a result of the involvement, the participants should learn more than from the usual static case study in which the trainee tends to look on the solution as a one-time decision.

¹U.N. Secretariat, New Methods and Techniques of Training, U.N., Geneva, 19-29 August, 1968, P.4.

8- The dynamic management game has feed-back which allows for actions taken in one period to affect future conditions and results. So, it represents an effective educational device to illustrate accurately the dynamic nature of business.

9- In game situations a large number of interacting variables must be simultaneously accounted for by the player. This is highly realistic.

10- Because time is compressed, the player can make as many decisions in a game in a few hours as he would make in an operating business in several years. This raises the value of gaming as a training technique.

11- General management games do have a potentially valuable contribution to the development of decision-making skills which is not dependent upon practice in a realistic environment.¹

12- Companies use game models of their own industry can predict competitors' reactions to company decisions and policy changes.

13- A game can be used as a laboratory for behavioral research and organizational research. Games also have research uses in the development of dynamic theories of the firm and economic theories of oligopoly behavior.²

¹Meier, R.C., Newell, W.T., and Pazer, H.L., Simulation in Business and Economics, Prentice-Hall, 1969, P.207.

²Ibid, P.20.

1 14- The game method also offers the functional specialist a vehicle for broadening his management or organizational horizons. An important aspect of the use of games is its adaptability to a wide variety of situations.¹

Dynamic gaming has several advantages for the instructor as well as the player.² Some of these benefits are:

1- The instructor himself gains an insight into the structure of the actual business situations that the game is designed to simulate.

2- The instructor has great flexibility in making the game illustrate a specific point, it is quite easy to revise a game.

3- The cost of training through the use of games should be much lower compared to on-the-job or the sink-or-swim type of training.

4- Dynamic games offer an opportunity to work with models and to see that conceptual structuring of a complex situation is possible.

5- Playing a business game usually proves to be an enjoyable experience for the participants. Instructors will have little difficulty in holding a group's attention for relatively long period of time.

¹Op.cit., P.4.

²Greene, J.R. and Sission, R.L., Dynamic Management Decision Games, John Wiley & Sons, Inc., 1959, P.4.

Development of Gaming Technique:

Gaming as a training device is not new. It has been employed in military training for many years. War games have been utilized since the sixteenth century. They were developed from simple chess-like games to today's month-long simulated worldwide games.

War gaming, from its earliest inception to the present time, has involved two or more teams of participants competing against each other for control of an area in the game environment. Early games were primarily for developing an appreciation for possible military tactics utilizing military vocabulary.¹ They were conducted upon chess-like boards with men labeled to represent common military units. With the introduction of time as an element, came the development of elaborate scale models used to teach implementation of tactics and to involve the trainees in a planning exercise.² Later, as politics and logistics both increased in importance for military games, extensive brochures were developed which defined the political setting of each combatant. These brochures defined the available resources in the simulated environment and provided a theme for the exercise with military goals for each side. By 1860 all the elements of modern gaming were involved: the notion of time, detailed simulation of activities, and cognizance of pertinent environmental forces.

¹Murray, H.J.R., A History of Board Games, Oxford University Press, 1952, pp.234-236.

²Young, J.P., A Survey of Historical Developments in War Games, John Hopkins University, 1960. P.17.

In 1874, a new school of war gaming, referred to as free kriegspiel, arose to theorize and add realism to games. The result of this effort was an enormous rule-learning challenge to the would-be game participant. This game relied completely upon experienced umpires with no rule book. The two schools maintained a lively rivalry and, by each adopting the advantages of the other, seems to improve the state-of-art of military gaming.¹

More recently the computer has been employed in war gaming with the machine doing much or all the data reduction and analysis. During the period 1946 to 1956 with the founding of RAND Corporation and other civilian advisory groups, a concentrated effort was made to extend former war-gaming exercises into operational games for testing strategies for military operations. One environment for play was an abstraction of a military situation programmed for a computer to simulate how the environment might respond to a set of plans.²

Aside from military applications, undoubtedly the most extensive attempts to utilize games and gaming techniques have been in business and related areas. In the business field the use of games and gaming is about 15 years old. It is generally agreed that the earliest business management game was the Andlinger Business Game, which was designed by G.R. Andlinger and

¹McKenney, J.L., Simulation Gaming for Management Development, Harvard University, 1967. P.9.

²Weiner, H.G., An Introduction to War Games, The Rand Corporation, August 1959. p.22.

R.J. Green at 1956. It is a simple and manually computed game. As a result of that, it was used as a training device by several management institutes in and out the United State of America.¹ Approximately, at the same time, the top management decision simulation game was developed by the American Management Association.² This game is a computerized general management game. The game is designed for team play in an interactive, competitive environment that is characteristic of other general management games. Participants are assigned to a team comprising the management of a hypothetical company producing a single product and competing with the other teams in a single market. The A. M.A. game and The Andlinger Business game had a considerable influence on the development of business games.³

One of the first uses of a management game on a university campus was the Top Management Decision Game developed by Schrieber at the University of Washington. This game, patterned after the A.M.A. game, was first used in the summer of 1957. At the same time, a number of universities and companies constructed management games. Besides general management games which initially received the most attention, a wide variety of games

¹Zaki, R.H., "Cairo 68" A Game for Top Management, N.I.M.D., December 1969. p. 2.

²Meier, R.C., Hewell, W.T., and Pazer, H.L., Simulation in Business and Economics, Prentice-Hall, 1969. p.181.

³Ibid., p. 182.

oriented to particular functional areas of business management have been developed. Marketing management, inventory control, scheduling, and finance are among the areas for which games are now available. Although games have not received as much attention by economists as they have in the business field, at least one game has been designed to demonstrate economic principles related to market behavior.¹

Development of the Usage of Gaming Technique in the U.A.R.

The management game as an educational device and a training technique was not used by the different management training institutes or universities in the United Arab Republic before 1961. The National Institute of Management Development was the first scientific association which used such technique. During the period 1961-1967, the institute, - in keeping with its concern to use the latest training and educational techniques - used the Andlinger Business Game, in its original structure or in a modified shape, in several training programs for top management which were conducted during this period.

But in the last few years, the idea of developing a game which simulates the situations which are faced by the arabic manager, was raised. Dr. Ramzi, the Professor of Statistics at the N.I.M.D., was a pioneer in this field. He designed a game which is labeled Cairo 68. Cairo 68 represents a trial for achieving such a goal, hoped to be followed by other trials for developing this game and for designing new ones. This game was used, till 31 December, 69, three times as a tool of training top managers who attended the Institute's training programs, two times in U.A.R. and one time in Iraq.

¹Haldi, J., and Wagner, H.M., Simulated Economic Models, Irwin, 1963.

Chapter Two

Problem Formulation and Research Design:

- Formulation of the Research Problem
- Formulating the Hypothesis
- Definition of Terms
- Definition of Concepts
- Experimental method
- Resources of Data
- Methods of Data Collection
- Formulation of the questionnaire
- Categories
- Coding
- Limitations of the study.

Problem Statement:

The National Institute of Management Development is concerning with developing the training techniques which it uses in training top management. It also uses the up-to-date training techniques and tries to adapt them to the Egyptian environment.

To achieve these objectives, the National Institute of Management Development adopted the Business Game technique. There was a trial to develop a suitable game for the Egyptian top management. This trial resulted in "Cairo 68".

This game was used three times in the National Institute of Management Development training programs. In two of these training programs, the game was one of several training techniques used. In the third program, "The First Follow-up program of Top-Management", the game was the only training technique used.

There is a lot of controversy within the National Institute of Management Development and between the National Institute of Management Development and other faculties in the U. A. R. about the effectiveness of the business game training technique on the decision-making talent of top managers. Some specialists in the field believe that gaming technique helps in improving the decision making ability of the top management, while others think it does not. These judgements about the effectiveness of the business game are based on guessing and armchair discussions rather than using scientific research.

The purpose of this study is to clarify whether the business game technique used by the National Institute of Management Development would produce a change in the decision making abilities of the top management trainees, and what kind of changes would be produced from the participants' point of view.

Formulation of the Research Problem:

An evaluation of the extent to which business game techniques as used by the National Institute of Management Development in the U.A.R. affects decision making abilities of the top managers of the industrial projects from the participants' point of view.

The Hypothesis:

The business game training technique improves the decision making ability of the top managers of the industrial projects in the U.A.R.

Definition of Terms:

Business Game: is/^a controlled situation in which a team competes against adversaries and / or an environment to attain predetermined objectives.¹

Top Managers: those persons occupying leadership positions ranging from department head to the chairman of the board.²

¹Greene, J.R. & Sisson, R.L. Dynamic Management Decision Games, Wiley and Sons, Inc., N.Y., 1959, P.1.

²N.I.M.D. Bulletin 1962-63, N.I.M.D. 1962.

Definition of Concepts:

Decision Making Ability:

Is the ability to choose rationally a course of action.

The previous concept can be translated into the following observable events:

1- Sources and types of data gathered by the player for making the decision:

- Sources:

- Documents
- Environment
- Personal Experience
- Researches

- Types:

- Historical Data
- Analytical Data

2- The alternative courses of action developed:

- The objectives to be achieved
- The policies (courses of action) to be set up to achieve such objectives.
- Feasibility of the courses of action considered.

3- Methods used for projection of anticipated consequences of each course of action.

- Calculating statistical probability
- Interpreting inferences
- Measuring correlations
- Searching for determinants
- Downright guessing

4- The Criteria used for selecting the course of action.

- The relative effectiveness of each course of action in accomplishing the objective, i.e., predicting the relative "Yield" of the course of action in terms of benefits and costs.
- Considering the factors that are limiting or strategic to the decision involved (The restrictions).
- Feasibility of the course of action to be selected.

Experimental Method:

The evaluation tried to measure the effect of the business game technique on the decision making ability of the top managers after they have been exposed to the technique.

Sources of Data Collection:

This study involved all the participants in the first follow-up program of top management which was conducted on the last week of December, 1969. All the participants were top management executives who had previously attended the N.I.M.D.

programs and trained by other methods of training such as lecture, case method... etc. They were 24 participants. We can classify them according to their occupations as follows:

Table 2-1: Classification of Participants according to their Occupations:

Occupation	Number of Participants
1- Chairman of the Board	8
2- General Manager	6
3- Vice General Manager	1
4- Financial & Commercial Manager	2
5- Plant Manager	2
6- Financial Manager	2
7- Marketing Manager	1
8- Administrative Manager	2
Total	24

Methods of Data Collection:

This study depends on three methods of data collection:

- 1- Observation
- 2- Documents
- 3- Questionnaire

1- Observation:

One of the methods used for gathering the data for this study was direct observation. The author attended the training program and observed and recorded different behavior and actions as they occurred on the spot.

2- Documents:

There were four groups representing four companies. Each group wrote a report summarizing the different procedures it executed. The author tried to draw some inferences from relating these reports with the results of each company's policy.

3- Questionnaire:

A Questionnaire was developed to assess the participants reactions after playing the game. The data generated from this questionnaire represent the participant's evaluation of the business game as a training technique for top management.

Formulation of the Questionnaire:

The questionnaire, is composed of two types of questions. consists of The first one / open-end questions and the second of structured questions.

There are three open-end questions:

1- What did you gain from playing the game?

A- Advantages.

B- Disadvantages.

2- After you played this business game, what is your evaluation of the following:

- Umpires

.....
.....
.....

- Game Period

.....
.....
.....

- Decision Period

.....
.....
.....

- The system of game execution

.....
.....
.....

3- Other opinions and suggestions about the business game you would like to add to your previous opinions.

Each participant was asked to give specific information in his own words about the effect of the business game on his management abilities.

For the closed-end questions, each participant was asked to put a tick (✓) in front of the expected answer or answers which best described his own opinion.

There were five closed-end questions which were:

- 1- Specify to what extent the game training increased your abilities:

	<u>Very Great</u>	<u>Great</u>	<u>Moderately</u>	<u>Little</u>	<u>None</u>
- Knowledge & Concepts
- Skills
- Ways of thinking & Attitudes
- Self Understanding
- Your understanding of others
- Your dealings with others
- Your general view of the management process and dynamics
- Ability to make decisions
- Other results:					
.....					
.....					
.....					

2- What is the probability of transferring the effect of training by this business game to your work in the company?

- Developing job performance to a very great extent
- " " " to a great extent
- " " " to some extent
- " " " a little
- Not expected

3- What is your general feeling toward the business game? Was the experience generally:

- Pleasant
- Unpleasant
- Indifferent

4- To what extent were the following characteristics and criteria of a successful business game, realized in this business game?

	To a very Great ex- tent	To a Great Extent	To a Mode- rate Extent	Little	None
- Degree of Simulation in general
- A model simi- lar to what is going on in the com- panies
- Excluded nonessen- tial in- formation
- Included Necessary information
- Participants involvement in the game
- Reasonable- ness of dif- ficulty in playing the game

5- After you played this game:

A- Did you have a complete idea about business games?

- Yes
- to some extent
- No

B- To what extent is the business game suitable as a top management training technique?

- very suitable
- suitable
- suitable to some extent
- not suitable

C- What is your preference of the following training methods and techniques to be used in top management training programs? Please, put No.(1) in front of the best method, and No.(2) in front of the following preferred, and so on... If you don't prefer any of these techniques, please put (-) in front of it.

- () - Lectures
- () - Conferences (Panel)
- () - Seminars (group discussion)
- () - Case Method
- () - Management Game

Establishing of Categories:

A- Five categories were established for three close-end questions:

- very great extent
- great extent
- to a moderate extent
- little
- none

B- Three categories were established for the fourth close-end question.

- pleasant
- unpleasant
- indifferent

C- Two categories were used for the open-end questions:

- advantages
- disadvantages

THE CODE

The questionnaire data were coded as follows:

1. For three close-end questions:

	To a very great ex- tent	To a great extent	To a mode- rate extent	Little	None
- <u>Increase in:</u>					
- Knowledge & Concepts
- Skills
- Ways of thinking & Attitudes
- Self under- standing
- Your under- standing of others

	To a very great ex- tent	To a great extent	To a mode- rate extent	Little	None
	_____	_____	_____	_____	_____
- Your deal- ing with others
- Your gene- ral view of the mgmt. Pro- cess and dynamics
- Ability to make deci- sions
- <u>Probability</u> <u>of:</u>					
- transfer- ring the effect of training by "gaming to your real Co.
- <u>Realizing:</u>					
- Degree of simulation in general.....
- A model similar to what is going on in the companies
- Excluded non-essen- tial in- formation
- Included necessary informa- tion

	<u>To a very great ex- tent</u>	<u>To a great extent</u>	<u>To a mode- rate extent</u>	<u>Little</u>	<u>None</u>
- Partici- pants in- volvement in the game
- Reason- ableness of diffi- culty in playing the game

2- For one close-end question:

	<u>Pleasant</u>	<u>Unpleasant</u>	<u>Indifferent</u>
General feeling toward the busi- ness game

3- For the open end question:

	<u>Advantages</u>	<u>Disadvantages</u>
- Playing the game
- Umpires
- Game period
- Decision period
- The system of game execution

Limitations of the Study:

- 1- There is no "before" measurement in this evaluation
i.e., there is no previous evaluation of the parti-
cipants decision making abilities before attending
the program.

- 2- Most of the data collected by the questionnaire used in this study represent the participants' evaluation of the effect of the business game on their decision making abilities.
- 3- The available literature is very limited. This is the first time anyone has used a business game designed for the Egyptian environment in training top managers.
- 4- The sample is not large enough to represent the entire community of top managers in U.A.R. and consequently this will be taken into consideration in generalizing its results.

However, this attempt should be considered as a pilot study to be followed by more comprehensive and rigorously designed studies.

CHAPTER THREE

HOW TO PLAY "CAIRO 68" BUSINESS GAME

- The Objective of "Cairo 68" Business Game.
- The Structure of "Cairo 68" Business Game.
- Description of the Game System.
- Procedure of Playing the Game.

The Objective of "Cairo 68" Business Game:

"Cairo 68" business game was designed to represent a game based on the situations faced by the Arab manager. Its main objective is to use it as a tool for training top management.

The Structure of the Game:

The structure of "Cairo 68" business game consists of the following points:

- 1- The number of teams participating in the game.
- 2- The umpires.
- 3- Time periods.
- 4- The forms to be used.

1- The Number of Teams Participating in the Game:

Any number of teams can play the game, however, there should be more than one team in order to have the advantage of comparing the performance of these groups, and consequently better learning from such experience.

Each team represents the top management of a firm. Each firm is considered to work in an independent market, but the firms may compete with each other if they decide to enter the foreign markets.

In the first follow-up program of top management, which was conducted by the N.I.M.D, there were four teams, each composed of six persons.

2- The Umpires:

There should be an umpire for each team. The umpire represents the link between the firm and the environment in which

it works. He uses objective criteria(the model) to determine the outcomes of making certain decisions.

The umpire supplies the firm with the information which is necessary for making their decisions, but not more than what is permitted by the rules of the game.¹ This information includes the production, inventory, marketing, and financial systems of the firm. It also includes the research and studies which the company can ask for including costs. The umpire, also, instructs the team concerning the use of the forms and the deadline for receiving the teams' decisions.

There were four umpires, an assistant chief-umpire and a chief-umpire , for this game.

Time Periods:

This game simulates the decision-making processes which take place over several years. Each year is divided into four periods of three months each, beginning with January, April, July and October.

Each team makes the decisions for each of these periods in a half-hour period. They have to write them in the proper form in duplicate. Then they deliver them to the umpires at the end of the decision period. Each umpire has 15 minutes to determine the results of the decisions according to the game model, to record these results on the forms, to return a copy of each form to the team, and to inform the team when their next decision forms are due. Also, the umpire may supply extra information to the team using form(W). Then, the cycle is repeated.

¹ See "The Description of the Game System."

The Forms¹:

The following forms are used in this game:

Form A: a summary of the company decisions during a certain period. These decisions include: investing, financing, product-development, production, distribution, exporting, promotion , research and study decisions.

Form B: The inventory turnover in the main stores and in the sales areas stores. This form involves three tables:
Table one: total inventory turnover in the main stores.
Table two: Oven inventory turnover in the sales areas.
Table three: heater inventory turnover in the sales areas.

Form C: The additional information needed by the company for a certain period. This information concerning:

1. estimating the total absorption capacity of the local market during the next year.
2. estimating the absorption capacity of the sales areas during the next period.
3. estimating the effects of promotion on the company relative share from the local absorption capacity.
4. Studying the effects of promotion in the international market, during any period, on the quantities which the company can contract to export in the following period.

¹. See Appendix B.

5. Investigating the proposals which the company can contract during the next period.
6. Studying the effects of developing the products for sales.
7. Estimating the fixed and variable production costs when the plant is composed of several units.

Form D: Movement of cash, sales and notes receivable. This form includes three tables:

Table (4): The cash flow during the period.

Table (5): The local and foreign sales.

Table (6): The movement of the notes-receivable.

Form H: Financial statements which show the financial results of company decisions. This form includes:

1. The income statement of the period.
2. The balance-sheet at the end of the period.

FormW: Additional information to be mentioned to the company.

This information includes data about the pricing policies, the production costs, and any other information.

The Description of the Game System:

The teams should have the following data:¹

1. The nature of the company activities.
2. The production system of the company: scheduling of plants and production, plant characteristics, manufacturing cost characteristics, and the possibility of product development.
3. The inventory system of the company: number of stores to be constructed, their capacities, their locations, basis of evaluating the inventory, and inventory costs.
4. The marketing system of the company: local and international markets' characteristics, the competitive situation, the possible volume of sales and the factors which effect it, advertising and promotion costs and effects, the product price and its changes, channels of distribution and their costs, sales areas, and the schedule of exporting.
5. The financial system of the company: the company's capital, its financial resources, the accounts-receivable schedule, borrowing policies and instructions, and the alternative investment and construction policies and their costs.
6. The research and studies which the company can ask for and their costs.

¹For more details, see appendix B.

7. The way of using the forms, and the deadline for receiving the team's decisions.

By supplying the teams with this information, they can make their construction, production, inventory, marketing, financial, research and study decisions. They have to take into consideration their main goals which they aim to achieve, their short-term and long-term policies, and their previous decisions and results. The umpire ^r appraises these decisions by using objective criteria (the model) and records their results in the specified places in the forms. The teams should evaluate these results and any additional information before making the following period decisions.

The Procedures of Playing the Game:

For playing "Cairo 68" business game, the following steps are necessary:

1- Orienting Participants:

Before starting the game, it is necessary to hold a meeting with the participants to explain the general rules and the main factors in the different situations in the game. It is highly desirable that the game documentation is to be studied by the participants before the presentation. Individual study and the oral presentation allow ample opportunity for questions from the floor.

Thorough orientation is a prerequisite to effective participation. In this session the participants should be arranged into teams. The composition of each team should be considered in advance so that each major management function is represented in each team.

2- Organization and Objectives of Teams:

Each team meets to discuss the following points:

A- The nature of the situations which are going to be faced by the company.

B- Goals, policies, long-term and short-term plans.

C- Organization and coordination of the team activities.

D- Follow-up and evaluation methods of the company performance.

3- The umpire meets his team to tell them when he wants their decisions, and to answer any further question but not more than what is permitted by the rules. He tries to help them in using the forms. The teams usually start by determining the necessary investments and construction decisions. They record their decisions in the proper forms in duplicate.¹

4- When the agreed upon time ends (usually half-hour) the teams should deliver their written decisions to the umpires who appraise these decisions according to a pre-determined objective criteria. The umpire records the results of these decisions and their effects on the financial position of the firm, in the forms and returns a copy to the team.

5- The team must evaluate the effect of their decisions in the light of its firm's goals and plans. The team can ask for any additional information which it thinks necessary. Then the team makes its decisions for this period, and gives them to the umpire to appraise them.

¹. See Appendix B

- 6- At the end of each of the four periods, the administration team of the game issues aggregate information about the financial position of each company.
- 7- The umpire should inform the team of any changes in the general policies or in the environmental factors.
- 8- When the game has proceeded for the desired number of periods, the game may be stopped.
- 9- After that an evaluation session should be held. The goal of this session is to extract the principles which could be applied by the participants in the real life.

To explain these procedures, here is an example of a firm decisions during two different time periods. These two time periods are: the first period and the sixth period. The author chose,

these periods because in the first period the team is going to make the decisions of constructing the production capacities, where it has only the capital and nothing else. While in the sixth period, the firm is well established and is practicing all its activities, and it has to make decisions which are related to production, marketing, collecting the revenues, etc...

The First Period: after team (e.g.A) meets for organizing its activities and plans, it starts to play the game. The umpire gives them the following information by using form W:

- (1) Local oven-price L.E. 60.
- (2) Local heater: price L.E. 40.

(3)

Area	% of residents	Order of the average income	The Weather	
			Winter	Summer
A	33	3	Warm	Very Hot
B	15	1	Moderate	Hot
C	52	2	Cold	Moderate

He gives ^{them} the forms, and asks them to deliver to him after half an hour the decisions they think necessary for starting the project. The team decides to establish a complete production unit composed of an oven assembly subunit, a heater assembly subunit, a joint parts and components production subunit and a main store. Its costs are L.E 800,000. According to these decisions, the team should record the following data in the forms:

in Form A: First decision:

To establish new production units ☒ which is:
a complete production unit. Its establishment costs 800,000 pounds, and they start producing in the period 1/4.

in Form D: Table (4):

	<u>L.E.</u>
The balance at the beginning of the period	2,000,000
-new production unit establishing costs	<u>800,000</u>
-The balance at the end of the period	1,200,000

in Form H:

The Balance Sheet in the End of the Period

Assets			Equities		
Total	Partial		Total	Partial	
	800,000	<u>Fixed Assets</u> Producing fixed assets		2,000,000	Capital
800,000		Total fixed assets.	2,000,000		Capital+re- tained earnings (2)
		<u>Current assets:</u>			+Loans
-	-	-	-	Short-term
-	-	-	-	Long-term
	1,200,000	Cash	-	-
1,200,000		Total current assets (2)	-	-	Total Loans
2,000,000		Total assets (2)	2,000,000		Total equities

The team, after that, has to give the umpire two copies from all the forms. Then, the umpire, within 15 minutes, has to check the correctness of filling the forms, define the results of these decisions, record these results in the specified places in the forms, e.g., all the items with No. 2 in form H, return when a copy from each form to the team, and informing the team/the next decisions are due.

The Sixth Period (2/2):

If, for example, the financial position of the firm at the end of the fifth period is as shown:

The Balance Sheet in the End of the Period

Assets			Equities		
Total	Partial		Total	Partial	
	800,000	Fixed assets producing fixed assets.		2,000,000	Capital
	150,000	+distributing fixed assets		(120,000)	-deficit (1)
950,000		Total fixed assets		1,880,000	=Owners equ- ity. (1)
	369,000	Current assets products stock (2)		30,000	+ the period net profit(2)
	498,000	+notes recei- vable. (2)	1,910,000		Capital & reserved profit (2)
	93,000	+Cash money			
960,000		Total current assets.	-	-	Loans: Long term +Short term
			-		=Total loans
1,910,000		Total assets	1,910,000		Total equit- ies.

and the company asked for a short term loan equal to L.E.

400,000 in the fifth period. The procedures will be as follows:

- 1- The umpire at the beginning of the sixth period (that is the period following the period in which the company asked for the loan) informs the firm that the bank will give the firm a short-term loan of L.E. 400,000, due in the period 2/4, and with a 5% interest rate. The variable costs of one heater = L.E. 25 and of one oven = L.E 40.

- 2- If the firm makes development, production, marketing, promotion and research decisions, it should record them in form/as follows:

- Decision No. 5: determining a products-development budget for the present period of 5000 pounds.
- Decision No. 6: to produce 6000 ovens. Their production variable costs are 240,000 pounds.
- Decision No. 7: to produce 4000 heaters. Their production variable costs are 100,000 pounds.
- Decision No. 8: shipping 5600 ovens from main stores to sales areas stores.
- Decision No. 9: shipping 4800 heaters from main stores to sales areas stores.
- Decision No. 14: allocating 3000 pounds for oven-promotion in local market.
- Decision No. 15: allocating 3000 pounds for heater promotion in local market.
- Decision No. 17: allocating 5000 pounds for heaters promotion in the international market.
- Decision No. 18: Allocating 5000 pounds for research and studies.

3- In form B: Tables (1), (2), and (3) will be filled as follows, taking into consideration the remarks. The umpire is going to compute items 4 and 5 in table 2, and items 4 and 5 in table (3)

Firm No. _____
 Year _____ Quarter _____
 Period : _____ / _____

Form B
 table shows the inventory turnover in the main stores and branch stores.

Table (1)

Total inventory turnover in the main stores

Description	Ovens		Heaters		Remarks
	quantity	costs	quantity	costs	
Stock at the beginning of the period	5600	224000	4800	120000	equals the previous period end-stock
Contracted amount to be exported					Decisions 12, 13 of the previous period.
The available amount for local distribution	5600	224000	4800	120000	
The amount to be directed to the sales areas.	5600	224000	4800	120000	Decisions 8 & 9
The residual					
Present period production	6000	240000	4000	100000	Decisions 6 & 7
End - Period stock	6000	240000	4000	100000	take in consideration decision 12 & 13 for present period.

Form B

Inventory turnover in the sales areas

Table (2)

First : The ovens

Description	Areas	A	B	C	Total		Remarks
		quantity	quantity	quantity	quantity	Costs	
Beginning - period Stock							= Previous end -- period stock
The amount to be allocated for each area.		1100	2800	1700	5600	224000	Decision No.(10)
The available amount to be distributed in the sales areas.		1100	2800	1700	5600	224000	Should not exceed the capacity of the sales centers
What was sold		1100	2800	1700	5600	224000	to be filled by the umpires
End-period stock							to be filled by the umpire.

Table (3)

Second : The Heaters

Description	Areas	A	B	C	Total		Remarks
		quantity	quantity	quantity	quantity	Costs	
Beginning - period Stock		320	200	480	1000	25000	= Previous end- period stock
The amount to be allocated for each area		400	2000	2400	4800	120000	Decision No.(11)
The available amount to be distributed in the sales areas		720	2200	2880	5800	145000	Should not exceed the capacity of the sales centers
What was sold		360	1800	1440	3600	90000	to be filled by the umpire.
End-period stock		360	400	1440	2200	55000	to be filled by the umpire

N. B. The value of the products units is computed on the basis of the production variable costs only.

Review to be done by the umpire:

	The amount in the main stores	+	The amount in the sales centers	=	Total stock	x	unit variable costs	=	Total costs
ovens :	<u>6000</u>	+	<u> </u>	=	<u>6000</u>	x	<u>40</u>	=	<u>240000</u>
paters :	<u>4000</u>	+	<u>2200</u>	=	<u>6200</u>	x	<u>25</u>	=	<u>155000</u>

The costs of the total stock = 395000

- 4- In Form C: The firm should put a check ☒ in the square opposite to the requested data, and write the costs of getting these information in the specified spaces, and then compute the total costs. The umpire records the data needed in this form , and then returns a copy of this form to the team.

Firm No. : _____
 Year / Quarter
 Period : _____ / _____

Form C
 The requested
 Information

put the check (✓) in the square in front of the
 requested information)

The costs of obtaining
 the information

A- estimating the total absorbing capacity of
 the local market during next year.

5000

Time-Period	—/—	—/—	—/—	—/—
Product				
ovens	1600 1300	3700 3300	2300 2000	7600 6600
heaters	500 300	2300 1900	1700 1400	4500 3600

Costs
 E. E.
 5000

B- estimating the absorbing capacity of the sales
 areas during next period.

area	A	B	C	Total
Product				
ovens				
heaters				

Costs
 L. E.
 3000

C- estimating the effect of promotion on the company
 relative share from the local absorbing capacity.

OVENS			HEATERS		
Promo- tion budget	the es- timated minimum	The es- timated maximum	Promo- tion budget	esti- mated minimum	estima- ted maximum
Pounds	%	%	Pounds	%	%
3000			3000		
6000			6000		
9000			9000		

Costs
 L. E.
 3000

D- Studying the effect of promotion in the international market during any period on the quantities which could be contracted on in the following period.

OVENS		HEATERS	
Promotion budget	Percentage of expected increase	Promotion budget	Percentage of expected increase
Pounds	%	Pounds	%
5000		5000	
10000		10000	
15000		15000	

- investigating proposals which the company can contracted on during the next period.

2000

	OVENS		HEATERS	
	Price	quantity	Price	quantity
basic	50	100	35	220
discounted	45	150	30	340

F- Studying the effect of developing the products on sales potentials.

G- Estimating the fixed and variable production costs in advance when the plant is composed from the following units:

The production fixed costs will be ----- pounds
The variable costs of one oven will be ----- pounds
The variable costs of one heater will be ----- pounds

The total expenditures of obtaining the information in this period is

=

5000

5- In Form D: Tables (4), (5), and (6) will be filled as follows taking into consideration the remarks. The umpire is going to compute items 1 and 3 in table (5), and items 2, 4, 5 and 6 in table (6).

No.: _____
 Year _____ Quarter _____
 od: _____ / _____

Form D
 The movement of cash
 Sales and notes-receivable

Table (4) Table of Cash-flow during the period

Description	Partial pounds	Total pounds	Remarks
balance at the begining of the period		93000	balance at the end of the previous period.
he local sales value of the period before previous period			
he local sales value of the previous period	249000	249000	
exports value of the previous period			
receivable value from the due notes-receivable.		342000	
loan from the bank		400000	
available cash during the period		742000	= begining-period balance + revenues + the loan
educting :- production unit establishing costs			decision No. (1)
sales center establishing costs			decision No. (2)
riable costs of producing ovens	240000		decision No. (6)
riable costs of producing heaters	100000		decision No. (7)
tal periodical costs of the period	171000		From the income statement form H.
ying a loan to the bank			
tal cash payments		511000	
balance at the end of the period		231000	= available cash - cash payments

Table (5) Local and International Sales

O V E N S			H E A T E R S			T O T A L	Remarks
quantity	Price	Value	quantity	Price	Value	Value	
5600	60	336000	3600	40	144000	480000	to be filled by the umpire
							Previous period Decision 12, 13
5600	60	336000	3600	40	144000	480000	to be filled by the umpire

Table (6) Flow of Notes-receivable

	Partial pounds	Total pounds	Remarks
balance of the begining of the period		498000	= The balance of the previous period end
local sales of this period	480000		to be filled by the umpire (table 5)
ports in this period			(From table 5)
al new notes - receivable		480000	to be filled by the umpire (table 5)
(begining-period balance + total new notes-receivable)		978000	to be filled by the umpire
al due notes - receivable of this period		249000	From table (4)
balance at the end of the period		729000	to be filled by the umpire

6- In Form H: The income statement and the balance sheet should be filled as follows taking into consideration the remarks. The umpire is going to compute items 1, 2, 3, and 11 in the income statement. He is going to compute all the items with No. (2) in the balance sheet.

Firm No.: _____
 Year _____ Quarter _____
 Period: _____ / _____

Form H
 The Financial Statements
 which show the results of
 the firm's financial decisions

Income Statement of the Period

	Partial		Total	Remarks
	Ovens	Heaters		
	336000	144000	480000	to be filled by the umpire from table (5)
es' variable costs	224000	90000	314000	to be filled by the umpire
fit margin from sales	132000	54000	166000	to be filled by the umpire
periodical costs :-				
l' interests	20000			Decision (3) + instructions of the long-term loan
duction fixed costs	100000			to be defined according to the firm's production capacities
tribution fixed costs	30000			10,000 x Number of the sales centers on work.
ducts - developing expenses	5000			Decision (5)
otion expenses	11000			(14, 15, 16, 17) Decisions
earch & studies expenses	5000			Decision (18)
of periodical costs			171000	
profit (or loss) ^x			(5000)	to be filled by the umpire

^x in the case of loss, the figure should be put between two brackets and deduced.

The Balance Sheet in the end of the period

Equities

Partial		Total	Partial	
	<u>Fixed Assets</u>			
800000	producing fixed assets (1)		2000000	The Capital
150000	+ distributing fixed assets (2)		(90000)	+ retained earnings till - previous period (1)
	= Total fixed assets(1)		1910000	= Total or rest of deduction (1)
	<u>Current Assets</u>		(5000)	+ net profit or loss in this period (2)
395000	Products stock (2)	1905000		= The capital + retained earnings (2)
729000	+ notes-receivable (2)			
231000	+ Cash (1)			long-term loans (1)
	= Total current assets (2)	400000	400000	+ short-term loans (1)
				= Total of loans (1)
00	Total Assets (2)	2305000		Total Equities

-) These items should be filled by the firms
-) These items should be filled by the umpire

After the umpire corrects the filled forms, defines the results of these decisions, and records these results in the specified places in the forms, he returns a copy from each to the team. Then the cycle continued.

CHAPTER FOUR

ANALYSIS

- Tabulation and Analysis of the Collected Data:
 - Observation Data.
 - Documents Data.
 - Questionnaire Data.
 - Quantity and Type of Data.
 - Tabulation.
 - Techniques Used In the Analysis
 - Statistical Analysis of Data.

Tabulation of the Collected Data:

As mentioned before, the author used three methods for collecting the necessary data for evaluating "Cairo 68" business game. These methods were:

1. Observation
2. Documents
3. Questionnaire.

In this chapter the author will tabulate and analyse the collected data. The classification used in collection is used for tabulation.

Data collected by Observation:

The data which were collected by observation can be summarized in the following points:

1. The introductory session:
 - a. The introductory session was marked with a great deal of individual floundering and participants' anxiety. This anxiety generated long discussions with the game administrators on how unrealistically the simulation functions, thus preventing them from operating effectively.
 - b. The participants' resistance and then acceptance of this new training technique may be due to the traditional way of teaching which has been used in Egypt for several decades, and which was based mainly on lecturing by the instructor and listening by the students.

2. Game Execution:

- a. One firm understood completely the game rules after five-time periods, but the majority of the participants were operating well after the ninth period.
- b. The firm that had two or more participants who performed well in the finance, production, and marketing activities, played the game better than other firms.
- c. The computation and accounting processes consumed most of the time permitted either to the teams to reach their decisions or to the umpires to calculate the results of these decisions.
- d. The firms' financial positions which were presented at the end of each four quarters, helped each firm to know its competitive situation in comparison with the other firms and consequently evaluate its decisions and goals.
- e. Although there was no direct competition between the firms, as long as each firm was working in an independent local market, there was indirect competition between the different teams.

This condition led the firms to work as if they were in a competitive situation.

3. Decision making:

- a. The characteristics of the firm members' personalities had an obvious effect on the way of reaching the firm decisions, e.g., if one of the team members had an authoritarian character and strong personality, the firm

will be run by one man decisions.

- b. As long as the decision-periods were in sequence, the participants became more involved, and their interest in carrying out their firm activities was increased.
- c. The team who made use of the scientific way of making decisions through playing the game, achieved the best results.
- d. The feed-back which was realized in this game, represented the dynamic nature of business. This raised the value of the game as a training technique.

4. Assisting decision-making tools:

Some of the participants used some of the modern quantitative methods, such as PERT, in making their decisions. These participants achieved better results.

5. Concluding session:

- a. The concluding session was very lively where the participants engaged in a fruitful discussion on proper basis for decision making.
- b. The final written report stimulated reflective discussions on the firms performance, and this was valuable to the learning experience of the game.

Data Collected from Documents:

After the playing ended, each firm submitted a report specifying its goals, organization, plans, methods of follow-up performance, and an evaluation.

The administration set guide lines for writing reports.
These guide lines were in the form of questions as follows:

First: The Goals:

1. What were the long term and short term goals of the firm?
2. What were the general policies which the firm set to achieve these goals ?
3. Are the goals changed? When, How , and Why ?

Second: Organization:

1. How did you organize your firm ?
2. Did this organization change during the actual playing of the game ? How and Why ?
3. What were the main factors which had influence on this organization ?
4. How did this organization affect the decision-making process in the firm, and the manner in which the board members participate in this process ?

Third : Planning and Decision-making:

1. What were the long-range and short-range plans which the firm set to achieve its goals ?
2. Did you change the firm plans during practicing your job ? (with or without changing the goals?)
How and why ?
3. Did the firm set alternative plans to be used in the case of changed circumstances ?

4. Did the firm determine its financial needs for the following time periods ? What was the time range which was used ?
5. How did you determine the financing policy of the firm in the short term and in the long term ? How did this policy be effected by the financing policy of the central monetary organization ?
6. What were the firms investment and construction policies ? Did you relate these policies with the firm's financial policy ? How ?
7. How did you arrive at the production, marketing, promotion , investigation , contracting, and research decisions ?
8. To what extent did you relate between the decisions which were made in each time-period ?
9. To what extent did you relate between the decisions which were made in any time period, ^{previous} and expected decisions ?
10. Did the firm during the planning and decision making process use any of the following techniques and tools ?

A- Linear programming.

B- Breakeven charts.

C- PERT

D- Expected general and monetary budgets.

E- Statistical forecasting.

F- Other Techniques.

Fourth: Follow-up on performance:

- 1- What was the method which the firm used to follow-up its performance ? Was it through the reports, or financial percentages, or graphs, or other methods ?
- 2- Did you relate between the follow-up system and the firm planning process ? How ?
- 3- Did you use the available data about the sales to estimate the general trend of the market ? Did you relate between the available data of the expected sales and production programs ? How ?

Fifth: Evaluation of performance :

- 1- What are the main reasons—from your own point of view—that help to achieve or not to achieve your goals ?
 - 2- How can you explain the development of the company during the game period ?
 - 3- How can the firm modify its strategies if it has the opportunity to start from the beginning again ?
 - 4- What are the concepts, principles, and benefits you get from this experiment, and which you can apply in your own real organization ?
- 2- Although the four firms' goals were similar to a great extent, the results were different. So, if we took the net profit as the criteria of the firms success in achieving

their goals we could find that firm No.4 achieved its goals and realized the largest profit, while firm No. 2 realized losses.

Table 4-2: The Firms' Net Profit or Losses:

Firm No. 1 L.E.	Firm No.2 L.E.	Firm No. 3 L.E.	Firm No. 4 L.E.
1,116,700	(292,500) Losses	696,900	1,243,500

3- By analysing the policies, organization, plans, follow-up system, decisions taken and the way the firms made these decisions, the author tried to derive the main reasons, and the effect of training by the business game on achieving these different results.

As there were three firms which realized profits while only one firm realized losses, the author, for the sake of avoiding repetition, chose firm No. 4, as it realized the largest profits, and firm no.2, as it realized losses, for analysis.

By analysing the data which was gathered from the documents, it is safe to deduce the following points:

1- The goals of the four firms were, approximately, the same. These goals were:

Table No.4 The firms goals.

goals of firm No.1	goals of firm No.2	goals of firm No.3	goals of firm No.4
<p><u>Short-term goals:</u></p> <p>A- To run the production units with their full capacities</p> <p>b- To spend periodically a certain amount on product development</p> <p><u>Long-term goals:</u></p> <p>A- To increase sales and consequently profits</p> <p>b- To continue on developing products.</p>	<p><u>Short-term goals:</u></p> <p>A- To run the firm with its full capacities promote and increase its sales.</p> <p>b- To choose the product mix which realize the least costs and most profits.</p> <p>c- To develop the products so as to catch-up with the latest design-trends in the industry, and this to:</p> <p>c-1 increase its share of the local market</p> <p>c-2 develop the product quality</p> <p>c-3 decrease production costs.</p> <p><u>Long-term goals:</u></p> <p>A- To expand and enter the export market</p> <p>b- To get over the bottle necks in the production process, and increase the production capacity.</p>	<p><u>Short-term goals:</u></p> <p>A- To schedule production in such a way to realize the maximum exploitation of the production and financial facilities</p> <p>b- To distribute most of its products in the local market.</p> <p><u>Long-term goals:</u></p> <p>A- To set up two five-years plans. The first five-years plan goal was to increase the production and to export the surplus</p> <p>b- Expansion was the goal of the second five-years plan</p>	<p><u>Short-term goals:</u></p> <p>A- To produceovens and heaters on an economic basis</p> <p>b- To increase its production to meet the local needs.</p> <p>c- To develop its products continuously</p> <p>d- To achieve a reasonable profit margin,</p> <p><u>Long-term goals:</u></p> <p>A- To export a certain percentage of the total production, and increase it gradually</p> <p>b- To continue developing its products.</p> <p>c- To achieve the maximum profit margin.</p>

A- Policies:

Firm No. 2	Firm no. 4
The firm did not set any clear cut policy.	A-To develop the products continuously and to stress on the product quality. B-To produce ^{on} /economic bases by: 1-Producing the possible maximum amount of products. 2-avoiding the waste of raw-material and production requirement. C-To distribute the products through the firms sales branches. D-To remain on a competitive price policy either in the local or export markets. E-Investments should be based mainly on self-financing.

Interpretation: While firm No. 2 did not set any defined policy for achieving its goals, firm no.4 set a clear-cut policy. This may have a direct reflection on the final results of each firm in relation to its goals.

B- ORGANIZATION:

Firm No.2	Firm no. 4
<p>1-The firm applied the principle of division of labour and specialization for organizing its activities. Each member of the team was responsible for a certain job according to his experience.</p> <p>2-The firm did not change its organization.</p>	<p>1-The firm divided its activities between its members according to:</p> <p>A-the member's experience, B-the firm's need for the different specializations.</p> <p>2-There was a horizontal co-operation which took place, sometimes, between the members.</p> <p>3-No change happened in this organization during the game period.</p>

Interpretation: Both firms had a similar organization. This might indicate that organization had not a direct effect on achieving the goals and final results of the two firms.

C- Planning and Decision-Making:

Firm no. 2

Firm No. 4

Production Plans & Decisions:

- 1-The firm constructed a main production unit at period 1/1.
- 2-It constructed a new assembly unit for ovens and a joint production unit on period 1/2
- 3-Because of not using these additional new units for five periods, the firm decided to sell them ^{with} a loss.
- 4-The firm made its production plans and decisions, during the first few periods, based on the data it bought about the expected absorption capacity of the local market. But due to the lack of liquid money to buy such data, the firm depended upon the historical data.

Product Development:

- 1-The firm, as a result of its critical financial position, was not able to allocate any budget for product development before the period 5/1. So, the firm did not benefit because it was too late to develop its products.

1-Short-term Plan:

This plan was set to achieve the short-term goals. It included constructing a main production unit and a branch-store in each sales area, taking into account the probability of constructing new units for expansion.

2-Long-term Plan:

It was based mainly on production expansion according to expected local market needs and entering the exporting market. This plan took into account:

- A-expected expansion of the local market needs as long as the individual income was increasing.
 - B-expected product development results such as increasing the product quality, decreasing costs and increasing sales.
 - C-Possibility of exporting.
- 3-Since the firm goals did not change, its plans were not changed.

4-Alternative Plan: to export when the local sales decreased.

5-Financial Needs: were determined for the following time-period. The time range was not stable.

Firm No. 2

Marketing & Promotion Plans and Decisions:

- 1-The firm decided to construct 4 sales centers at an early period. This cost the firm L.E. 200,000 without any return or use.
- 2-It allocated L.E. 12,000 as a period promotion budget for the periods 1/2, 1/3, 1/4.
- 3-The firm did not pay attention in reviewing the historical data which was written in the game structure and rules.

Firm No. 4

- 6-Financing Policy: the short-term policy was to use the short term loans. In the long-run the firm decided to depend upon self-financing because the central financing policy of the government did not encourage the firm to obtain long-term loans.
- 7-Investment Policy: included:
 - A-construction of a main production unit as a starting point.
 - B-construction of three branch-stores in areas A, B and C after two time periods.
 - C-construction of a joint production unit to run the assembly units of ovens and heaters with full capacities, on period 4/2 after the firm became sure that the local market can absorb the production.
 - D-Construction of a second store in area "B" on period 5/1 because this area represented the largest local market to the company.
 - E-construction of a new assembly unit of ovens to exploit the full capacity of the joint production unit.
- 8-Decision Making: The firm made its decisions on the following basis:

Firm no. 2

firm No. 4

A-To study the topic first in the concerned department as follows:

A-1-it gathered all the historical data related to the topic it needed to make a decision either from the documents or from the environment represented by the umpire.

A-2-Making all the research necessary to obtain the analytical data to make accurate decisions.

A-3-Based on these data and taking into consideration the short-term and long-term goals, the firm developed the possible alternative courses of actions.

A-4-Assessing the possibility of each course of action.

A-5-Using the following methods for projecting the anticipated consequences of each course of action:

- Linear programming
- Break even charts
- PERT
- Statistical projection
- Financial budgets

B-After that, the board of directors(team) studied these results and were able to predict relative yield for each course of action in terms of benefits, costs and its effect on the financial position of the firm.

C-The team made the decision taking into consideration its feasibility.

D-Relating the period decisions with each other to be executed in harmony.

E-Relating the period decisions with the previous periods decisions and the expected following decisions, by using the graph charts.

Interpretation: The previous presentation may indicate the following conclusions:

First: 1-Firm No.4 set clear cut short-term and long-term plans to achieve its goals.

2-It was conservative in its capital investment decisions. It decided to start producing only to supply the local market, and besides determined a continuous product developing budget. The firm aimed by this method to consolidate its position in the local market before expanding to export. So, it had no construction sunk costs.

3-The firm decided to produce according to the following principles:

3-1-to produce the maximum amount of the most profitable product-mix within the available production facilities.

3-2-to increase production through the increase of sales.

3-3-expansion was based on self-financing, i.e., reinvesting the revenues. The firm could ask for loans if it was the only source of finance or if the firm expected high returns.

3-4-as long as the absorbtive capacity of the local market was not yet covered, and the income per capita was increasing, the priority was to distribute in the local market then the export market where competition was very severe and the profits were limited.

4-The firm made all its decisions in a scientific manner.

Consequently, the author can conclude that firm No.4 succeeded to achieve its goals by practicing making the proper plans and decisions through playing the game.

Second:1- While firm No.4 was conservative, firm No.2 was very ambitious. It decided to expand from the second period, before the main production unit began to produce. This resulted in investing L.E.1,200,000. in construction while the whole available capital at this period was L.E.,2,000,000. So, there was L.E.1,200,000 as sunk costs.

2- The firm decided to construct 4 sales centers at an early period. This resulted in spending L.E. 200,000 without any return or use.

3- The firm allocated L.E.12,000 as period promotion budget in the periods 1/2,1/3,1/4. The result was a L.E.36,000 loss.

4- The result of these wrong decisions was that the total loss at the beginning of the period 3/4 was L.E. 814000, and the total loans were L.E. 757500 in the same period.

5- The author deduced that the reasons for making these wrong decisions were:

- 5-1 The firm did not give much attention to use the historical data written in the game structure and rules.
- 5-2 The firm did not use scientific techniques in making its decisions and plans.
- 5-2 The firm neglected scheduling its decisions, e.g., the allocated promotion budget decision preceded the proper period with 3 time-periods. This resulted in a complicated financial problem to the firm to the extent that at the 2/1 period, when the firm began to sell its products, the firm did not consider the consequences of its decisions.
- 5-5 The firm did not set any accurate criteria for making its decisions.
- 5-6 The firm did not coordinate its decisions between the different activities such as: production, marketing, and storing.
- 6- As a result of practicing the decision-making process through playing the game, and the guide lines which the umpire and the game administrators gave to the firm concerning the scientific methods of making the decisions, the firm discovered its faulty decisions and tried to correct them within the available facilities at its disposal. As a result, the firm tended to apply a contraction policy. Consequently its total loss at the end of the period 5/4 was L.E. 292,500 and its total loans were L.E. 540,000 during the same period.

D-Follow - up on performance:

Firm No.2	Firm No. 4
<p>The firm conducted a follow up on its performance by following up:</p> <ol style="list-style-type: none"> 1.The production figures of each period and the accumulated figures of the previous periods 2. The total sales of each period and the accumulated figures of the previous periods. 3.The inventory. 4.The accumulated profits. 5.The short and long-term loans. 6.The products development and promotion budgets. 	<p>The firm was making a continuous follow-up on its performance as follows:-</p> <ol style="list-style-type: none"> 1.It used the charts to follow-up execution and results of its decisions. 2.It related the follow-up system with the plans and decision-making process and by comparison between what was aimed to achieve and what was actually achieved. 3.It recorded the available sales data continuously and used these data to estimate the general direction of the market. 4.It compared the sales of any given period with the sales of similar previous periods. 5.It related the available expected sales with production programmes, to coordinate between production,marketing and storing activities.

Interpretation: The author may conclude that:

1-Firm No. 2 did not make a scientific follow-up on performance. Its follow-up plan helped the firm to discover its faulty decisions after they had taken place. It did not realize the main goal of following up performance which is to prevent faulty decisions as much as possible.

2-Firm No. 4 set an accurate follow-up policy which helped it to achieve its goals.

In brief, the previous analysis may indicate the following conclusions:

1-The goals, organization, policy, planning, and follow-up decisions which the firms made and the way by which they made these decisions were reflected on these firms' results and in achieving their goals.

2-Practicing the decision-making process through playing the game, developed the performance of the participants by teaching them the proper way of more accurate decision making.

The Questionnaire:

The data generated from this questionnaire represent the participants' evaluation of the business game as a training technique for top management.

Quantity and Type of Data:

1. Three open-end questions were directed to the participants concerning the benefits they gained from playing the game, their evaluation of the: umpires; game period; decision period; the system of game execution; and any suggestion they would like to mention about the business game.

The participants were asked to list the advantages and disadvantages for each item.

2. Five closed-end questions were also directed to the 21 participants.
 - a. Five categories were established for three close-end questions.
 - b. Three categories were established for the fourth close-end question.

Tabulation:

1. As the essential operation in tabulation is counting, it was initially used by the author to determine the number of cases that fall into the different categories. This was done entirely by hand for the following reasons:
 - a. There was a moderate number of cases.
 - b. The number of categories were small.
 - c. It was less time-consuming and less expensive.
2. Each question was tabulated separately.

Statistical Techniques:

The author used the following statistical techniques for arriving at conclusions:

1. Number of responses for each category.
2. Percentages.

These two techniques were used because the author thought that the community for the study was small enough to permit comparisons and to vary the responses of the participants.

Statistical Analysis of the Questionnaire

Data

Interpretation of Question No. 1:

"What did you gain from playing the game?"

- advantages
- disadvantages

In answering this question all the participants, 21 (100%) mentioned that they gained several advantages from playing the game such as⁽¹⁾:

1. Practicing how to make quick and proper decisions scientifically under continuously changing conditions, (66.7%).
2. It revealed the importance of using the scientific methods and tools in decision making, (33.3%).
3. It revealed the importance of relating and coordinating between the different decisions in the firm, (33.3%).
4. Gaining new managerial concepts and methods, (28.6%).
5. It realized a high degree of participants' involvement and thus made it an effective way of training top managers, (28.6%).

Five participants (23.8%) mentioned there were disadvantages such as:⁽²⁾

(1) See Appendix A. Table No. 1

(2) See Appendix A. Table No. 2

1. The decision period was too short to study the situation carefully and to use the scientific techniques to make the proper decisions, (9.5%).
2. Authoritarianism of some of the participants in making the decisions, (9.5%).

The previous presentation may indicate that the business game has several advantages as a training technique for top managers.

Interpretation of Question No. 2:

"After you played this business game, what is your evaluation of the following factors":

- Umpires
- Game period
- Decision period
- The system of game execution

The participants evaluation of these factors were as follows:

1. The Umpires:

9, (42.8%) participants indicated that the umpires were excellent, 3 (14.3%) indicated that they were very good, 7 (33.3%) indicated that they were good, while one (4.8%) only indicated that the umpires did not have enough experience for such job.⁽¹⁾

This may indicate that the umpires performed at a high level.

⁽¹⁾ See Appendix A. Table No. 3

2. Game Period⁽¹⁾:

12, (57.7%) participants indicated that the game period was short and it would be better extend it for longer period, while 9 (42.8%) indicated that it was suitable.

This may indicate that the participants preferred to play the game for a longer time inorder to achieve goals of their long-term plans and decisions.

3. Decision Period⁽²⁾:

16, (76.2%) participants indicated that the decision period was suitable, while two, (9.5%) indicated that it was too short to study the situation carefully and to use the scientific techniques inorder to make the proper decision. Three, (14.3%) participants did not comment.

These results may indicate that the decision period was suitable in general especially after the participants became more involved in the game and had practice in playing.

4. The system of game execution⁽³⁾:

12, (57.2%) indicated that the system of game execution was excellent, four (19%) indicated that it was very good, four (19%) indicated that it was good, while one only, (4.8%) mentioned that it was not as what it should be because some of the participants did not understand the game objectives, and because the shortness of the decision period.

(1) See Appendix A. Table No. 4

(2) See Appendix A. Table No. 5

(3) See Appendix A. Table No. 6

From these results the researcher may conclude that the system of the game execution in general, was excellent. This conclusion may be due to the efficient effort which was done by the game administrators in conducting the game. By referring to the observation and documents analysis we can get the same conclusions concerning such point.

Interpretation of Question No. 3.⁽¹⁾:

"Specify to what extent did the experience you get from the game realize the following factors?"

- Knowledge & concepts.
- Skills.
- Ways of thinking and attitudes.
- Self-understanding.
- Your understanding of others.
- Your dealings with others.
- Your general view of the management process and dynamics.
- Ability to make decisions.

Knowledge & Concepts:

15, (71.4%) participants indicated that the experience which they recieved from playing the game realized a great increase in their managerial knowledge and concepts, two (9.5%) indicated a very great increase, while four (19%) indicated that knowledge and concepts were increased to a moderate extent.

(1) See Appendix A. Table No. 7

Skills:

Ten, (47.6%), of the participants indicated that the experience increased their managerial skills to a great extent, three (14.3%) indicated that it increased to a very great extent, seven (33.3%) indicated that it increased to a moderate extent, while one only (4.8%) indicated that his managerial skills were increased to a little extent by playing the game.

Ways of Thinking and Attitudes:

Eight (38%) of the participants indicated that their ways of thinking and attitudes were developed to a very great extent, ten(47.8%) indicated that it developed to a great extent, while three (14.3%) indicated that their ways of thinking developed to a moderate extent only.

Self-Understanding:

13,(61.9%) indicated that their self-understanding increased to a great extent, five (23.8%) indicated that it increased to a very great extent, while three(14.3%) indicated that it increased to a moderate extent.

Your Understanding of others:

Three (14.3%) participants indicated that their understanding of others increased to a very great extent, 14(66.7%) indicated that it increased to a great extent while four (19%) indicated that it increased but to a moderate extent.

Your Dealing with Others:

Nine(42.8%) of the participants indicated that their dealing with others developed to a very great extent, nine (42.8%) indicated that it developed to a great extent, while only three(14.3%) indicated that their dealings with others developed to a moderate extent.

Your General View of the Management Process and Dynamics:

Six (28.8%) of the participants indicated that their general view of the management process and dynamics were deepened to a very great extent, nine (42.8%) indicated that it was deepened to a great extent, and five (23.8%) indicated that it was deepened to a moderate extent. One participant made no comment.

Ability to make Decisions:

Six (28.8%) of the participants indicated that their ability to make decisions increased to a very great extent, 13(61.9%) indicated that it increased to a great extent, while only two (9.5%) indicated that it increased but to a moderate extent.

From the previous presentation, the author can conclude that training top managers by the business game may increase to a considerable extent, their managerial knowledge and concepts, their managerial skills, their self understanding, their understanding of others, and their ability to make decisions. Also, business game technique may develop the trainees' ways of thinking and attitudes, their ways of dealing with others, and their general view of the management process and dynamics.

By combining the first two categories (to a very great extent, and to a great extent), counting the frequencies which fall in both, and putting the factors in order to start with the factor with the highest frequency, the ~~author~~ may conclude that the factor which was greatly effected was "Ability to make decisions", then "Ways of thinking & attitudes," "Self-understanding, and dealing with others, then "increasing managerial knowledge & concepts," then "Your general view of the management process and dynamics", then "the managerial skills." This may confirm the hypothesis that the business game improves the decision making ability of the top managers and then the other related managerial skills.

1- Ability to make decisions	19 (90.5%)
2- A- Ways of thinking & attitudes	18 (85.7%)
b- Self-understanding	18 (85.7%)
c- Your dealing with others	18 (85.7%)
3- Knowledge & Concepts	17 (80.9%)
4- Your general view of the Mgmt.	
Process & dynamics	15 (71.4%)
5- Skills	13 (61.9%)

Interpretation of Question No.4: ⁽¹⁾

"What is the probability of transferring the effect of training by this business game to your work in the company:

- Developing Job performance to a very great extent
- " " " to a great extent
- " " " to a moderate extent
- " " " a little
- Not expected

(1) See Appendix A. Table No. 8.

one(4.8%) participant indicated that his job performance will be developed to a very great extent, eight(38%) indicated that it will be developed to a great extent, nine (42.8%) indicated that it will be developed to a moderate extent, while one (4.8%) expected little development. This may indicate that the business game has an effect on developing the trainees job performance. Also, the results of analysing the documents data may also give the same indication.

Only two(9.5%) participants did not expect that their job performance will be developed as a result of being trained by this business game. The author believes that the reason may be because these two participants were not working in industrial projects for which the game was designed.

Interpretation of Question No. 5 (1):

"What is your general feeling toward the business game?

Was the experience generally:

- Pleasant
- Unpleasant
- Indifferent

18(85.7%) of the participants indicated that their general feeling toward the business game was pleasant. While no participant indicated that his general feeling was unpleasant, there were three (14.3%) participants who indicated that it was indifferent.

The author may suggest that the participants feeling regarding pleasure toward the business game may be the ^{result} of the involvement factor which was realized in the game.

(1) See Appendix A. Table No. 9.

Interpretation of Question No. 6⁽¹⁾:

" To what extent did the characteristics and criteria of a successful business game, realized in this game?"

These characteristics are:

- Degree of simulation in general
- A model similar to what is going on in the companies
- Excluded non-essential information
- Included necessary information
- Participants involvement in the game
- Reasonableness of difficulty in playing the game.

⁽¹⁾ See Appendix A. Table No.10

Degree of Simulation in General:

Seven (33.3%) of the participants indicated that simulation was realized in "Cairo 68" business game to a very great extent, six (28.6%) indicated "to a great extent," and eight (38%) indicated "to a moderate extent."

A Model Similar to What is Going on in the Companies:

Two (9.5%) of the participants indicated that a model similar to what is going on in the companies was realized in this game to a very great extent, eight (38%) indicated "to a great extent", seven (33.3%) indicated "to a moderate extent", while three (14.3%) indicated "to little extent."

Only one participant mentioned that the game did not represent a model similar to what is going on in the companies. The author believes that the reason may be because this participant was working in a construction company and not in an industrial one, and the game is designed to train top managers of the industrial sector.

Excluded Nonessential Information:

Six (28.6%) indicated that this game was excluded from nonessential information to a very great extent, three (14.3%) indicated "to a great extent", four (19%) indicated "to a moderate extent", while five (23.8) indicated "to a little extent".

Two (9.5%) participants indicated that the game included nonessential information.

Included Necessary Information:

Six(28.6%) of the participants indicated that the game included the necessary information of a successful business game to a very great extent, ten(47.6%) indicated "to a great extent", three (14.3%) indicated "to a moderate extent", and one (4.8%) indicated "to little extent."

Participants Involvement in the Game:

Ten(47.6%) participants mentioned that they were involved in the game to a very great extent, nine(42.8%) indicated "to a great extent", one (4.8%) indicated "to a moderate extent", while one (4.8%) indicated "to little extent."

Reasonableness of Difficulty in Playing the Game:

One (4.8%) participant indicated that playing the game was difficult to a very great extent, six(28.6%) indicated "to a great extent", eight(38%) indicated "to a moderate extent", while two(9.5%) mentioned that it was difficult a little.

From the previous presentation, the author may conclude that most of the participants indicated that the characteristics of a successful business game, by definition, were realized to a great extent in Cairo 68 business game.

Interpretation of Question No.7:⁽¹⁾

"After you played this game:

A- Did you have a complete idea about business games ?

- Yes

- to some extent

- No

(1) See Appendix A. Table No. 11.

19(90.5%) participants indicated that after they played this game they got a complete idea about business games, while two only (9.5%) mentioned that they got to some extent an idea about business games by playing this game.

These results may indicate that the game execution, in general, was efficient.

B- To what extent is the business game suitable as a top management training technique?⁽¹⁾

- Very suitable
- Suitable
- To some extent
- Not suitable

15(71.4%) indicated that the business game was very suitable as a top management training technique, four (19%) indicated that it was suitable, while one (4.8%) indicated that it was suitable to some extent.

From these results, the author may conclude that most of the participants considered the business game a very suitable top management training technique. And by referring to the results of question No. 1, we can find the reasons of this consideration.

⁽¹⁾ See Appendix A. Table No. 12.

C. What is your preference of the following training methods and techniques to be used in top management training programmes? Please put No. (1) in front of the best method, and No. (2) in front of the following preferred, and so on... If you don't prefer any of these techniques, please put (-) in front of it.

- () - Lectures
- () - Conferences
- () - Seminars
- () - Case method
- () - Management Game

N.B.: See table No.13. Appendix A.

Lectures:

Six(28.6%) of the participants indicated that the lecture method as a training technique for top managers was their first preference, two (9.5%) indicated that it was their second preference, one (4.8%) indicated that it was his third preference, four(19%) indicated that it was their fourth preference, seven(33.3%) indicated that it was their fifth preference, while only one (4.8%) indicated that he did not prefer it as a training technique for top management.

Conference:

Nobody indicated that the conference method was their first preference, one(4.8%) indicated that it was his

second preference, seven (33.3%) indicated that it was their third preference, seven (33.3%) indicated that it was their fourth preference, four (19%) indicated that it was their fifth preference, while two, (9.5%) participants mentioned that they did not prefer it as a training technique for top managers.

Seminar:

Two (9.5%) participants indicated that the seminar method as a training technique for top managers was their first preference, six (28.6%) indicated that it was their second preference, eight (38%) indicated that it was their third preference, two (9.5%) indicated that it was their fourth preference, two (9.5%) indicated that it was their fifth preference, while only one (4.8%) mentioned that he did not prefer it as a training technique for top managers.

Case Method:

Six (28.6%) participants indicated that the case method was their first preference, four (19%) indicated that it was their second preference, four (19%) indicated that it was their third preference, four (19%) indicated that it was their fourth preference, two (9.5%) indicated that it was their fifth preference, while only one (4.8%) indicated that he did not prefer it as a training technique for top managers.

Management Game Technique:

Eight (38%) participants indicated that the management game as a training technique for top managers was their first

preference, eight (38%) indicated that it was their second preference, one (4.8%) indicated that it was his third preference, three (14.3%) indicated that it was their fourth preference, while one (4.8%) indicated that it was his fifth preference.

The author used a simple scoring system. He gave a weight to the first preference equals 1, and 2 to the second preference, and three to the third preference, and 4 to the fourth preference and 5 to the fifth preference and 6 to "not preferred", and multiplied these weights with the corresponding frequencies, and then considered the method with the lowest total score (weight) as the first preference, and so on.. Then the author got the following results:

- 1- The Business game was their first preference.
- 2- The case method was their second preference.
- 3- The seminar method was their third preference.
- 4- The lecture method was their fourth preference.
- 5- The conference method was their fifth preference.

CHAPTER FIVE

Summary and Conclusions

- Summary
- Interpretations
- Conclusions
- Recommendations

Summary

The purpose of this exploratory study was to evaluate the management game as a top management training technique from the participants point of view, aiming to explore its effect on the decision making abilities of top managers in the industrial environment of the U.A.R., to discover the factors that increase, if possible, its functional effectiveness, and to suggest a more thorough method for evaluating the effects of game playing in the future.

The First Chapter of the study dealt with the historical background of the management game as a training technique. It began with the presentation of the different definitions of the business game method of training. The purposes of the business games were classified according to three areas of application namely, education, research, and business planning. The author distinguished between the several types of management games by purpose, participation, structuring, complexity, scoring and method of computation.

The management games have several advantages either for the player or the instructor. It was hypothesized that the primary value of business game technique is to permit the users to learn something from the closely controlled hypothetical situation that can be employed to advantage at some future time in an operating business.

The first chapter also presented a review of the development of gaming technique in and outside the United Arab Republic.

The Second Chapter dealt with "Problem Formulation and Research Design." The problem was defined as "An evaluation of the extent to which business game technique as used by the National Institute of Management Development in the U.A.R. affects decision making abilities of the top managers of the industrial projects from the participants' point of view."

Observation, documents and questionnaires were used as the method of collecting the necessary data for this study. Documents were presented in the reports which were written by the different groups who played the game. These reports represented a summary of company goals, organization, plans, methods of follow-up performance, and evaluation of performance. A questionnaire was developed also, to gather data concerning the participants' evaluation of the business game as a training technique for top management after they had been exposed to it. The questions which were used covered the following topics:

- The advantages and disadvantages of playing the game.
- The participants' evaluation of:
 - umpires
 - game period
 - decision period
 - the system of game execution

- The extent to which the game realized the following factors:
 - developing managerial knowledge and concepts.
 - developing managerial skills.
 - developing ways of thinking and attitudes.
 - developing self understanding.
 - developing the participants' understanding of others.
 - developing the participants' dealings with others.
 - developing the participants' general view of the management process and dynamics.
 - developing the participants' ability to make decisions.
- The probability of transferring^f the effect of training by this business game to the participants real world.
- The extent to which the characteristics of successful business game, by definition, were realized in this business game.
- The extent to which the business game is suitable as a top management training technique.
- The participants' preference of the following training methods and techniques:
 - Lectures
 - Conferences
 - Seminars
 - Case method
 - Management game

Finally, the author summarized the main limitations of this study.

Chapter Three dealt with explaining how to play "Cairo 68" business game. It began by defining the objective of the game "to be used as a tool for training top management:" The structure of the game, the number of teams participating in the game, the umpires, time periods, the forms to be used in this game and the game system were explained. This chapter involved, also, the description of the procedures for playing the game with a practical example.

The Fourth Chapter dealt with the organization and analysis of the collected data. The author tabulated and analysed the data according to the method which was used in collecting it. He began ^{with} / tabulating and analysing the data collected from the documents. The quantity and types of data collected by the questionnaire, and the counting process to determine the number of cases that fall into the various categories (tabulation) were covered in this chapter.

The author used two techniques in analysing the questionnaire data:

- 1- Number of responses for each category.
- 2- Percentages.

Interpretation of Results

Analysis of the collected data indicated that the business game training technique improves the decision making ability of the trainees. All the results that were extracted from the data collected by the observation, documents and questionnaire methods.

Observation Indicated That:

- 1- As long as the decision-periods were sequential, the participants became more involved, and their interest for carrying out their firm activities were increased.
- 2- The trend of decision-preciseness and accurateness was always increased as the participants became more involved in the game and more practiced with the scientific way of decision-making. The author derived this result from observing the continuous development of the firms financial positions.
- 3- The indirect competition between the groups, representing in comparing their performance every 4 periods, increased their awareness of developing their way of making decisions to get better results.
- 4- As for as some of the teams used decision assisting scientific tools, they got better results.

The Data Extracted From the Documents Indicated That:

- 1- The decisions which the firms made and the method by which they made these decisions were reflected on the results.

- 2- Practicing the decision-making process through playing the game developed the performance of the participants by teaching them the proper way of making more accurate decisions.¹

Analysis of the data which was generated from the questionnaire represent the participants evaluation of the business game as a training technique for top management. The results of this analysis indicated that:

- 1- The participants gained several advantages from playing the game such as:
 - a- practicing how to make quick and proper decisions scientifically under dynamic conditions.
 - b- The high degree of participants involvement which the business game technique realizes makes this technique a very effective method for training top managers.
 - c- Gaining new managerial knowledge and concepts.
 - d- It revealed the importance of relating and coordinating between different decisions in a firm.
 - e- Practicing how to correct their errors resulting from previous wrong decisions.
 - f- Observing the effects of their decisions in a short time.
 - g- Practicing the use of scientific decision making tools.
 - h- Practicing how to discover the key factors to observe in a job situation in order to understand the business position.

¹See "Analysis of data collected by documents," pp.70-80

- i- It represents the dynamic nature of business.
 - j- Developing the trainees managerial skills, ways of thinking, attitudes, self-understanding, and understanding of others.
 - k- It broadened the participants general view of the management process and dynamics.
 - l- It improved, to a great extent, the participants ability to make decisions.
- 2- All the participants, except two, indicated that they expected that their job performance would be developed as a result of being trained by the business game technique.¹
- 3- Most of the participants indicated that the main characteristics of a successful business game, by definition, were realized in "Cairo 68" business game.²
- 4- The participants' evaluation of the umpires and the system of game execution was, on the average, that they were very good. Most of them considered the game period and the decision period as being suitable.
- 5- Most of the participants indicated that the business game is very suitable as a top management training technique.³
- 6- The business game was the participants' first preference training technique to be used in top management training programmes.

¹ Refer to table (8) Appendix A

² Refer to table (10) Appendix A

³ Refer to table (12) Appendix A

7- Two participants only mentioned two disadvantages:

A- The decision period was too short to study the situation carefully and to use the scientific techniques to make the proper decision. The author believes that the reason may be because of some deficiencies in their team organization.

B- Authoritarian behavior of some of the participants in making the decisions. The author suggests that such deficiency may be due to psychological reasons and not to the business game as a training technique.

CONCLUSIONS:

The limitations of this study tended to make broad generalizations open to question. However, this attempt should be considered as a pilot study to be followed by more comprehensive and rigorously designed studies. The following conclusions are suggested for verification by further research:

- 1- The business game training technique improves the decision making ability of the top managers of the industrial projects in the U.A.R.
- 2- The business game is one of the most effective training techniques for top management as far as it simulates the real environment of the managers.
- 3- The dynamic aspect of the management games is their unique contribution as compared with most other training techniques.

- 4- Games provide a larger variety and number of decision making opportunities than would be provided in an equal amount of time at work. This raises the value of gaming as a training technique.
- 5- The high degree of participants' involvement in a business game, give them an opportunity to learn more than from the usual static training techniques.
- 6- Business games give the players the advantage of obtaining an immediate feedback of their decisions results. This gives them the chance to discover their faulty decisions, to correct them, and consequently to learn more.

RECOMMENDATIONS:

The **author** suggests the following recommendations to overcome the limitations:

- 1- A pre-measurement of the participants' decision making ability should be made to evaluate the effects of the business game technique more scientifically and accurately by comparing before and after results.
- On the other hand, if a control group, similar to those who will participate in playing the game, can be secured, better results may be obtained. Here, the "before-after" experimental design with one control group would be used. This will insure, at least, avoiding calculating the effects of uncontrolled events in the results.

- 2- An ^aevaluation, from the participants' point of view, of the effect of the business game back on the job to be made shortly after the training programme termination, three or four months for example, to determine whether the effect of training by this technique is temporary or does it have a longer lasting effect.
- 3- It will be helpfull to include an opinion survey of the trainee supervision peers, and subordinates in a "before-after" measurement to get more accurate evaluation.
- 4- A questionnaire should be directed to the game administrators to obtain their evaluation of the business games technique. This may help to increase its effectiveness.
- 5- To avoid, as far as possible, subjectivity in evaluation, the researcher could use other methods of data collection plus the questionnaire such as the documents and depth interviews.
- 6- Since the business game technique is now used in several training programmes, it is better, for any more studies on this topic, to cover the whole community in order to have greater accuracy in generalizing the results.
- 7- It should be taken into account that the participants, who are going to be trained by "Cairo 68" business game, must be top managers of the industrial sector and not from any other sector because this game is designed for the industrial top management sector.

8- A critique of the results after the game is played is a vital aspect of the training process. This critique should not only be in terms of the relative standings of the teams but also in terms of the relationship of company's objectives and plans to the results achieved.

9- For increasing the functional effectiveness of this business game:

A- In the introductory session, the faculty can eliminate the floundering of the participants by urging them to stop creating hypotheses about how life differs from the simulated environment and by suggesting they deal with the available information and work within that framework as realistically as possible. During this time it is important to stress that the model is meant to be an experience about how some markets behave and how some manufacturing systems function.

B- The number of participants in each group should be limited to five because there is not enough work for more than that.

C- Decision period should be 45 minutes instead of half an hour, to give the trainees better opportunities to make proper decisions.

D- The game period should last to the extent that shows the results of long-range decisions and policies.

Suggested Topics for Further Research:

- 1- "Before-and-after" experimental study with a controlled group about an evaluation of Gaming as a top management training technique in the U.A.R. industrial environment.

The objective of such a study in order to verify the results of this thesis research.

- 2- A comparison study of the effect of the dynamic business game and that of any other training technique such as case method on the decision making ability of top managers.

The purpose of this study is to discover the more effective training method in improving the top managers decision making abilities.

- 3- The behavioral effects of the business game training technique.

The purpose of this study is to explore any behavioral effects result from participating in playing and administering the game.

- 4- An evaluation of the effect of the business game back on the job to be made three or four months after the termination of the training programmes involving participants, superiors, peers and subordinates.

The purpose of this follow-up study is to obtain information concerning the effectiveness of the training technique over a long period of time.

APPENDICES

APPENDIX (A)

Table No.1

The Advantages of playing the game

Item	Frequency	%
Practicing how to make quick and proper decisions scientifically under continuous changing conditions	14	66.7
It showed the importance of using the scientific methods and tools in decision making	7	33.3
It realized a high degree of participants' involvement, and that make it an effective way of training top-managers.	6	28.6
Gaining new managerial concepts and methods.	6	28.6
It showed the importance of relating and co-ordinating between the different decisions in the firm.	7	33.3
To know how other top-managers make-decisions through playing the game.	5	23.8
Practicing how to recover from previous wrong decisions	3	14.3

Table No.2 The Disadvantages of playing the game

Item	Frequency	%
The decision period was too short to study the situation carefully and to use the scientific techniques to make the proper decision	2	9.5
Authoritarianisms of some of the participants in making the decisions	2	9.5
Dissatisfaction at the restrictions imposed on making the decisions	1	4.8

Table No.3 Evaluation of the umpires

Item	Frequency	%
excellent	9	42.8
very good	3	14.3
good	7	33.3
umpires have not enough experience	1	4.8

Table No.4 Evaluation of the game period

Item	Frequency	%
the game period was short	12	57.2
the game period was suitable	9	42.8

Table No.5 Evaluation of the decision period

Item	Frequency	%
Decision period was suitable	16	76.2
Decision period was short	2	9.5
No comment	3	14.3

Table No.6 Evaluation of the system of game execution

Item	Frequency	%
Excellent	12	57.2
Very good	4	19
Good	4	19
Deficient	1	4.8

Table No. 7

I T E M S	Very great increase		Great increase		To a moderate extent		Little		None	
	F.	%	F.	%	F.	%	F.	%	F.	%
Knowledge & Concepts	2	9.5	15	71.4	4	19	-	-	-	-
Skills	3	14.3	10	47.6	7	33.3	1	4.8	-	-
Ways of thinking & attitudes	8	38	10	47.6	3	14.3	-	-	-	-
Self Understanding	5	23.8	13	61.9	3	14.3	-	-	-	-
Your understanding of others	3	14.3	14	66.7	4	19	-	-	-	-
Your dealing with others	9	42.8	9	42.8	3	14.3	-	-	-	-
Your general view of the mgmt. process & dynamics	6	28.8	9	42.8	5	23.8	-	-	-	-
Ability to make decisions	6	28.8	13	61.9	2	9.5	-	-	-	-

F. = Frequency
% = Percentage

Table No.8 Probability of transferring the effect of training by this business game to the participant's work.

Item	Frequency	%
to a very great extent	1	4.8
to a great extent	8	38
to a moderate extent	9	42.8
a little	1	4.8
not expected	2	9.5

Table No.9 Participants' general feeling toward the game.

Item	Frequency	%
pleasant	18	85.7
Unpleasant	-	-
Indifferent	3	14.3

Table No. 10- Degree of realizing the characteristics of a successful Bus. Game.

Items	To a very great extent		To a great extent		To a moderate extent		Little		None	
	F.	%	F.	%	F.	%	F.	%	F.	%
Degree of simulation in general	7	33.3	6	28.6	8	38	-	-	-	-
A model similar to what is going on in the companies	2	9.5	8	38	7	33.3	3	14.3	1	4.8
Excluded nonessential information	6	28.6	3	14.3	4	19	5	23.8	2	9.5
Included necessary information	6	28.6	10	47.6	3	14.3	1	4.8	-	-
Participants involvement in the game	10	47.6	9	42.8	1	4.8	1	4.8	-	-
Reasonableness of difficulty in playing the game	1	4.8	6	28.6	8	38	2	9.5	-	-

F. = Frequency

% = Percentage

Table No 11 The degree of having an idia about business games after playing "Cairo 68" game.

Item	Frequency	%
Yes	19	90.5
To some extent	2	9.5
NO	0	0

Table No.12 The degree of suitability of business games as a top management training technique.

Item	Frequency	%
Very Suitable	15	71.4
Suitable	4	19
To some extent	1	4.8
Not suitable	0	0

Table No. 13- Participants preferences of the different training techniques

Items	First Preference		Second Preference		Third Preference		Fourth Preference		Fifth Preference		Not Preferred	
	F	%	F	%	F	%	F	%	F	%	F	%
Lectures	6	28.6	2	9.5	1	4.8	4	19	7	33.3	1	4.8
Conferences	0	0	1	4.8	7	33.3	7	33.3	4	19	2	9.5
Seminars	2	9.5	6	28.6	8	38	2	9.5	2	9.5	1	4.8
Case Method	6	28.6	4	19	4	19	4	19	2	9.5	1	4.8
Management Game	8	38	8	38	1	4.8	3	14.3	1	4.8	0	0

F = Frequency

% = Percentage

Appendix B

The Description of "Cairo 68"

Business Game

- Introduction
- General rules of the game
- Main factors in the situation faced
by the firms
- Forms to be used in the game

Introduction:

The following is an almost a literal translation from the Arabic language which tends to be some what repititiou: and "wordy".

The main objective of designing business games is to use it as a tool for training top management. The business game focuses on "The decision-making process" as it is considered one of the main activities of managing. Thus, some persons like to label the game as "Dynamic decision-making exercise", but the most common name is "Management Game."

The N.I.M.D. used the Andlinger business game ^{either} in its original form or in a modified shape in several programs during the period, 1961-67. But since 1967, the idea of developing a game based on the situations faced by the local manager, was raised. "Cairo 68" represents a modest trial for achieving such a goal. It is hoped that it will stimulate other trials for developing this game and for designing new ones.

"Cairo 68" can be described as a game for the general Management of an Industrial enterprise, and based mainly on manual computations.

The general structure of the game involves two main parts:

First: General rules of the game.

Second: The main factors of the situations faced by the Firm.

Part One

The General Description of the Game

First: General Rules of the Game

These rules concern:-

- 1- The number of teams participating in the game
- 2- The Umpires.
- 3- Time Periods.
- 4- The forms to be used.
- 5- Game explaining session.
- 6- Preparation for starting the game.
- 7- Evaluation Session.

1- Number of Teams Participating in the Game:

The number of teams in a game is largely predetermined by its purpose and the model itself. Manual games are generally restricted to a dozen teams or less, due to the computational problems encountered with a great numbers of teams. On the other hand a computerized game may be played by 100 teams".¹ For the "Cairo 68" game any number of teams (groups) can play it. One team can play this game, but it is preferable to have more than one team, because it allows a comparison of the performances of these groups.

Each team manages a firm with a different domestic market, but these firms may compete with each other if they decide to enter the export market.

¹ Thorelli, H.B., and Graves, R.L., International Operations Simulation, The Free Press of Glencoe, 1964, P. 19.

Each team is free in organizing its operations.

2- The Umpires:

There will be an Umpire for each team. The umpire represents a contact link between the firm and the environment in which it works. He uses objective criteria to define the outcomes of taking certain decisions. The Umpire cannot supply the company with more information than permitted by the rules of the game.

Time Periods:

This game simulates the decision-making processes which normally take place over several years. Each year divided into 4 periods.

At the beginning of each period, the teams start to make what they consider the proper decisions in relation to the situations they will face and which will be explained later.¹ The teams should use two copies of each of the forms: A, B, C, D, E, to record their decisions. Then, each umpire has to receive these forms from his team to define the results of these decisions, record these results in the forms, return a copy from each form to the team, and inform the team when the next decisions are due. Also, the umpire may supply extra information to the team using form (W).

Each team studies, during the defined period for making their decisions, the results of the previous decisions, uses the available information, and then makes the proper decisions for the new situation.....

¹ See the main factors in the situations be faced by the companies.

The Forms:

The following forms are used in this game:

Form A: Summary of the company decisions during a certain period.

Form B: The inventory turnover in the main stores and in the sales areas stores.

Form C: The additional information needed by the company for a certain period.

Form D: Movement of cash, sales, and notes receivable.

Form H: Financial statements which show the results of the company decisions.

Form W: Additional information to be mentioned to the company.

Game-explaining Session:

A session for explaining the general rules and the main factors in different situations in the game should be held before starting the game. It is better for each participant, before attending such session, to read the general description of the game and determine the points he wants to discuss, to increase its effectiveness.

In this session, the teams should be formed and their locations defined.

Teams meeting for Game Preparations:

After the game explanation session, each team meets in its defined location to prepare for the game. In this meeting, it is best to discuss the following points:

- A- The nature of the situations to be faced by the company which will be directed by the team.
- B- Goals, policies, and long-range and short-range plans.
- C- Organizing the team functions.
- D- Follow-up and evaluation methods of the company performance.

Evaluation Session:

At the end of the game an evaluation session of the game is held. The objective of this session is to extract any principles which could be applied in the management process performed by the participants in the real life.

Part Two

Main Factors in the Situations

Faced by the Companies

The main factors in the situations faced by the companies can be defined as follows:

- 1- The nature of the company's activity.
- 2- Production.
- 3- Local market.
- 4- International Market.
- 5- Product development.
- 6- Product promotion.
- 7- Financing.
- 8- Investments & constructions.
- 9- Research and studies.

Detailed Description of these Factors:

1- The Nature of the Company's Activity:

The company produces butane ovens and heaters (see investments and constructions).

The company sells its products in the local market, but it also can export them.¹

2- Production:

The decision to determine the quantity of ovens and heaters to be produced within a certain period should be taken at the beginning of this period.

¹ See "Local Market" and "International Market".

This decision should take into consideration that the amount to be produced should not exceed the amounts that can be produced. (the available production capacity).

The production capacity of the first production unit is composed of the following groups:

1- Assembly capacity of ovens:

It includes the workshops assembling the ovens. These workshops could assembly 6000 ovens every quarter of a year.

2- Assembly capacity of heaters:

It includes the workshops assembling the heaters.

These workshops could assembly 8000 heaters every quarter of a year.

3- Production capacities:

It includes the workshops which produce the parts and components of ovens and heaters such as the workshops of moulding or forming and the workshops which perform finishing processes such as painting workshops.

The first production unit is designed to achieve its highest balance between production capacities. But the forming capacity is the only restricted one.

-
- 1- The company can increase its available production capacities by constructing new production units (see Investments and Constructions.)

The full capacity of the forming workshops is 8000 ovens or 16000 heaters for each quarter (i.e. Double forming capacity is necessary for an oven compared to a heater.")

The amount of ovens to be produced is defined in batches of 100 ovens. The amount of heaters to be produced is defined in batches of 200 heaters.

The production of each period is to be sent to the main stores before the end of the period, and is available for distribution in the local sales areas or for exporting during the next period (the next quarter of the year) to the production period. N.B. The capacity of the main stores is 30.000 ovens and heaters.

The following table shows the company's available alternatives within the limits of the first unit production capacity of quantities of ovens and heaters which could be produced each quarter of a year.

The Maximum Quantity of
Heaters which could be Produced
with any Fixed Quantity of Ovens \bar{x}

The Amount of ovens	Maxi. Amount of Heaters	Amount of Ovens	Maxi. Amount of Heaters	Amount of Ovens	Maxi. Amount of Heaters
From Zero					
4000	8000	4700	6600	5400	5200
4100	7800	4800	6400	5500	5000
4200	7600	4900	6200	5600	4800
4300	7400	5000	6000	5700	4600
4400	7200	5100	5800	5800	4400
4500	7000	5200	5600	5900	4200
4600	6800	5300	5400	6000	4000

It is possible from this table to determine the maximum amount of ovens which could be produced with any fixed amount of heaters. For example: The maximum amount of ovens which could be produced with 4000 heaters or less, is 6000. But this maximum limit is lowered to 5900 if we want to produce 4200 heaters... and so on.

3- The Local Market:

Each company (team) is considered as the only producer in the local market. For that, it can get a great share of this market. But the company cannot change the price because there is a central authority that sets up the price of these products.¹

The local market is divided into three selling areas: A.B.C. Each area has a separate absorption capacity. Each company sells its products in each of these areas through sales branches with stores attached to them.

The sold amount in a certain area, at any period of time, is affected by:

- 1- The Umpire is going to inform the company of the local pricing decisions at the beginning of each period, by using the form (W).

- 1- The absorption capacity of the area and the company's relative share of it. (The company's relative share is effected by the degree of product development and the company's promotion efforts.¹
- 2- The distribution capacity of the company in the area and the amount ready to be distributed in the area within the limits of this capacity.

The distribution capacity of the company in a certain selling area depends on the number of sales branches constructed by the company in this area.² Each branch is composed of an exhibition and a selling office with a number of salesmen. Attached to it is a store with a capacity of 5000 units (ovens or heaters), representing the maximum distributing expectation of each branch within a quarter of a year.

The inventory of the company in any sales area within a certain period, is defined by the begining inventory in this area at the beginning of this period plus the amounts to be shipped at the beginning of the period, to this area from the main store of the company. The amount in any area-at a certain period cannot exceed the storage capacity of the company in this area at the beginning of this period.

All sales in the local market is on credit and the payment period is six months (two periods) after the selling period.

1- See "Product development" and "Product distribution."
2- See "Investments and constructions."

4- The International Market:

The company can export a part of its production to the international market. The amount to be exported is a small amount in comparison with the total amount in this market, and consequently the international prices is not influenced by the company's exports but is determined by the interaction of total supply and total demand.

The company to be able to contract to export any amount of its products, should investigate¹ the international market within the period prior to the period of contracting. From this investigation, the company obtains the following information.

- A- The basic price of exporting in the next period.
- B- The maximum amount which could be contracted ^{at} this basic price.
- C- The maximum amount which could be contracted on if the company gives a certain quantity discount. This discount is determined according to the circumstances of the international market.

Based on this information, the company can decide to contract or not. In the first case, the company has to determine either to export according to the basic price or for the discounted price, and then to fix the amount which it is going to export according to the conditions prevailing during the investigation period.

When a company decides to contract to export certain amounts of heaters or ovens it must set aside these amounts to insure meeting its contract commitments.

1- See "Research & Studies."

Thus, the necessary stages of the exporting process can be defined as follows:

1- Investigation, 2- contracting, and 3- exporting

The proposals which the company can obtain during the investigation period, depend on the degree of the product development and on the promotion efforts which the company offers during the investigation period.¹

Export is concluded in return of notes-receivable to be paid on the period following the exporting period.

5- Products Developing:

If the company can improve any of its products, this will give it a competitive advantage in the local and the international markets. This development needs continuous effort by the company. It involves a relatively long time of not less than two years before a change becomes available to reach a degree of development which could be applied on the company's products. This chance of developing an improved products increases proportionally with the length of time in which the company continues its development efforts and with the amount^{of}/money which the company spends on this activity. To continue development efforts, a quarterly budget should be allocated of not less than 5000 pounds.

When the development efforts result in a change, the umpire informs the company. He also informs it of the proper time for using it and the expected effect of this usage either(1)increasing the selling potentials or(2)decreasing the

¹- see "Products developing and Products Promotion."

production costs, or (3) getting a permission from the control authorities to increase the selling price, or (4) other possible results.

If the company wants to study the expected effect of development, it should ask for that by item (W) in the form C.¹

Products Promotion:

Selling in the local market takes place through sales branches in the three sales areas. As long as promotion efforts increase, the demand on the company's products increase and consequently the relative share which the company can get from the absorption capacity of the market increases. The company uses all the advertising media of its three sales areas to promote its ovens and heaters. The company, may choose between three levels of local promotion budgets for this product (oven or heater) in this period. These levels are L.E. 3000 or L.E. 6000 or L.E. 9000. It is also possible to study and estimate the effect of the product promotion budget level on the firm's relative share of the local market for each of the ovens and heaters (item C, form C) ².

In addition, the company can promote its products in the international market. The company's chance for contracting on bigger quantities increases if it promotes its products during the investigation period. The company can choose among three levels of international promotion budgets for each of the two products. These levels are: L.E. 5000, or L.E. 10000 or L.E. 15000. It is also possible to study the effect of the level of the international promotion budget of each product, in a certain period, on the quantities which the company can get proposals during the same period.³

1- See "Research & Studies."
2- See "the research and the studies"
3- Ibid.

7- Financing:

Each firm starts with a capital of 2,000,000 pounds. The firm can expand by re-investing its profits. So, the local and international sales and the capital are the main financial resources of the company. As previously explained, the payment for the local sales takes place in two periods following the seeling period. The payment for the international sales takes place in the period following the exporting period.

The company is not permitted to discount the notes receivable which it gets in return for the local or international sales. The company is permitted in any period to ask and get short-run loans to the amount L.E. 10,000 or any multiple of 10,000. The company should repay the loan after 6 months (two periods) plus the general rate of interest of 5% which should be paid in the same period of receiving the loan. The Bank may put any restraints on the size of the short-run loans for any company.

Also, the company is permitted to ask for long-term loans from the bank. It should state in its request, the amount of the loan, the time needed to repay, and the reasons fpr requesting the loan. The bank reviews the request taking in consideration the company's financial situation, and then it decides if it should make the loan and under what conditions. The studying of the request and sending the answer usually takes two periods of time.

8- Investments and Construtions:

The firm can invest in construct production capacities (units) and sales branches.

A. Investing for Constructing Production capacities:

The main production units which each company should construct, to enter this industry¹, is composed of: production capacities for ovens; production capacities for heaters: joint production capacities for the heaters and ovens; the main stores and the management building. The cost of constructing this main production unit is 800,000 pounds. The company should pay these expenses in the same period it makes the construction decision.

The construction of the plant lasts for three time periods—including the period of the construction decision. After that the plant starts the production stage. As the production begins the firm assumes that production fixed costs equal 100,000 pounds (including the depreciation)² each quarter of the year. These fixed costs are not affected by the quantities which will be produced in any period. The firm also assumes that the variable cost for each oven is 10 pounds for each heater is 25 pounds. But the variable cost may be changed according to market conditions.

The firm can expand its production capacities by adding any number of the following units:

- 1- A complete production unit with a capacity similar to the main production unit capacity costing 600,000 pounds.
- 2- A unit for ovens with a capacity similar to the main oven unit capacity costing 100,000 pounds.
- 3- A unit for heaters with a capacity similar to the heaters main unit capacity costing 100,000 pounds.

1- See "The Production".

2- The firm spends the value of depreciation always on the necessary replacement to keep the firm's capacities.

- 4- A joint unit for producing production requirements with a capacity similar to the main point unit costing 300,000 pounds.
- 5- Adding new store to the main plants with a storing capacity 10,000 units costing 50,000 pounds.

The established costs for any of the previous units is paid when the firm makes the construction decision. The establishment of any of these units needs the same period for constructing the similar main units. The production fixed and variable costs change as a result of establishing the new units.

N.B. If the company wants to know this information in advance, it should conduct technical studies to estimate these costs.¹

B. Investing for Establishing distribution capacities
in the sales areas:

The cost establishment of a sales branch equals 50,000 pounds including the investment in buildings, furniture, and necessary transportation facilities for the branch. The time needed for establishing a sales branch is two time periods including the time period of the decision. When the two periods have ended the branch is ready for use and from this stage the firm must assume fixed costs equal to 10,000 pounds. This includes all branch expenditures e.g. the depreciation², whether these branches are used or not.

1- See "The researches and the studies".

2- The firm spends the depreciation value always on the necessary replacement for keeping the distribution capacities which it establishes.

9- Research and Studies:

The firm can ask for certain information ⁽¹⁾ which can be available by conducting certain research or studies. This information includes the following items:

- A- The estimation of the whole absorbing capacity of the ovens and heaters during the next year. (costs = 5000 pounds).
- B- The estimation of the sales areas' absorbing capacity during the next period. (Costs = 3000 pounds)
- C- Estimating the firm's relative share of the local absorption capacity at different levels of promotion budgets. (costs = 3000 pounds).
- D- Studying the effect of the promotion in the international market during any period on the quantities which the firm can contract on it during the followed period. (costs = 5000 pounds).
- E- Investigating the proposals (prices and quantities) which the firm can contract on it during next period. (costs = 2000 pounds).
- F- Studying the effect of product development or its selling potentials in the local and international markets. (costs = 5000 pounds)
- G- Estimating the variable and fixed production costs of any certain expansion project. (costs = 5000 pounds).

(1)

See "form C".

Appendix B

Some Guides For the Participating
Groups in the Game

First: General Guides:

- 1- Each form should be completed in two copies. After the firm writes all its decisions in forms A, B, C, D, and H, the two copies should be delivered to the umpire. The umpire then writes the results of these decisions on the forms and returns one copy to the company.
- 2- If the firm leaves the place for writing a decision blank the umpire will assume that the firm decides not to take a decision related to this topic.
- 3- When the firm makes a certain decision, a summary of this decision should be written in form A. In addition, its financial results should be stated in the places specified for them in forms B, C, D, H and W, (see second).
- 4- The firm should make its decisions and fill in all the forms needed at the time specified by the umpire.

Second: The information which should be written in each form by the firm:

Form A: Complete all the items (leaving any item blank means that the firm decides not to use it).

Form B: 1- fill in all the items of table (1)

2- Fill in all the items of tables 2 and 3 but the items

of "what is already sold" and "the stock at the end of the period".

Form C: But the check mark (✓) in the square in front of the requested data and write the costs of obtaining this information in the opposite space, and then compute the general expenditure of obtaining the needed information.

Form D: 1- complete all table (4)
2- fill in sales spaces in table (5)
3- fill in the spaces of "the exports of this period" and expected total notes receivable in this period in table (6). The firm should note that:
Total amount received from the notes receivable
(table 4) = Expected total notes receivable in this period
(table 6)

Form H: 1- fill in all the spaces on the income statement but the items which are marked with: to be filled in by the umpire.
2- fill in the spaces coded by (1) in the income statement, while the spaces which are coded by (2) are to be filled in by the umpire.

Firm No.: _____
 Year / Quarter
 Period : _____

Form A
Summary of the Firm Decisions

First : Investing Decisions:

Decision No. 1 : not to change present production capacity ☐
 establishing new production units ☐ which
 are: _____

their establishment costs ~~one hundred and one~~ pounds, and they starts
producing in the period ~~from 1941 to 1942~~ / ~~from 1942 to 1943~~ .

Decision No. 2 : not to change present distributing capacities ☐
establishing new sales units ☐ which
are : _____

(in area A ———) -- (in area B ———) - (in area C ———)

their establishment costs ——— pounds, and they starts selling in

the period ——— / ——— .

Second : Financing Decisions:-

Decision No. 3 : Asking for a short-term loan equals to _____ to be repayed in ____/____ with a total interest (5%) _____ pounds to be paid in this period.

Decision No. 4 : Asking the bank for a long-term Loan equals to ----- pounds for ----- years.

Third.: Products - development Decisions:

Decision No. 5 : The products' development budget for this period is _____ pounds

Fourth : Producing Decisions:

Producing Decisions:

Decision No. 6 : to produce _____ ovens. Their production variable costs are _____ pounds.

Decision No. 7 : to produce _____ heaters. Their production variable costs are _____ pounds.

(N. B. It is not possible to ship the present period production to the local sales centers or to the export markets before the following time period).

Fifth : Local market distribution Decisions :

Decision No. 8 : Directing _____ ovens from the main stores to the local sales areas.

Decision No. 9 : Directing _____ heaters from the main stores to the local sales areas.

Decision No. 10 : allocating a share, for each sales area, of the ovens which are decided to be directed in decision No. 8 (to be shown in table 2, Form B)

Decision No. 11 : allocating a shares, for each sales area, of the heaters which are decided to be directed in decision No. 9. (to be shown in table 3, form B)

Sixth : Exporting Decisions:-

Decision No. 12 : contracting on exporting _____ ovens, with price _____ pounds, and its total value _____ pounds.

Decision No. 13 : contracting on exporting _____ heaters, with price _____ pounds, and its total value _____ pounds.

Seventh : Promotion Decisions :

Decision No. 14 : defining ----- pounds for promoting the
ovens in the local market.

Decision No. 15 : defining ----- pounds for promoting the
heaters in the local market.

Decision No. 16 : defining ----- pounds for promoting the
ovens in the international market.

Decision No. 17 : defining ----- pounds for promoting the
heaters in the international market.

Total
amount
of Pro-
motion

Pounds

Eighth : Research and studies Decisions :

Decision No. 18 : defining ----- pounds for conducting certain
researches and studies (should be shown in form C).

Firm No. Year Quarter
 Period : /

Form B
 table shows the inventory turnover in the main stores and branch stores.

Table (1)

Total inventory turnover in the main stores

Description	Products		Ovens		Heaters		Remarks
	quantity	costs	quantity	costs	quantity	costs	
Stock at the beginning of the period							equals the previous period end-stock
Contracted amount to be exported							Decisions 12, 13 of the previous period.
Available amount for local distribution							
Amount to be directed to the sales areas.							Decisions 8 & 9
Residual							
Present period production							Decisions 6 & 7
Period stock							take in consideration decision 12 & 13 for present period.

Inventory turnover in the sales areas

Table (2)

First : The ovens

Description	Areas	A	B	C	Total		Remarks
		quantity	quantity	quantity	quantity	Costs	
Beginning - period Stock							= Previous end - period stock
The amount to be allocated for each area.							Decision No.(10)
The available amount to be distributed in the sales areas.							Should not exceed the capacity of the sales center
What was sold							to be filled by the umpires
End-period stock							to filled by the umpire.

Table (3)

Second : The Heaters

Description	Areas	A	B	C	Total		Remarks
		quantity	quantity	quantity	quantity	Costs	
Beginning - period Stock							= Previous end- period stock
The amount to be allocated for each area							Decision No.(11)
The available amount to be distributed in the sales areas							Should not exceed the capacity of the sales center
What was sold							to be filled by the umpire.
End-period stock							to be filled by the umpire

Form B

N. B. The value of the products units is computed on the basis of the production variable costs only.

Review to be done by the umpire:

The amount in the main stores + The amount in the sales centers = Total stock x unit variable costs = Total costs

ovens : _____ + _____ = _____ x _____ = _____

heaters : _____ + _____ = _____ x _____ = _____

The costs of the total stock = _____

Firm No. : _____
 Year : _____ Quarter : _____
 Period : _____ / _____

Form C
 The requested
 Information

(put the check (/) in the square infront of the requested information)

The costs of obtaining the information

A- estimating the total absorbing capacity of the local market during next year.

Time-Period	—/—	—/—	—/—	—/—
Product				
ovens				
heaters				

Costs
 £. E.
 5000

B- estimating the absorbing capacity of the sales areas during next period.

area	A	B	C	Total
Product				
ovens				
heaters				

Costs
 L. E.
 3000

C- estimating the effect of promotion on the company relative share from the local absorbing capacity.

OVENS			HEATERS		
Promo- tion budget	the es- timated minimum	The es- timated maximum	Promo- tion budget	esti- mated minimum	estima- ted maximum
Pounds	%	%	Pounds	%	%
3000			3000		
6000			6000		
9000			9000		

Costs
 L. E.
 3000

- D- Studying the effect of promotion in the international market during any period on the quantities which could be contracted on in the following period.

OVENS		HEATERS	
Promotion budget	Percentage of expected increase	Promotion budget	Percentage of expected increase
Pounds	%	Pounds	%
5000		5000	
10000		10000	
15000		15000	

- investigating proposals which the company can contracted on during the next period.

	OVENS		HEATERS	
	Price	quantity	Price	quantity
basic				
discounted				

- F- Studying the effect of developing the products on sales potentials.

Form C

G- Estimating the fixed and variable production costs in advance when the plant is composed from the following units:

The production fixed costs will be ----- pounds
The variable costs of one oven will be ----- pounds
The variable costs of one heater will be ----- pounds

The total expenditures of obtaining the information in this period is = -----

Costs
L. E.
5000

Firm No.: _____
 Period: _____ Year _____ Quarter _____

Form D
 The movement of cash
 Sales and notes-receivable

Table (4)

Table of Cash-flow during the period

Description	Partial pounds	Total pounds	Remarks
The balance at the beginning of the period			balance at the end of the previous period.
$\frac{1}{2}$ the local sales value of the period before the previous period			
$\frac{1}{2}$ the local sales value of the previous period			
The exports value of the previous period			
The receivable value from the due notes-receivable.			
A loan from the bank			
The available cash during the period			= beginning-period balance + revenues + the loan
<u>Deducting :-</u>			
new production unit establishing costs			decision No. (1)
New sales center establishing costs			decision No. (2)
variable costs of producing ovens			decision No. (6)
variable costs of producing heaters			decision No. (7)
Total periodical costs of the period			From the income statement form H.
paying a loan to the bank			
Total cash payments			
The balance at the end of the period			= available cash - cash payments

Table (5) Local and International Sales

	O V E N S			H E A T E R S			T O T A L	Remarks
	quantity	Price	Value	quantity	Price	Value	Value	
Local								to be filled by the umpire
International								Previous period Decision 12, 13
Total								to be filled by the umpire

Table (6) Flow of Notes-receivable

	Partial pounds	Total pounds	Remarks
Balance of the beginning of the period			= The balance of the previous period end
Local sales of this period			to be filled by the umpire (table 5)
Exports in this period			(From table 5)
Total new notes - receivable			to be filled by the umpire (table 5)
Total (beginning-period balance + total new notes-receivable)			to be filled by the umpire
Total due notes - receivable of this period			From table (4)
Balance at the end of the period			to be filled by the umpire

Firm No.: _____ Year _____ Quarter _____
 Period: _____ / _____

Form H
 The Financial Statements
 which show the results of
 the firm's financial decisions

Income Statement of the Period

	Partial		Total	Remarks
	Ovens	Heaters		
Sales				to be filled by the umpire from table (5)
Sales' variable costs				to be filled by the umpire
Profit margin from sales				to be filled by the umpire
The periodical costs :-				
Loans' interests				Decision (3) + instructions of the long-term loan
Production fixed costs				to be defined according to the firm's production capacities
Distribution fixed costs				10,000 x Number of the sales centers on work.
Products - developing expenses				Decision (5)
Promotion expenses				(14, 15, 16, 17) Decisions
Research & studies expenses				Decision (18)
Total of periodical costs				
Net Profit (or loss) ^x				to be filled by the umpire

^x in the case of loss, the figure should be put between two brackets and deduced.

The Balance Sheet in the end of the period

Assets

Equities

Total	Partial		Total	Partial	
		<u>Fixed Assets</u>			
		producing fixed assets (1)		2000000	The Capital
		+ distributing fixed assets (2)			+ retained earnings till previous period (1)
		= Total fixed assets (1)			= Total or rest of deduction (1)
		<u>Current Assets</u>			+ net profit or loss in this period (2)
		Products stock (2)			= The capital + retained earnings (2)
		+ notes-receivable (2)			long-term loans (1)
		+ Cash (1)			+ short-term loans (1)
		= Total current assets (2)			= Total of loans (1)
		Total Assets (2)			Total Equities

(1) These items should be filled by the firms

(2) These items should be filled by the umpire

Firm: _____

Year Quarter

Period: _____ / _____

Form W

Additional Information

- 1- It is decided to set the oven local price at _____ pounds, starting from period _____ / _____ .
- 2- It is decided to set the heater local price at _____ pounds, starting from period _____ / _____ .
- 3- The production costs of the constructed production units (data to be given to the company in the period ~~period~~ to the possibility of using the new production capacity in producing.) are:-

Starting from the Next Period

Pounds

The total production fixed costs

The ovens variable costs

The Heaters variable costs

4- Other Information:

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