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The Strategy of Scientific Research in Service of the

Future Industry Course

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Introduction

The world witnessed in the late years of the twenties century several radical regional and international changes and transformations starting with a great technological revolution and Japan appeared as a new giant imposing on the west to revise systems and methods of performance.

Thus, the concept of privatization prevailed as a system of administration and the possession of the economic units and production instruments along with removing all obstacles and impediments that hinder goods, services, and investments transport.

Thus, the world became like one market where all producers compete together. Indeed, the land is no longer under possession of any, rather it is owned by God who said,

"It is Who has submitted the earth to you, so walk in the paths thereof and eat of His provision. And to Him will be the Resurrection." (The Qur'an, 67: 15)

In this international rough market, competition grows fiercer where only the most powerful is capable of survival and attracting the clients and consumers due to his good quality, products, services, and its low cost.

In this framework, a new war began using new weapons, the most important of which is science, knowledge, and full quality that leads to ever-growing economics.

These changes and transformations require that all countries and nations should change and get the qualifications to contain these changes and cope up with them.

Thus, they have to reconsider all of their systems, activities, and performance. It is unanimously agreed that the perfect quality is the ultimate objective and the way of every country that desires to have a place on the map of the new world. Quality and good performance have become inevitable.

Thus, the quality of goods, products, and services occupies the foremost position in the economic thought concerns since the eighties of the late centuries when all turned to study and analysis for the sake of change and development.

In this new world, new powers appeared and left the world in surprise due to their amazing and wonderful economic progress.

These were the countries that managed to change and get changed after an enlightened assimilation of the trends and requirements of time.

They then achieved prosperity, progress, and welfare for their peoples. These are useful lessons that are worthy of study.

Here in Egypt, we have no choice but to assimilate the changes of the present world and the new world status. Thanks to God, we have the causes and means to reach; Egypt has long history and experience in many small and heavy industries.

It also practiced wide a rage of experience in the foundation and operating several factories in different fields. It thus has the experience, bitter or sweet, and knowledge that set the basis for the true direction towards the future.

Egypt has also enough bases for the necessary services of industry such as human resources, service projects, energy and transport, educational abilities and training and scientific research requirements. These are the indispensable

foundations of industrialization that distinguishes Egypt from other similar countries.

This research presents an analytical study of the way to progress and improving the quality of Egyptian goods and products in the framework of the strategy of the council of industry research

The Strategy of the Council of Industry Research

General objectives

Among the general objectives of the strategy is the improvement of quality and raising it to the international standard (the third objective). It also defines general objectives as follows:

- New goods
- New methods of production
- Exploiting raw material and remains
- Helping the holding company to form CRITICAL MASS for researches and the research units undertaking research and development may develop to be NON-PROFIT ORGANIZATION.

It may said that the objective of improving quality to reach international standards may not be achieved – as shown in this study – unless other objectives are achieved at first.

Thus, it may be said that the main goal of the strategy of Egyptian industry researches is to improve the quality and meet international standards.

The Specific Objectives

Among the specific objectives is to carry out studies that serve industry in the new change. For example, developing the modern methods of administration in addition to other objectives that may be defined specifically as follows:

- Preparing a list of the commodities, methods, raw materials, and the determination of things chosen for achievement during one thousand days.
- Preparing a list of the research and development units required to be founded or supported "in the holding company, for example, along with connecting the foundation program with the programs of liberating the economy.
- Suggesting the essential researches connected with goods and ADVANCED services and the way the state should deal therewith.
- Drawing connection between the different levels of scientific researches.
- Expanding the Take of the advantage of the information and technological banks.

As the issue is essential an issue of transformation and change to achieve good, excellent, and competitive production, in other words, changing the course to the complete quality where the possibility of offering good products in proper and competitive prices becomes available to face the fierce markets where producers rival to please the consumers.

The complete and entire quality that depends on the existence of evident strategies and objectives, certain agendas, enough resources, good and efficient cadres, and sincere and careful efforts for follow-up and continuous

evaluation to back the wheel of implementation permanently ahead in the exact times defined.

In the light of our bad circumstances where dilemmas gather, unless we learn the true and deep lessons of the international changes and undertake self-criticism to modify our courses, it may be too late and the changes on the regional and international arena may storm us.

Thus, the wisdom of the egyptian leadership is evident in clear-cut manner in specifying one thousand days for the entire and comprehensive quality; the quality of performance during all of its levels. Indeed, it is not an easy task, as it needs a violent and powerful shake stirring man's innermost to recover himself, realize the points of weakness, and reform them.

Man should come back to his home and reality in deep insight and accurate analysis to make conclusions and discover the governing rules and laws.

It is necessary to stamp out many of the prevalent traditions and replace them with new ones to achieve the sought transformation. It is an issue of control and accurate direction of man's thought, emotions, and behavior.

The new way of predicting the future-making and evaluating the present day to spot the shortcoming that hinders progress is greatly suspended on the management that can liberate mankind and reform them through science, faith, principles and rational rules leading activities, movements, and activations.

This management shall open the doors wide for intellect, reasoning, and invention granting humanity the feeling of psychological and intellectual security when man's intellectual mistakes are forgiven and passed unpunished to free man and let him think, talk, discuss, analyze, compose, infer, induct, deduce, compare, and draw conclusion.

The transformation to the entire quality is essentially an issue of good management, thus we will consider the fourth of the specific objectives that concerns the undertaking of studies for the service of industry in the new transformation (developing the management, for example) is the objective that should take priority at execution to achieve it immediately and in parallel to the preparation for the implementation of the other objectives.

First: Carrying out studies that serve industry in the new transformation

Developing the management systems

The national and international changes

These changes are of three categories:

- Repetition (frequency rate)
- The field (the scope of effect)
- The possibility (the possibility of occurrence)
- The range of effect (strong/weak)
- The trend of effect (positive /negative)

Therefore, when we pay attention to the study and pursuit of changes, it is not obligatory (and we cannot) be aware of all changes.

However, what is most important is to confine our interest in these changes that have the following distinctions:

- Frequent occurrence
- Far-reaching effect
- Big probability
- The strength of effect (negative / positive)

Examining the most important changes that surround us in the international and national space reveals the following facts:

- Economic changes
- Political changes
- Military changes
- Social changes
- Cultural changes

Technological changes

Applying the previous standards unveils that the technological changes occupy the foremost position in terms of importance, not only for the identification of all of these standards but also because they precede, encourage, and move the rest of changes.

A question may rise: how to deal with these changes, especially the technological changes:

Indeed, dealing with these changes means:

- To recognize (to presage) and realize their importance and predict their effect (positively or negatively) in addition to confessing the possible impacts upon occurrence.

- Preparing for receiving and adapting therewith (to escape their negative effects and invest their positive effects).
- Coexisting with the changes and assimilating them (changing to comply with their requirements and work for dominating and overcoming them)

This analysis gives rise to another question: who in society is able to deal with the changes in the aforementioned mode?

Management as a social phenomenon (sub-system in the society) is able to deal with changes. The management staff shall not assume the responsive management but the proactive management.

Thus, we can reach the following results:

If the management is the means of society to invest capitals and resources to achieve the society's objectives,

If the technology is the means of management to achieve the objectives of society,

If the technology, in essence and definition, is changeable, developing, and exchangeable, then management is necessarily changeable, renewable, and developing.

How can the management be changeable?

- Understanding and assimilating the transformations (changes) in the surrounding environment and realizing the new reality along the future development indications.
- Understanding and assimilating the effects and reflections of these transformations on the concepts, methods, and management functions to

form a new frame of management thought that can deal efficiently with the changing reality and prepare for activation with every future development.

The pivotal idea posed in this research is:

In the striving course towards the information society and successive technological revolutions, we should not confine the discussion and treatment of our issues including management depending only traditional concepts and narrow and ineffective handlings.

The main foundation in our research is that developing and raising the management efficiency to achieve comprehensive managerial progress requires a way of treatment that lives in the time and avail of its possibilities and technologies along with predicting the future's unprecedented opportunities, energies, and possibilities.

The cornerstone of our thought is to surpass backhandedness and narrow-mindedness while treating with management issues to find out free forms and efficient ways grasping the age facts and technologies to achieve a huge production leap, totally unimagined in the presence of the traditional concepts and methods.

The age when we live has an essential characteristic that may be applied to all facts, namely, change and transformation.

It is necessary, if we want to live, to set aside the traditional ideas, systems, and ways of treatments and strive to understand the facts of the stage and the portents of future to be able to find a place in the new world.

It is necessary for those who live the Information Age to use its concepts and reformulate the strategies of developing production to be jumping strategies

that can exceed obstacles instead of the crawling strategy that stand handicapped before problems and restraints.

Therefore, we need a new able management that can lead, invent, renew, and deal with changes.

We need a new able management that can lead and control the transformation to keep continuous, stable and ever-growing rates. The basic duty of this new management is to redefine the objectives and found the strategies, policies, and systems that borrow additional powers from information technology that were not available in the past.

It shall also endeavor to discover new possibilities for the production and productivity development using human resources in the best manner along with taking the advantage of scientific research and developed technology to remove the fetters ensued from the limited material resources.

Reflections of the New reality on Management

- Changing from treatment in safe, stable, and closed market (closed system) to treatment with moving, rough, and open system where no stability is secured.
- Changing from preservation and traditionalism to flexibility and freedom in systems and orders (Market is to judge).
- No-confinement to the past but striving approach towards the future.
- Changing the management's vision of man (a worker is a partner, not wage-earner)

Example of the New Management

New management philosophy

- Client first
- Entire and comprehensive quality
- Development and renewal
- Market is the judge

New Management Mechanisms

- Distinction is the way to success
- Inventiveness id the way to Distinction
- Research and development are the ways to inventiveness

New Inputs

- New goods
- New markets
- New services
- New technologies
- Higher productivity
- Higher profits

The basic challenge that faced management in the ninetieths:

The essential challenge was the way to bring about the necessary change to coexist in a fierce competitive and open atmosphere.

While facing this challenge, the management shall bear in mind that information technology affects the five elements of organization as follows:

Technology:

Technology will continue its rapid development in a yearly rate vary from 20-30%, thus time and distance factors continue to lose their effect in favor of more connection and good organization.

Humans and the roles suggested: Thanks to information technology, new roles will be suggested for humans where they will use inventive mechanisms and instruments in more interconnection and learning of information.

Thus, training will occupy special importance in teaching individuals the necessary skills and abilities for dealing with information technology.

The organizational framework: new modes of organizational frameworks are produced that are greatly different from the traditional modes and are characterized by dynamics, openness, and dependence on nets that draw connections among the working teams.

The managerial activities: the flow of information speeds up the works of planning, control, coordination, and decision-taking with more integrated manner and then better outcome.

The strategy: the information technology encourages the development of managerial strategies that depend on interconnection and association along with swift response to markets and competition.

Management in the information age:

- The organizational framework depending on information will submit to change to be fewer in level number and flat where the fewest number of managerial jobs will be available.

- Knowledge will form the base of organization depending on experts who will organize the work, direct activities, and rectify performance immediately through the feedback information come from colleagues and clients.
- Most of the jobs will be dependent on information whereas the manual and traditional graphic jobs will grow fewer.
- Analysis and diagnosis (dealing with information) will be the most important activity in the process of organization.
- Decision-taking will be more dependent on information systems and computer technology, thus speedier decisions through more alternatives follow.
- The TEAM will be the axis of informational organization, not the INDIVIDUAL.
- THUS, the integrated formation of teams to be nets will constitute the main and essential characteristic of informational organization instead of having separated and independent departments.
- Changing to decentralization instead of centralization.
- Changing to smaller sizes.
- Higher degree of partnership in management

The difficult challenge that faces the Egyptian Management

This challenge is represented in the following:

- The international and national changes that inevitably lead to opening the Egyptian market for the foreign imports along with the decreasing opportunities of Egyptian products as a result of the foreign invasion of markets (superior technology, free trade, and exports liberation).

At the same time:

- The national climate has not liberated yet. Likewise, it has not provided the management with the necessary movement to confront these new circumstances. Indeed, the sources and aspects of support and backing that were available in the past are decreasing gradually and even waning.

Therefore, the hard difficulty facing the Egyptian management is the way of confronting these new circumstances in the continuous presence of the traditional obstacles (incomplete liberation) in addition to the urgent need of liberating the outside atmosphere of management without real liberation of the management itself.

Recommendations

Preparing a research within the frame of this study that addresses the following topics:

- Working out a new methodology for the Egyptian management that expected to be effective in facing the difficult challenges that confront this management.
- Forming more efficient system for the choice of managers and leaders and the process of evaluation.
- Forming more efficient system for training the leading cadres to use the modern management systems.
- Suggestions for proper application of the results of this study.

The First Three Specific objectives of the Strategy

1.

- Preparing a list of the commodities, methods, raw materials, and the determination of things chosen for achievement during one thousand days.
- Preparing a list of the research and development units required to be founded or supported "in the holding company, for example, along with connecting the foundation program with the programs of liberating the economy.
- Suggesting the essential researches connected with goods and ADVANCED services and the way the state should deal therewith.

The ultimate goal of this stage is to achieve two main objectives:

- Protecting the national products by means of achieving better quality to compete the imported products both in quality and price.
- Doubling our exporting abilities by means of achieving better distinguished and competitive production.

Upon studying these two objectives, take care of the following points:

A. Examining the transformational industries as three main groups according to the ways of ultimate use of the products as follows:

First Group: The consumptive goods industry whose products are used for direct and ultimate consumption. Consumption may be once like beverages and foods, thus these are called soft consumptive goods industries to be distinguished from the durable consumptive goods industry that are not used for one but through a long period of time, for example cars and refrigerators.

Second Group:

- Intermediate goods whose products may be used for the final consumption objectives or for the production requirements in other industries such as electricity that may be used in domestic lighting or factories.

Third Group: Production goods industries:

These industries produce the goods that help produce other goods, thus they increase and contribute to the productivity power of the society such as machinery industry.

B. Defining the form of industrialization, as the forms of industrialization are several (the Japanese form is probably the most proper form for Egypt), thus here a summary treatment of this issue:

It is noticeable that Japan started the serious programs of manufacturing after the World War II following a unique economic example for the industrial development.

This example essentially depended on the founding and preparing the infrastructure of the society such as roads, facilities, instruments, and communication media along with preparing the proper social atmosphere. In the meanwhile, it regulated the legislative and the organizational frames including the management systems to push forward the wheel of industrial development. Japan depended mainly on manpower that were prepared and trained until they reached a high level of efficiency and proficiency.

The Japanese form of industrialization was built on the foundation of using and development of the scientific research to produce untraditional industrial

goods depending on deep studies of the requirements of the national and international markets.

Thus, Japan presented distinguished goods reflecting the production of the resolved scientist and the skillful worker. Japan was true when it adopted a very serious principle for the industrial development; meeting the market requirements is necessarily dependent upon the shoulder of scientific researchers and is the responsibility of scientific researches that offer researches, inventions, and development upon industrializing the goods, for the manufacturing of traditional and transferred goods borrowed from other countries may lead to many harms, more than the benefits expected.

In the light of this concept, Japan used the results of the scientific researches for producing developed production whether productive or consumptive. In the meanwhile, it also encouraged these goods so long as they are distinguished with a relative traits in terms of preparation, design, performance, and operation; not merely a repletion of other international products.

Defining the goods list in the engineering field, the following consumptive goods and products come first:

- stoves
- washing machines
- heaters
- warmer
- gridirons
- fans
- irons
- ovens and furnace
- batteries

- lamps
- extinguishers
- air conditioners
- refrigerators
- converters
- motors
- steel
- breakers' staple
- filterers
- cars
- welding alloys
- kitchenware
- Gas cylinder
- Stove cylinders
- Pressure organizers

It is possible to seek the help of the sides concerned wit exports to know the goods and products that occupy the most important position in the list of engineering industries, especially:

- The General Committee for Exports and Imports Control
- Exports Development Center
- The Commercial representatives in the ministry of Economy and foreign trade

The main researches concerning developed goods and services:

Upon suggesting main researches concerning developed goods and services, it is necessary to focus on the following facts:

1. Quality is to built in the product through the various stages of production.

2. Regardless of the size of work in the company/factory, the work shall be completed through a process or series of processes. Thus, the more we improve the process planning and design, the better quality we have. Therefore, the requirements, inputs, and output of every process shall be clearly defined along with the control techniques and the operation governing rule by means of performance specifications, instructions, and the ways of operating the required resources necessary for implementation such as manpower, machinery, training, knowledge, and experience.

3. The feeding industries are decisive elements in determining the quality of goods and products wherein they are included.

4. Quality system varies from an organization to another even if they are both manufacturing the same products and carry out the same activities and works. Indeed, the quality system in any organization is greatly affected by its goals, products, experiences, and special practices. Organizations are like patients; every patient has its very special treatment even if the disease is the same. Hence, it is necessary to concentrate on the essential researches of developing goods and services to give rise to a general methodology and inventive scientific thought. At the same time, it is inevitable to care for research and development departments inside the organizations to achieve the firm

cooperation between the main research groups and the research and development departments in business organizations.

5. Most of product lines in Egypt – if not all – have been imported along with their operation techniques only without penetrating to the detailed technical characteristics of goods and products or the way of building the product quality through certain characteristics in the different process of operation. It is necessary in the upcoming stage to recognize all of the characteristics and criteria that govern the product quality and the relative gravity of every characteristic in the entire quality of goods, and when and how to achieve these characteristics in the product lines. However, this can by no means come true except by intense studies and researches.

6. The technological revolution enabled man to make the best use of the available substances' resources on earth after recognizing new characteristics and traits of the substances. This also took place after having better techniques and methods to deal with these materials. Thus, man was able to eliminate the negative effects ensued from the limitedness of substances and the increase of their cost following the development of the use of the available substances and producing several substances and new cheap materials. Here in Egypt, we use several substances and materials in the feeding industries of goods and products without realizing the accurate characteristics of these materials and substances, thus it is impossible to improve their quality and this will not be achieved without the studies and researches.

7. Improving the business organizations requires preparation and development to avail of the information technology in the process of developing these organizations, thus work techniques and ways are

developed along with coordination, merge achievement, integration, and increasing the competitive power and developing the system elements.

8. The standard definitions specify the minimum quality of good. However, they do not give much concern to the way of achieving these standards. Indeed, this is the role of scientific research.

In the presence of these facts, it is necessary to have the following:

Forming a research group for each good dependent on the scientific research comprising the remarkable industrial experts in the field concerned to undertake the following duties:

- Defining all the technical characteristics and ruling standards for the good quality and the relative gravity of each characteristic along with defining the standard of the entire quality of the good.
- Defining all the technical characteristics and ruling standards for the feeding goods of manufacturing certain good.
- Designing the main processes that rule the good quality along with the exact definition of the standards of inputs, outputs, and performance control through the performance specifications and the ways of operating the required resources for implementation (manpower, machinery, training, knowledge, and experience).
- Forming a comprehensive vision for the research and development department expected to be in the place of producing the good in terms of: (Formation – organization – administration – cadres – resources – training – connections with the research group of the good, etc.)
- Forming a comprehensive vision for making the best use of the information technology, thus work techniques and ways are developed

along with coordination, merge achievement, integration, and increasing the competitive power and developing the system elements.

- Reviewing the relevant legislation and suggestions of development to lay down a vision of the system of granting agreement for the developed sites of the same good and defining the standards required along with evaluating all the production sites of the goods with certain classification system of evaluation: first class, second class, etc. The vision shall also give certain privileges for the developed sites under certain regulations and laws.
- Evaluating the national industries and developing good production (capitalism).
- Identifying the required resources for the achievement such as manpower, equipment, and finance "sources and means", as it is now difficult to define exactly the required resources for achievement.
- As this program is considered a national program for improving the quality of the national production, thus it is suggested to be discussed with the various relevant sides especially the union of industries, the public business sector, and businessmen society to specify the contribution and receive the support of the concerned sides for this national project. It may be suggested that the producers of every good shall contribute in the necessary finance for carrying out the research and studies necessary for the good production. Finally, it is not forgettable that resorting to the international organizations for help is seriously important.

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