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Innovation and Creativity Management

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Introduction

Introduction

The creative process is considered an essential aspect at the level of all institutions, regardless of their size (micro, small, medium... etc.) or nature (public, private... etc.), especially in light of the changes occurring in the institutional environment—whether within the sector of their activity or the general environment. Therefore, managers of institutions must find effective mechanisms to manage innovations and creativity within their organizations in order to achieve their objectives. This requires them to become familiar with the various models related to the creative process and its specificities.

As a result, institutional managers will find themselves compelled to seek out a system of creativity primarily based on the research and development (R&D) function, which is one of the most critical components of this system. Additionally, they must identify the appropriate form of creative activity—be it organizational, technological, or marketing innovation—that aligns with the institution’s capabilities on one hand and responds to the diverse needs of current and future customers on the other.

Accordingly, this textbook titled “Innovation and Creativity Management” has been prepared. It falls within the broader framework of the course “Innovation Management and Financing” and is designed for Master’s students specializing in the management of small and medium-sized enterprises (SMEs). The aim is to enhance their understanding and knowledge of various concepts and elements that constitute and define innovation and creativity management and its applications. This will allow students studying business administration, SME management, and entrepreneurship to develop a comprehensive view of innovation and creativity, their concepts, and applications.

This textbook will also provide insight into the main determinants and forms associated with creativity. It is specifically tailored for

Introduction

Master's students in Management Sciences, SME Management specialization, considering that the author has taught this course to several cohorts within this specialization.

Moreover, this textbook clarifies all aspects related to the creative process, which every student in the SME Management curriculum should study and analyze. These aspects include the R&D function, organizational creativity, technological creativity, marketing creativity, etc.

Consequently, the textbook includes eleven main chapters addressing the key topics in innovation and creativity management, as outlined in the course lecture plan.

This textbook, primarily aimed at students, seeks to achieve the following objectives:

- ✓ Introduce students to the concept and importance of innovation and creativity within the organization;
- ✓ Enable students to distinguish between various concepts related to innovation and creativity;
- ✓ Help students learn how to analyze different managerial practices related to the creative process;
- ✓ Familiarize students with different models and forms of creativity and discuss them;
- ✓ Equip students with a set of skills that will help them analyze and interpret creative activities within organizations.

Chapter One: Creativity in the Organization

First: Its Concept and Levels

Secondly: Classifications of Innovation

1. According to Schumpeter

- a. Type
- b. Degree of Innovation

2. According to the nature of innovation

3. According to Consumer Habits and Technology

THIRD: FORMS OF INNOVATION

- 1. Organizational Innovation: *There are several definitions that can be presented as follows:*
- 2. Technological Creativity:
- 3. Marketing Creativity

Discussion Questions

One of the main challenges encountered when analyzing creativity is the lack of consensus around the definition of this term. In this context, creativity—as used here—is a translation of the word *Innovation*. Some define it as something new (*novelty*), while others present it as anything different introduced to an organization. It may also refer to the production, acceptance, and application of new ideas, processes, products, and services within a specific scope. Others consider creativity as the early stage of a new idea. Another group views innovation and improvement...

Creativity is considered an important element invested in by successful institutions that seek to compete in markets with high quantitative and qualitative levels across various fields. Therefore, it is important for both individuals and organizations to be creative in order to face the different changes in the environment. The absence of creativity may pose a threat to the survival of organizations, which is why they must expand its application and establish it as a tradition that forms part of their organizational culture.

First: Its Concept and Levels

Several definitions have been proposed for creativity, varying according to the orientations of researchers and the level of analysis. Analyzing creativity at the macroeconomic level differs from analyzing it at the organizational level or other levels.

1. Its Concept

Schumpeter (J.) was among the first to define creativity. He saw it as encompassing five types: the search for a new product, the conquest of a new market, the discovery of a new source of raw materials, and a new organization of production. This means that the entrepreneur who takes the risk of producing something new must rely on a stock of new

knowledge and creativity and must verify the market's acceptance of this new product¹.

Thus, according to this definition, creativity should involve novelty—that is, it must appear for the first time, whether in the product, production method, market, source of raw materials, or the organization of production. This definition, therefore, describes creativity in its absolute sense.

Dess and Others also clarified that creativity refers to the organization's efforts in discovering new opportunities and solutions that no one has previously reached. It involves innovation and experimentation, which lead to new products, new services, and improved technological processes².

We notice that this definition clearly shows that creativity includes innovation and implementation or experimentation in the search for new opportunities or solutions that result in new products, services, or improved technology. In other words, creativity does not have to be entirely new, as Schumpeter clarified, but it can also be achieved through improvement.

According to the OSLO Manual, innovation is defined as: "The introduction of a new or improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization, or external relations³."

¹ Christian Marbach, "SMEs and Technological Innovation for a More Natural Relationship," *Regard sur les PME*, No. 10, Paris, 2nd Quarter, 2006, p. 24.

² Intithar Ahmad Hadi, "The Impact of Core Competency on the Process of Product and Process Innovation: An Applied Study at the General Company for Tire Industry in Babylon," *Journal of Administration and Economics*, Al-Mustansiriyah University, Vol. 34, No. 88, 2011, p. 74.

³ Monieddin Rahmouni and Marat Yil Dizogler, "Motivation and Determinants of Technological Innovation: A Survey of Modern Theories," *Cahiers du GRETHA*, No. 2011-10, Paul Cézanne University, Aix-Marseille III, France, p. 2.

As for Habib, he believes that: “Innovation fundamentally relates to the mechanisms of learning, knowledge production, and acquisition; without learning and new knowledge, there is no practical vision of innovation¹.”

This definition makes it clear that Habib focuses on the elements of knowledge and learning as essential to achieving innovation within an organization.

Based on the previous definitions, the following definition of innovation can be proposed:

It is the diverse efforts of the organization to exploit knowledge and experience to create new, improved, and useful opportunities or solutions in the form of products (goods or services) or technology.

Important note: Many literatures consider the terms innovation and creativity to be synonymous; however, some specialized authors distinguish between the two terms. Innovation concerns discovering a new distinct idea, while creativity relates to clarifying this idea and implementing it in the form of a process or product (good or service) that the organization offers to its customers. This distinction will be further explained in this booklet.

Levels of Innovation According to the content in the field of management sciences, there are three levels of innovation:

¹ Thomas Pendide, "Promoting Innovation in a Project-Based Organization Under Resource Constraints: Definition of a Process-Based Approach," Doctoral thesis in Industrial Systems, University of Toulouse, France, 2011, p. 83.

a. At the individual level

This refers to the innovation achieved by individuals who possess creative abilities and traits. Researcher Roby defined the characteristics of a creative person in the following principles¹:

- ✓ Commitment to clear goals and working to develop ideas;
- ✓ Encouraging exchange of ideas and constructive criticism;
- ✓ Freedom from traditional disputes and a focus on originality;
- ✓ Transparency in dealing with problems;
- ✓ Clarity of vision.

Generally, creativity at the individual level is known as the tendency to use one's intellectual abilities and skills within a set of various indicators aimed at producing a new output that benefits society.

b. At the group level: This is the innovation achieved or reached by a group, where innovation at this level is more effective than individual innovations due to the interaction, cooperation, and mutual assistance among group members. Group innovation is characterized by:

- ✓ Shared vision and mutual participation;
- ✓ Commitment to excellence in performance;
- ✓ Encouragement and incentive of individual innovations.

c. At the organizational level²:

Considering that the organization consists of groups and individuals working together, innovation at this level is largely similar to innovation

¹ Moayyad Abdul-Hussein Al-Fadhl, *Innovation in Managerial Decision-Making*, 1st ed., Ithraa for Publishing and Distribution, Jordan, 2009, pp. 15–21.

² Moayyad Abdul-Hussein Al-Fadhl, *Previously Cited Work*, p. 22.

at the group level. It is considered fundamental to the organization's growth. Some believe that productive innovation at the organizational level depends mainly on two factors:

- The knowledge base within the organization;
- The accumulation of knowledge over time.

Secondly: Classifications of Innovation

1. According to Schumpeter:

Schumpeter Alois Joseph (1934) classified innovation into two main criteria:

a. Type:

He identified five types of innovation:

- ✓ Introduction of a new product;
- ✓ Introduction of a new production process;
- ✓ Opening of new markets (entry);
- ✓ Access to new sources of supply of raw materials or semi-finished products;
- ✓ New organization of the firm.

b. Degree of Innovation:

There are two types:

- ✓ Incremental Innovation: which involves continuous and partial modifications in the organizational system of the firm;
- ✓ Radical Innovation: which includes deep (radical) changes in technology or usage methods.

2. According to the nature of innovation:

There are those who classify innovation into three basic types¹:

Product Innovation:

It means introducing a new product to replace an existing product that fulfills existing or latent needs in the market. Product innovation includes two types:

- ✓ Introducing a new product, i.e., a product that is marketed and sold for the first time in the market;
- ✓ Improving an existing product, i.e., modifying some features of the existing product to increase its durability and improve its performance.

Process Innovation:

It means the introduction of new elements or the presentation of new and better methods for performing tasks or producing things. It includes:

- ✓ Designing a new production process: by which a new type and quantity of production can be achieved;
- ✓ Improving an existing production process: by making changes that improve the level or quality of production.

The following table summarizes the main types of innovation according to classification (4):

¹ Benjamin Tyl, "The Contribution of Creativity in Eco-Innovation Processes: Proposal of the Eco-ASIT Tool to Promote Eco-Ideation of Sustainable Systems," Doctoral Thesis, Specialization: Mechanics and Engineering, University of Bordeaux 1, 2011, pp. 48–49.

Table (1): Classification of Innovation According to Project

Process	Product or Service
Incremental Innovation	Radical Innovation
Improved process	New process
Innovation project	

Source: Sandrine Fernez-Walch & François Romon, *Management de L'innovation de la stratégie aux projets*, Vuibert, France, 2006, p. 61.

3. According to Consumer Habits and Technology:

Abell defined two dimensions related to the market as key indicators measuring expected behavior from the consumer's side. The definition of these two dimensions and the degree of technological innovation and the degree of innovative behavior, except when product innovation is considered new or not, depends on consumer habits.

Figure (1): Types of Innovations According to Technology and Consumer Habits

Consumer Habits New Old

Technology	إبداعات جذرية	إبداعات سلوكية
New		
Old	إبداعات تكنولوجية	إبداعات جزئية

Source: Emmanuelle le Nagard-Assayag & Delphine Monceau, *Le Marketing de l'innovation de la création au lancement de nouveaux produits*, 2nd edition, Dunod, Paris, 2011, p. 30.

And the diagram can be summarized in the following points¹:

A - Radical Innovations:

Where a *new (modern) technology* is introduced that contributes to scientific breakthroughs and changes in applications, such as when proposing airplanes for the first time.

This category is associated with risk and involves types of risks faced by the institution:

- ✓ **Technological risk (uncertainty):** Because it requires technology that has not been previously used;
- ✓ **Marketing risk:** Especially if customers refuse the new consumption habits and do not adapt to the innovation.

B - Technological Innovations:

These are mainly based on *modern technology*, but the consumption habits do **not** change radically.

This category corresponds to *technological risk (uncertainty)* related to the use (trial) of new technology and its introduction to the market, while the commercial process relates to benefiting from the technology used without considering the customers. The process of adapting innovation is less than the first category because it does not involve major changes in consumption habits (usage).

C - Behavioral Innovations:

These are new behaviors without relying on new technology. These innovations are mainly accompanied by **marketing risk (uncertainty)**, whether because the new target market to which the new

1

product is directed is unfamiliar or because consumers agree to change their behavior¹.

D - Incremental Innovations:

They record the continuity of existing products, as most new products aim to be marketed. These innovations do not conceal risks and do not affect customers' behavior, nor do they require new technology usage.

THIRD: FORMS OF INNOVATION:

There are several groups that classify it into the following:

1. Organizational Innovation:

There are several definitions that can be presented as follows:²

Hage defined it as:

"The practice or process through which an idea, behavior, product, service, technology, or any new administrative practice emerges, where it results in a kind of change in the environment, processes, or organizational structures."

We notice that this definition focuses on any process that results in new administrative practices that reflect on the organization's structures.

Daft defined it as

The process of exploiting a new idea or behavior on the reality, business sector, market, or the organization's general environment.

Daft seems to have focused on the methods of the new idea or behavior as a basis for organizational innovation.

¹ Idem.

² Akef Lutfi Al-Hadhawneh, *Innovation and Creativity Management in Business Organizations*, Al-Hamed Publishing, Amman, Jordan, 2011, pp. 33–34.

Sylyman defined it as “the process resulting from a set of factors that provide the appropriate organizational environment, which includes the existence of a suitable work environment for generating new ideas.”

We find that this definition focuses on the necessity of providing a suitable climate for generating new ideas. Based on the above, organizational creativity can be defined as: "The various processes that contribute to generating a new idea or behavior, primarily arising from the organizational climate, which in turn affects the organization's outputs."

2. Technological Creativity:

It is defined as “those processes related to positive innovations concerning products of various kinds, as well as production methods¹.”

It is worth noting that the relationship between technological creativity in the product and in the production method varies depending on the nature of the product. In the case of industrial products, any change in the product usually requires a change in the production method. However, for consumer products, the relationship is not necessarily direct—unless the product itself undergoes a fundamental innovation. In such cases, replacing a material or component does not necessarily require changing equipment or technical methods².

¹ M. Saïd Oukil, *Economy and Management of Technological Innovation*, University Publications Office, Algeria, 1994, p. 33.

² M. Saïd Oukil, *Previously Cited Reference*, pp. 34–35.

3. Marketing Creativity:

According to the Organization for Economic Co-operation and Development (OECD) in Europe (2005), it is¹: “The application of new methods in marketing that essentially involve significant changes in product design, packaging, promotion, and pricing.”

We notice that this definition emphasizes the application of new marketing methods affecting three components of the marketing mix: product, price, and promotion, while omitting distribution.

It is also defined as²: "Introducing new and non-traditional ideas into marketing practices."

Thus, innovative marketing is the actual implementation of new ideas in marketing practices covering product, price, promotion, and distribution. Therefore, the second definition is more comprehensive than the first.

Based on this, the following definition of marketing creativity can be proposed: "New ideas that affect various components of the marketing mix—product, price, promotion, distribution—and marketing research."

Fourth: Creativity Indicators There are several key indicators (criteria) for evaluating the creativity process at the organizational level, including the following:

- ✓ The number of new development ideas that contribute to offering distinctive products to customers;

¹ Tamer Al-Bakri, Contemporary Issues in Marketing, Dar Al-Hamed for Publishing, Amman, Jordan, 2014, p. 206.

² Jaafar Khalil Mar'i: "The Role of Innovative Marketing in Achieving Competitive Advantage – An Analytical Study of the Opinions of a Sample of Employees at Al-Hukamaa Company for Pharmaceutical and Medical Supplies in Mosul," Anbar University Journal of Economic and Administrative Sciences, Vol. 04, No. 09, 2012, p. 224.

- ✓ The number of new products that significantly differ in their characteristics or uses from previous products or those previously used by the organization, aiming to diversify the product range, meet customer needs, and enhance competitive advantages among organizations;
- ✓ Cases of improving current products in a better way by making changes to the product with the aim of enhancing its quality and rationalizing its costs in order to increase sales;
- ✓ The use of new operations and work methods, including the number of times new procedures are introduced (systems, mechanisms, etc.) that differ from the organization's previous methods, aiming to offer high-quality products;
- ✓ Cases of change and development in current business lines, both in number and form, aiming to improve quality and offer a broader range of products to customers;
- ✓ The development of the organization's market share among competitors, which reflects its competitive strength in offering high-quality products within required timelines and contributes to achieving significant growth for the organization.

Discussion Questions

Try to answer the following questions briefly:

1. What is the difference between the terms *innovation* and *creativity*?
2. Analyze and determine the relationship between the different levels of creativity.
3. Mention the various forms of creativity within the organization.
4. What is the relationship between the different forms of creativity based on their *nature* and *degree*?

5. What are the requirements for creativity in organizations?
6. List the indicators of creativity within the organization.
7. What is the relationship between creativity and the organizational life cycle?
8. Provide real-life examples of creativity in practice.

Chapter Two: Modern Concepts in Creativity

I. Strategic Creativity

1. Its Concept:
2. Dimensions of Strategic Creativity:
 - a.Cultural Readiness:
 - b.Operational Readiness:
 - c.Understanding Process Structures:
 - d.Organized Implementation

II Green Innovation:

- a)Its Concept:
- b)Key Areas:
- c)Innovative Organizations:

Characteristics:

Discussion Questions

Like other administrative concepts, the term "creativity" has been approached by several modern trends, including the following:

I. Strategic Creativity

1. Its Concept:

(Snuikar) defines strategic creativity as the manifestation of multidimensional work that brings together content and surrounding processes (environment), facilitating the application of creation and innovation within the framework of strategic management processes. It also contributes to achieving strategic distinction and competitive advantage by challenging conventional logic, redefining the business model of the institution, redrawing market boundaries, and generating markets and continuous improvements in value for both customers and the institution.

In essence, it originates primarily from strategic management processes and contributes to achieving competitive advantage by redrawing market boundaries and creating new markets, thus generating value for customers and the institution¹.

2. Dimensions of Strategic Creativity:

Several dimensions include the following:

- ✓ **Creativity Management Process:** This links traditional and non-traditional element of creativity, including the ordinary consumer, market trends, and competitive analyses. It quickly explores what lies behind these factors. Lifer emphasized that among the mechanisms to enhance creativity is the commitment of

¹ Mu'n Waad Allah Al-Mu'adhidi and Ayman Jasim Mohammed, "The Extent of Strategic Creativity Dimensions Available in Iraqi Industrial Organizations: An Exploratory Study of Managers' Opinions in the General Company for the Manufacture of Medicines and Medical Supplies in Nineveh," Rafidain Development Journal, College of Administration and Economics, University of Mosul, No. 102, Vol. 33, 2011, p. 104.

administrative leadership and the encouragement of all its practices.

- ✓ **Industry Foresight:** A top-down approach that investigates influential forces, behavioral trends, and thinking factors within one or more industries. According to Hamal and Parhalad, future vision enhances an institution's future effectiveness, defines the skills it can develop, and clearly identifies opportunities for exploitation.
- ✓ **Strategic Alignment:** Involves the participation of all stakeholders, internal and external, in developing a shared vision. This contributes to aligning employee values with the work environment and the institution's management, leading to increased job satisfaction and enhancing creativity.
- ✓ **Technology and Core Capabilities:** Technology represents the tools, activities, and knowledge used in transforming inputs into outputs. A deep understanding of this dimension gives the institution insight into customer needs, future trends, behaviors, and how to leverage its core assets.
- ✓ **Customer Perceptions:** As current customers are true partners in the creativity process, the institution's sustainability depends on strengthening interaction with them by identifying both current and potential customers and their needs, in order to improve work methods and satisfy them at lower costs and with higher efficiency.
- ✓ **Organizational Readiness:** This includes three main foundations:

a. Cultural Readiness:

The higher the cultural preparedness, the more it helps achieve creativity within the institution.

b. Operational Readiness:

Refers to the various general processes undertaken by the institution aimed at forming and shaping a vision capable of directing creativity. This includes:

c. Understanding Process Structures:

Activities and processes must be characterized by flexibility in order to...

d. Organized Implementation

Within the framework of strategic innovation, implementation refers to a broad set of activities that require support and participation across different levels and departments of the organization.

2. Green Innovation:**a) Its Concept:**

"Green innovation refers to the development of new green technologies or green products that are sustainable or environmentally efficient compared to previous ones, or improvements to products to make them less environmentally harmful."¹

b) Key Areas:

The main areas of green innovation can be identified as follows²:

¹ Najm Aboud, *The Green Dimension of Business: Corporate Environmental Responsibility*, 1st Edition, Al-Warraq Publishing and Distribution, Amman, Jordan, 2008, pp. 457–458.

² Same Reference, pp. 459–460

- **Green Product:** A product that contributes to the introduction of new products or improvement of existing ones to be less harmful or more environmentally friendly.
- **Green Process:** Innovation that contributes to the development of new technologies or processes that are less harmful and more compatible with the environment, such as the use of clean technologies or those that require fewer raw materials and less energy.
- **Organizational Innovation:** This refers to the introduction of new concepts such as TQM (Total Quality Management), continuous improvement, and practices aimed at enhancing the internal environment and, consequently, the environmental and overall performance of the organization.

c) Innovative Organizations:

Jay Galbraith (Joy Golbraith) confirmed in one of his studies that in order for innovation to be sustained in large organizations, it must be embedded in the core operations of the organization.

4. Characteristics:

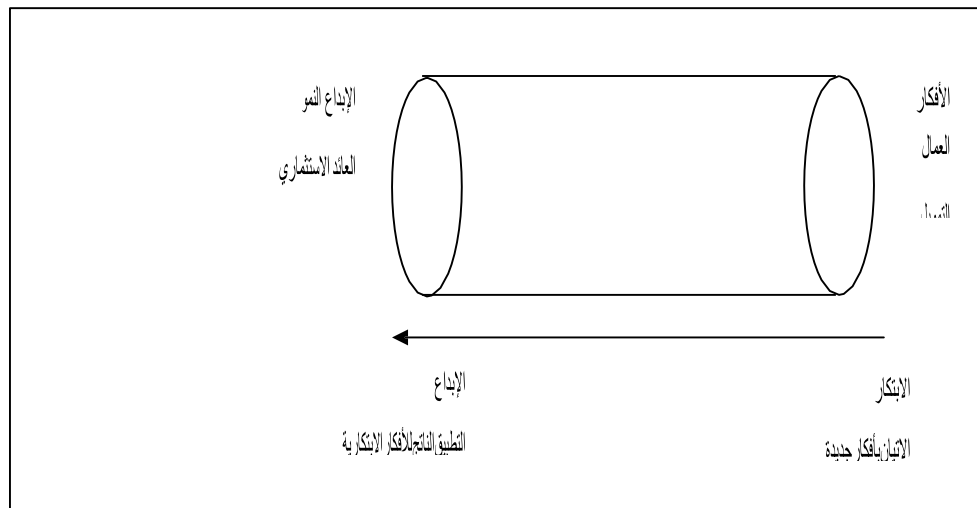
The most important characteristics can be summarized as follows¹:

- **Flexibility of organizational structures**, which enhances the ability to innovate;
- **Emphasis on horizontal communication processes and support from top management for the innovation process;**
- **Focus on cross-functional work teams;**

¹ Sayed Mohamed Gad El-Rab, Innovation Management and Competitive Excellence, Engineering House Press, Egypt, 2013, pp. 218–256.

- **Research and development** are independent functions and are integrated through work teams to achieve innovation. Peter Drucker observed that “successful innovations are now achieved through cross-functional teams, involving employees from marketing, manufacturing (production), and finance in research activities from the very beginning.”

Figure (02): Inputs and Outputs of Innovative Organizations



Source: Aakif Lutfi Khadawon, *previous reference*, p. 36

Cosk pointed out that the relationship between invention and innovation is a complementary relationship, as shown in Figure (01-02). Innovative organizations receive inputs that include ideas, workforce, and funding, which lead to the generation of unconventional ideas and outputs that include innovation, growth, and return on investment. This results in innovation through continuous improvements in production and achieving financial profits.

There are also other characteristics that distinguish innovative organizations, among which the most important are¹:

¹ Rifaat Abdel Halim Al-Faouri, *Organizational Innovation Management*, Arab Organization for Administrative Development, Cairo, Egypt, 2005, p. 174

- ✓ Strong focus on consumer desires;
- ✓ Enhancing productivity through employee participation in generating alternatives and work suggestions;
- ✓ Working to develop work ethics and principles, with commitment from all employees;
- ✓ Focusing on the business areas in which the organization excels, while avoiding distractions in unrelated domains;
- ✓ Simplicity of the organizational structure.

Discussion Questions

Answer the following questions briefly:

1. What are the requirements for strategic innovation in SMEs?
2. Define the relationship between innovation and the general strategy of the organization.
3. What are the challenges in implementing strategic innovation in organizations?
4. List the characteristics of innovative organizations.
5. What are the requirements for transforming into an innovative organization?
6. Define the relationship between innovation and environmental management.
7. What are the requirements for green innovation?
8. Identify the areas of application for green innovation.
9. Provide real-world examples of green innovation in practice.

Chapter Three: Constraints of Innovation in the Organization

First: External Constraints

- 1.Economic and Institutional Environment:
- 2.Openness to the Outside:
- 3.Demand:

Second: Internal Constraints

- 1.Institutional Strategy:
- 2.Leadership Style:
- 3.Institutional Culture:
- 4.Knowledge Management
- 5.Research and Development Activities:

Third: Other Determinants

- 1.Group of Personal Determinants
2. Constraints at the Organizational Level

General Environmental Determinants in Society

Discussion Questions 38

Chapter Three: Constraints of Innovation in the Organization

The purpose of this section is to clarify the factors or constraints of innovation at the organizational level. Many studies have focused on this element. Among these studies are the following¹:

First: External Constraints

Most studies have identified three main factors at this level:

1. Economic and Institutional Environment:

Griffith believes that the state can be a constraint on innovation through various interventions. The state's interventions can impact the drivers of innovation, especially through decisions related to research and development activities within organizations. However, the primary goal is linked to:

- ✓ The stability of the overall economy and interventions through interest rates related to the conditions of innovation activities,
- ✓ Political factors related to competition adjustments among different economic sectors².

2. Openness to the Outside:

Since market openness leads to intense competition, this creates pressure on organizations to innovate out of necessity. Also, directing organizations to comply with international standards (such as environmental management systems,

¹ Mohieddine Rahmouni, "Motivation and Determinants of Technological Innovation: An Overview of Modern Theories," GRETHA Papers, No. 10-2011, Montesquieu University Bordeaux IV, France, p. 6.

² Claire Lelarge, Determinants of Innovation Behavior in Companies: Internal and External Factors, Doctoral Thesis in Economic Sciences, University of Paris X-Nanterre, France, 2009, p. 13.

occupational safety and health, etc.) collectively forms another pressure that drives organizations toward innovation.

3. Demand:

Generally, innovation is linked to the market in which the organization operates. This market must have the technical capability to absorb innovation through its demand. Consequently, matching supply with demand is important for the organization's survival in innovation. The relationship between demand and innovation can be summarized as follows:

- ✓ There is a relationship between the direction of current profits from innovative activities for organizations and the development of demand in the market.
- ✓ Organizations that are in communication (interaction) with their customers can better align with the required needs, thus creating an important channel to guide innovation according to demand.

Griffith also believes the state can be a constraint on innovation through various interventions. The state's interventions can impact the drivers of innovation, especially through decisions related to research and development activities within organizations. However, the primary goal is linked to:

Stability of the overall economy and intervention through interest rates linked to conditions controlling innovation activities related to skilled training rates and according to the amendment of competition among different economic sectors¹.

¹ Idem.

Second: Internal Constraints

Studies differ regarding the internal factors that may limit innovation at the institutional level. These include organizational factors, technological factors, etc. However, generally, the most important constraints can be summarized as follows:¹

1. Institutional Strategy:

Innovation can be considered one of the dimensions of the strategic performance of the institution. This has been particularly mentioned in the concept of strategic innovation. Accordingly, it is a source of competitive advantage in the market. The institution's strategy can be directed towards focusing on active performance, namely the technology and products (goods or services) in question.

2. Leadership Style:

This can be an important limiting factor for innovation through the degree of its effectiveness, support, or hindrance. Leadership within the institution can provide appropriate innovation and risk-taking environments to cover all activities and products (technological innovation). On the other hand, conservative leaders may see risk-taking as threatening the system of the institution. In contrast, democratic leadership, characterized by flexibility, delegation, tendency towards teamwork and independent units, is more encouraging for innovation and creativity.

3. Institutional Culture:

Generally, institutions that offer technological innovations are characterized by a creative culture that includes important changes in

¹ Najm Aboud Najm, *Management of Innovation: Concepts and Modern Trade*, First Edition, Wael Publishing House, Jordan, 2003, pp. 135–138.

concepts and ideas. Such institutions are marked by a culture that tends to preserve current principles; this culture is incompatible with innovation and the resulting new concepts and beliefs.

4. Knowledge Management:

Habib views innovation primarily as mechanisms for learning, knowledge production, and new knowledge acquisition, rather than merely as a process of innovation operations. According to Ropertol, characteristics of knowledge-focused perspectives include three activities:

- ✓ The phase of acquiring knowledge;
- ✓ The phase of developing knowledge into innovations (new products or new scientific findings);
- ✓ Exploiting innovations to generate high value.

Thus, the institution should establish appropriate mechanisms to acquire the required knowledge in order to develop it into applicable innovations, whether in products or science, and then exploit these innovations to generate high value. This is detailed in the value innovation model.

As already indicated, according to this theory, the creation of the innovation process allows the information from the market before creating value in each phase of the three preceding phases.¹

5. Research and Development Activities:

The research and development activity plays a role within the organization. Some add that this type of activity has two main roles¹:

¹ Thomas Penide, Promoting Innovation in a Project-Based Organization, ..., pp. 83–84.

- ✓ Creating and producing innovations;
- ✓ Developing the organization's ability to benefit from the knowledge it has created or that has been produced.

There is no doubt that research and development activities are among the most important technological innovation determinants within the organization. They represent the main input in the scientific innovation process, as explained in the previous requirement. However, they are not the sole function of innovation because there are other determinants within the organization that limit the innovation process, such as human resources management, information systems, marketing functions, etc.²

Here, it should be noted that research and development activities will be detailed in the fourth chapter.

Third: Other Determinants

Since the innovation activity is a complex phenomenon, this means that there is a set of factors interacting in its composition. Studies have clarified that there is a set of factors influencing it, which we have classified into three basic groups as follows:

1. Group of Personal Determinants

The innovator is the starting point, and his important characteristics related to innovation have been focused on by numerous studies. These studies dealt with a set of personal indicators for identifying the innovative personality, which researchers differ about, although they

¹ Mohieddine Rahmouni, "Motivation and Determinants of Technological Innovation," Op. cit., p. 20.

² Dit Atmane Foudil, Essay on the Analysis of Determinants of Innovation in the Algerian Economy: The Case of the Agro-food Sector in the Béjaia Region, National Colloquium on Innovation for Competitiveness and Development: What Prospects for a Successful Takeoff in Algeria? ISGP (Bordj el-Kiffan), Algiers, April 16-19, 2012, p. 5.

agree on some of them. Generally, some of these are summarized briefly as follows¹:

- ✓ **Intrinsic Achievement:** The innovator is characterized by intrinsic motivation; external incentives do not drive him, nor do difficulties hinder him. The intrinsic motive plays a fundamental role as a desire to love what he does and for intrinsic motivation.
- ✓ **Inclination to Complexity:** Innovators usually record their intrinsic motivation when facing difficult and complex problems. The significant difference here is that intrinsic motivation plays the role of finding solutions to an environment's difficulties that everyone can perform easily, and the degree of complexity has increased in innovations.

2. Constraints at the Organizational Level

Companies remain, organizationally, a very influential framework on the innovative activity of individuals. They neither operate in a vacuum nor do they work outside their organizational environment and context, especially when this environment is characterized by restrictions and constraints. Studies have revealed that the rules, restrictive regulations, and prolonged procedures hinder the flow of innovative effort within institutions and work to preserve the existing status quo and its continuation.

While innovation means creating something new in opposition to the existing status quo, whether in the product, methods, or production processes, the prevailing organizational climate—with its essential influencing elements—constitutes a necessity for innovation and creativity at the level of the innovative individual. This individual may

¹ Najm Aboud Najm, *Management of Innovation: Concepts and Modern Experiences*, Previously Cited Reference, pp. 129–132.

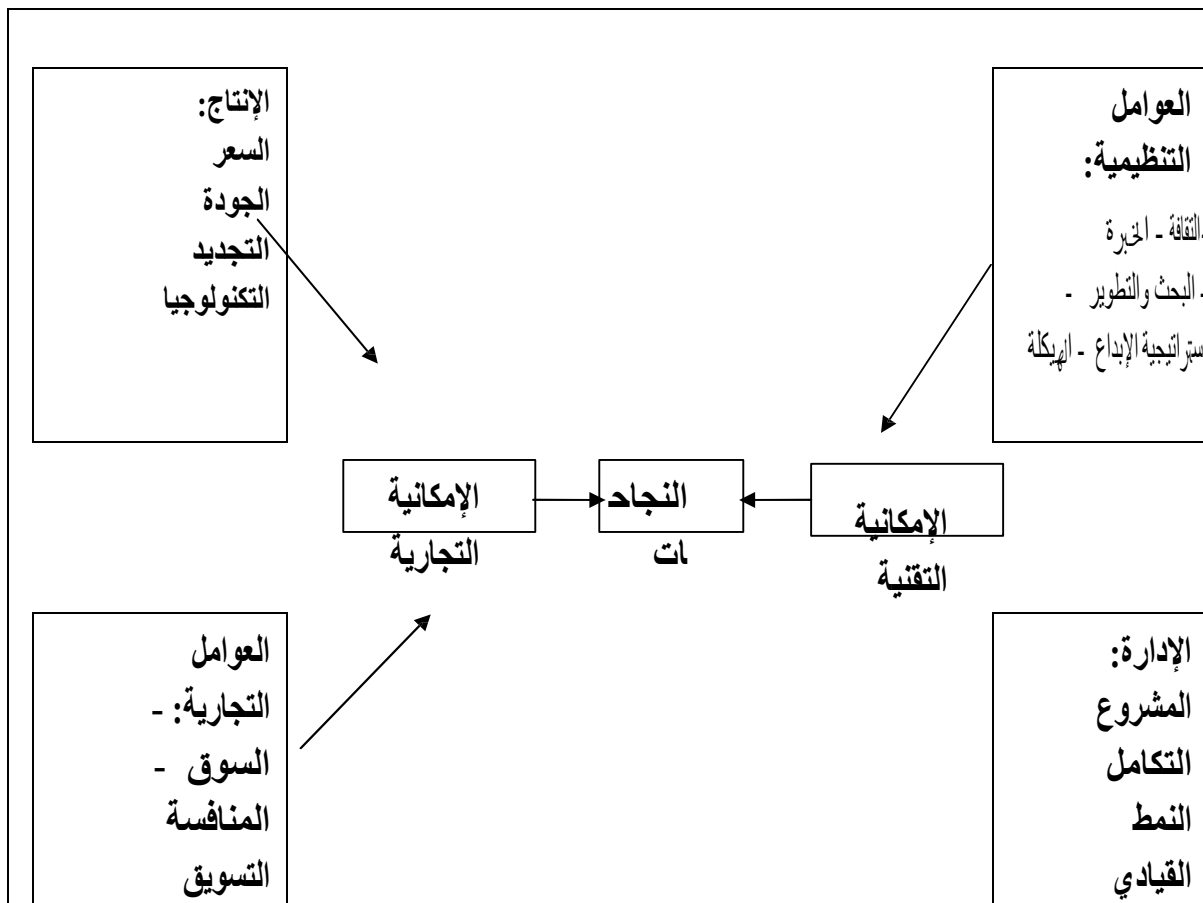
Chapter Three: Constraints of Innovation in the Organization

face various forms of organizational obstacles, since the internal environment (such as extensive production, stable cost management strategies...) tends to be stable, and the external environment (like lack of demand in the market except for medium or long term) is also stable.

However, this does not suit institutions that rely on innovation, since not every institution provides, within its conditions and organizational variables, a new environment that supports innovation. Therefore, it is necessary to consider organizational factors and their impact on promoting or hindering the innovative effort of individuals with creative potential.

The most important influencing factors on organizational-level innovation are shown in the following figure:

Figure 03: Constraints of Innovation



Chapter Three: Constraints of Innovation in the Organization



Source: Auger Pascal and Renaud Emmanuelle, *Le trio valeurs traditionnelles, confiance, innovation: L'enseignement de deux cas opposés pompiers et industrie aéronautique*, Première journée de L'atelier: innovation et Tradition, AIMS_ Université d'Angers, March 15, 2007, p.04.

The figure shows that there is a fundamental group considered as constraints on innovation, namely:

- ✓ **Technical capabilities:** These include all organizational factors (represented by what the organization practices in terms of culture and habits in the activity field in addition to innovation strategies fundamentally based on research and development processes within a certain organizational structure), plus other groups of factors related to managerial affairs (represented in leadership style, integration between activities, sustainability, and projects).
- ✓ **Commercial capabilities:** These include all aspects of production in terms of characteristics such as quality, price, and technology used, in addition to commercial factors mainly represented in the nature of market competition as well as marketing activities.

It follows that the more technical and commercial capabilities are provided properly and timely, the more the organization is enabled to create successful innovations.

General Environmental Determinants in Society

The relationship between the general environment and technological innovation does not only concern the acceptance of new ideas and new products, based on the fact that members of society care about what is new. Innovative individuals possess knowledge of social traditions, its outlook, and the originating culture, which distinguishes them from other societies. Consequently, they work within a unique social and cultural framework and are affected in a differentiated way by the actions and type of responses to changes and different circumstances in society.

There is no doubt that technological innovation is one of the major and important events for individuals and institutions that are influenced by all these factors in the general environment. The following is a review of some of the general environmental factors in society that affect technological innovation:

- **Research and Development Centers and Universities:** These have long traditions in basic research, and their valuable contribution is evident in both human knowledge production and applied research. Their contribution also extends to developing a pool of technological innovations either in products, methods, or production processes. In fact, research centers and universities in society contribute to creating and strengthening scientific and technical environments that help generate high-quality professional outputs.
- **Patent System:** The intellectual property rights system, mainly the patent system, plays an active role in creating the institutional dimension of rights for innovators and innovative institutions. While this system may limit the spread of innovations because a patent is a legal monopoly or a patent is a legal protection of the

innovator's rights, it encourages individuals and institutions to rely on this protection as a guarantee for continuing market superiority without continuous innovations and ensuring their sustainability through protection from competitors. Such a system is necessary to prevent imitation of innovation without fair compensation to the innovator, making this compensation a strong incentive for creativity.

Discussion Questions

Please try to briefly answer the following questions:

1. Define the relationship between legal and legislative factors and the innovation process in an institution?
2. How does the industrial sector environment affect innovation in SMEs?
3. Define the relationship between economic factors and innovation?
4. What is the relationship between organizational culture and innovation?
5. What are the general determinants of innovation in institutions, and what are the specific determinants for small and medium enterprises?
6. How does knowledge management affect innovation in the institution?
7. Explain how the role of organization affects innovation in institutions?
8. Provide practical examples of the impact of innovation determinants in Algeria and globally?

Chapter Four: The Role of Research and Development

First: The Concept of Research and Development

1. Basic Research:
2. Applied Research:
3. Development:

Second: Objectives and Characteristics of Research and Development Activity

1. Objectives of Research and Development Activity:
2. Characteristics of Research and Development Processes:
3. Inclusiveness:
4. Connection with Other Fields:
5. Time Frame:
6. Factors Affecting R&D Activity

Third: Constraints on Research and Development

Discussion Questions

Most studies and research have revealed that companies have lost interest in their development activities, whereas basic research activities were initially the primary concern for companies and large entities. A study by Ronald and Tomas showed the distribution of research and development costs according to the following percentages:

- ✓ Basic Research: 3.5%
- ✓ Applied Research: 23.5%
- ✓ Product Development Research: 73%

The study also concluded that basic and applied research are characterized by a high level of risk and require large financial capabilities that institutions may not be able to provide. However, development research usually has a low risk level, guaranteed results, and the possibility of economic returns¹.

First: The Concept of Research and Development

- ✓ Research and development activities refer collectively to the activities that economically contribute to the institution, developing products scientifically or technically, achieving consumer satisfaction, and supporting competitive ability through productive innovation and the creation of new products, inputs, or new production alternatives².
- ✓ According to Zikmond, scientific, methodological, and objective research involves collecting, recording, and analyzing data to help in making business decisions. The main purpose of research is to utilize various data to assist in decision-making.

¹ Mohamed Hossam Bazmawi, Application of Strategic Management Accounting to Research and Development Activity – A Field Study on the Pharmaceutical Industry in Syria, PhD Thesis in Economics, University of Aleppo, Syria, 2010, p. 57.

² Mohamed Qassam Zamawi, Previously Cited Reference, p. 57.

✓ Zikmond also pointed to two types of research:

1. Basic Research:

q This seeks to expand the boundaries of knowledge and is managed to verify the validity of theoretical hypotheses or to gain more knowledge about a particular concept.

2. Applied Research:

This aims to provide answers to specific problems that have occurred previously. However, research activities include the following within the research framework:

- ✓ Assisting in decision-making;
- ✓ Expanding knowledge boundaries;
- ✓ Finding solutions to specific problems.

There is a reciprocal relationship between basic research and applied research, and it is difficult to precisely define the boundaries between them because each requires the other. Basic research requires the kind of theoretical knowledge that stems from the first, and on the other hand, applied research can refine and reinforce some aspects of the first research¹.

3. Development:

It is the process of turning research results or knowledge into a plan or design for a new product, new service, new production method, or qualitative improvement of a known product, service, or production

¹ Mamoun Tawfiq Fidan, "A Proposed Model for Accounting in Research and Development Processes and Cost Treatment under International Accounting Standards in Industrial Establishments," *Administrative Journal*, Issue 96, March 2004, Institute of Public Administration, Muscat, p. 63.

method, whether for the purpose of sale or use. Development includes theoretical formulation, design, selection of alternatives, preparation of the initial model, and operation of experimental production units.

That is, the activities included within the scope of development include the following:

- ✓ Designing a new product or new production method;
- ✓ Testing alternatives and preparing the initial prototype;
- ✓ Operating experimental production units.

Some studies indicate that about 95% of researchers and engineers are involved in development activities. It is also worth mentioning some references to the relationship between the various activities mentioned above as follows¹:

- ✓ Basic research is usually conducted at universities and higher education institutes.
- ✓ Inputs of basic research are the existing scientific knowledge base, scientific and applied problems.
- ✓ Outputs of basic research are hypotheses, theories, rules, new laws, and publications in scientific journals.
- ✓ Inputs of applied research are outputs of basic research and the existing knowledge base, plus problems that may appear at any stage.
- ✓ Outputs of applied research are inventions that sometimes register as patents.

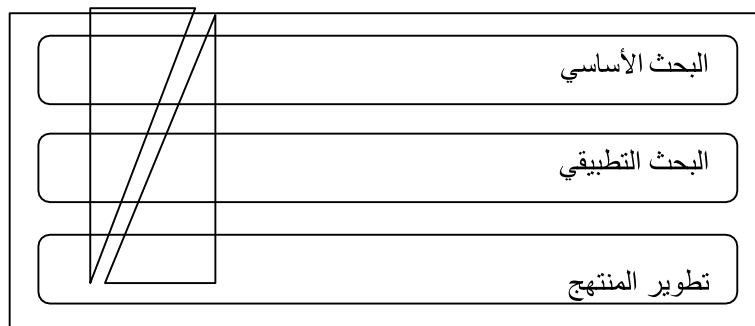
¹ Fidan Abdul Salam Salim, Strategic Management and Competitive Advantage in Modern Organizations, Dar Al-Maktab Al-Jami'i Al-Hadith, Egypt, 2010, pp. 358, 360.

- ✓ Development requires conducting experiments to prove the technical and economic feasibility of its outputs.

The research and development activity is closely linked to industrial progress. There is an increase in resources allocated to this activity in various industrial sectors, but there is a problem in measuring its inputs and outputs because most of them are intangible and generally not uniform.

(Trott) sees that industries clearly distinguish between research and development. Some institutions see research as done by universities, and development is carried out by industries, as illustrated in Figure (02-05), which shows research interest channels in industry and universities¹. In case of shared interest, applied research, which works on developing scientific principles for technologies that can be applied, is often discussed products. Universities focus on basic research aimed at discovering new knowledge and new scientific principles, while institutions focus on developing products for practical purposes².

Figure (04): Classification of research fields within industry and university



Source: Abdelbasset Ibrahim Hassouta, Khaled Khalaf Al-Zeraqi, “*The Impact of Research and Development on the Direction of the Global Market in Pharmaceutical Companies*”, *Arab Journal of Management*, Volume 32, Issue 01, June 2012, p. 96.

¹ Fidan Abdul Salam, Previously Cited Reference, pp. 358–360.

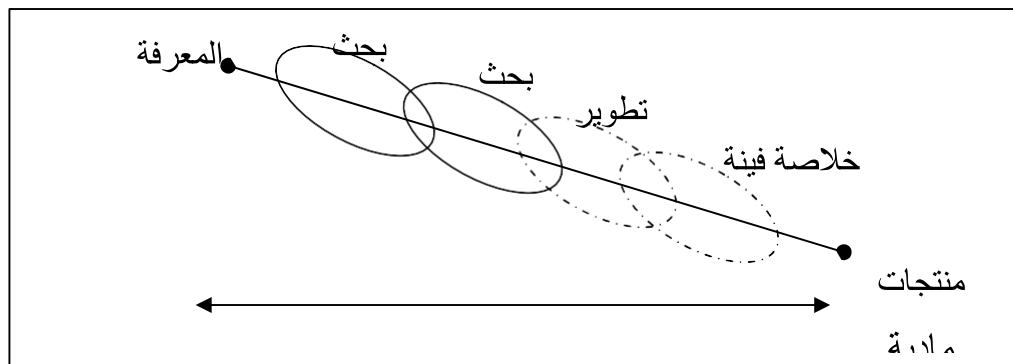
² Same previously cited reference, p. 96.

(Trott) pointed out that research and development activities existing in any management are main development activities.

Figure (06-02) illustrates the types of activities used by some global institutions, which are¹:

- Basic research;
- Applied research;
- Development;
- Technical support: focuses on providing support for existing products and sciences through performance and cost engineering for current products, sciences, and systems.

Figure (05): The research and development sequence



Source: Abdelbasset Ibrahim Hassouta, Khaled Khalaf Al-Zeraqi, *Previous Reference*, p. 97.

Second: Objectives and Characteristics of Research and Development Activity

The undertaking by institutions of research and development activities seeks to achieve a range of different objectives. This type of

¹ Fidan Abdul Salam, Previously Cited Reference, p. 97.

activity also has distinctive characteristics that can be summarized as follows:

1. Objectives of Research and Development Activity:

The objectives of research and development activities are constantly renewed based on the institution's strategic goals, which reflect the nature and types of research in general. The objectives of this activity can be mentioned as follows¹:

- ✓ Value analysis and engineering to reach competitive costs that contribute to supporting the institution's competitiveness;
- ✓ Innovation of new products that meet consumer desires, which leads to increased sales rates;
- ✓ Development of production processes aimed at reducing costs;
- ✓ Gaining customer satisfaction and maintaining the institution's market share. It is also possible to include other objectives such as:
 - Improving the mental image of the institution in the minds of customers;
 - Improving the overall performance levels of the institution, which represents a competitive advantage for the institution.

2. Characteristics of Research and Development Processes:

Research and development processes are characterized by a set of features, including the following²:

a. Novelty:

Research and development processes result in the creation and application of new products or organizational methods within the institution because many researchers see them as a collection of

¹ Mohamed Hossam Bazmawi, Previously Cited Reference, p. 61.

² Same Reference, pp. 65–67.

technical activities aimed at advancing new products (goods or services)¹.

b. Uncertainty:

Research and development processes are marked by a relatively high degree of uncertainty because the environment limits the possibility of repeating the same work, which weakens the continuity of research and development processes. This is due to the fact that most research activities do not lead to predictable outcomes. However, for development processes, it is possible to set criteria for their implementation and monitor them, despite the difficulty of accurately measuring their output.

The relationship between uncertainty and the type of research and development is explained in the following table:

Table No. (02): The Relationship Between Lack of Confirmation and the Type of Research and Development

Cause	Type of Research and Development	Lack of Confirmation
- No direct contact with the external environment.	Long-term outputs	High lack of confirmation
- New product or process innovation outside the scope of the project activity.	High lack of confirmation	
- No direct contact with the internal environment.	Production of new knowledge products	Normal lack of confirmation

¹ Fabrique Devaux, The Toolbox of the Manager, R&D, Dunod, Paris, 2010, p. 13.

Cause	Type of Research and Development	Lack of Confirmation
- Routine process	Short-term outputs	Low lack of confirmation
- Modification or restriction of products or production methods	Low lack of confirmation	

Source: Ali Abdel Ghani Al-Layid, Issam Al-Shawi, "Costs of Research and Development - A Comparative Study," *Arab Administration Journal*, Vol. 30, No. 1, June 2010, p. 45.

From the table, it is shown to us the variation in levels of confirmation relative to different types of research and development. It is also clear that this is related to the relationship with the external environment, where the more the R&D activity depends heavily on contact with the external environment and relies on long-term outputs, the higher the degree of lack of confirmation, and vice versa¹.

3. Inclusiveness:

Judgment is made on the extent of the duration of R&D activities based on empirical results, which requires a comprehensive view of the science of R&D and its outcomes, i.e., the necessity to present them in their various stages step by step.

4. Connection with Other Fields:

R&D processes in institutions crystallize into new sciences that include various stages and productive scientific elements. Accordingly,

¹ Mamoun Tawfiq Fidan, "A Proposed Model for Accounting in Research and Development Processes and Cost Treatment under International Accounting Standards in Industrial Establishments," *Administrative Journal*, Issue 96, March 2004, Institute of Public Administration, Muscat-Amman, p. 63.

their impact exceeds institutional and foundational principles, as these processes require integration into work, which necessitates resolving authority and responsibility problems to open opportunities for development and democratic growth.

5. Time Frame:

It is necessary that R&D activities fall within the overall strategy of the institution, where R&D objectives are set according to that strategy and, accordingly, goals are monitored, results are applied, and marketing decisions for R&D activities are implemented.

6. Factors Affecting R&D Activity

There are many factors and variables that affect the institution's direction towards R&D activity. We mention some of them below¹:

a. Nature of Management:

This basically refers to the characteristics of decision-makers and their ability to diagnose the internal and external environment of the organization and the influencing factors on it.

b) Organization's Capabilities: Where the capabilities and different resources of the organization affect decisions related to funding, research, and its objectives.

c) Nature of the Organization's Activity: That is, the level of industry or sector in which the organization operates.

d) Relationship of the Organization with Competitors, Distributors, and Customers: Also the product market and the

¹ Jaafar Khalil Mar'i, "The Role of Innovative Marketing in Enhancing Competitive Advantage – A Night Study of Opinions from a Sample of Employees at Al-Hukamaa Company for Pharmaceutical and Medical Supplies in Mosul," Journal of Anbar University for Economic and Administrative Sciences, Iraq, Vol. 4, No. 9, 2012, p.

degree of competition in addition to the current and future marketing context for the organization.

From the above, it can be noted that applying the above factors to a group of internal factors (nature of the organization and its capabilities) and external factors mainly represented in the nature of the organization's activity and its relations with competitors, distributors, and markets.

Third: Constraints on Research and Development

The research and development activity in any private institution in developing countries usually faces constraints, among which are the following:

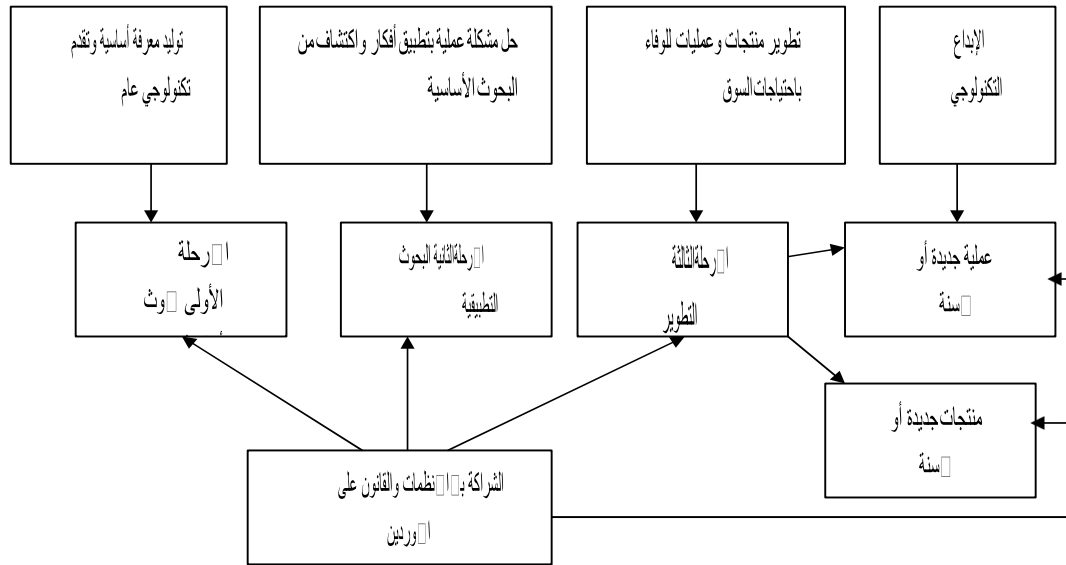
- ✓ Lack of integration between the industry and research and development institutions;
- ✓ Weak budgets allocated to research and development compared to counterparts in industrialized countries.

Some studies indicate that about 95% of researchers and engineers use the Internet in designing and developing their works, which contributed to the emergence of digital innovation, sometimes referred to as Cyber Innovation and the transition to the stage of digital research and development e-RSD, an advanced stage in the field of research and development that corresponds with the stage of the knowledge economy (digital economy)¹.

¹ Saad Mehdi Hassan Al-Amiri and Taher Hassan Mansour Al-Ghali, Management and Business, Previously Cited Reference, pp. 713–714.

It can also be said that what has been presented shows us that research and development results are inputs for technological innovation within the organization, as summarized in the following figure¹:

Figure No. (06): The Relationship Between Research and Development and Technological Innovation



Source: Saad Mahdi Hassan Al-Amri, Taher Hassan Mansour Al-Ghalay, *Management and Business*, Wael Publishing House, Amman, Jordan, Fourth Edition 2014, p. 314.

Discussion Questions

Please answer the following questions briefly:

1. Discuss the objectives pursued by organizations through research and development activities.
2. Define the relationship between research and development processes within the organization.

¹ Saad Mehdi Hassan Al-Amiri and Taher Hassan Mansour Al-Ghali, *Management and Business*, Wael Publishing House, Amman, Jordan, Fourth Edition, 2014, pp. 313–314.

3. What are the requirements and functions of research and development in SMEs?
4. Define the relationship between the function of research and development and other functions in the organization.
5. What is the relationship between the function of research and development and innovation in the organization?
6. What are the challenges generally faced by the research and development function in organizations, and specifically in small and medium enterprises?
7. What are the solutions to the impact of the research and development function on organizational performance?
8. Provide real examples of development processes in organizations.

Chapter Five: Innovation Model in the Organization

First: The Traditional Model

- 1.The Linear Innovation Model (1991) (Xuereb):
- 2.Dynamic Model in Industry for Innovation Management (1994) (Utlerback):

Second: The Modern Model

- 1.Adoption Innovation Model (2000) (Kotler):
- 2.Innovation Mix Model (2003) (Salicrn):
- 3.The Organizational Creativity Management and Production Model (Subrota et al., 2004

Third: The Strategic Dimension Model

- 1.The Integrated Framework Model for Innovation Processes (Jones, 2007)
- 2.Value Innovation Model

Discussion Questions 61

Studies have indicated that there are many models that explain the innovative process, which have evolved alongside the development of the environment and the organization's needs. Among these models are the following:

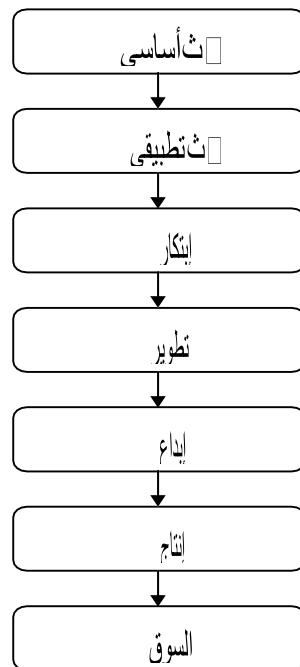
First: The Traditional Model

There are many types of this model, including the following:

1. The Linear Innovation Model (1991) (Xuereb):

According to this model, the innovation process consists of a series of activities aimed at converting information into a new product efficiently. This process is integrated into a linear model as illustrated in the following figure:

Figure No. (07): Ladder Model, Pyramid Model, and Linear Model



Source: Benjamin Tyl; "L'apport de la créativité dans les processus d'éco-innovation proposition de l'outil Eco Asit pour Favoriser l'éco-idéation de systèmes durables," PhD Thesis, Specialty: Mechanics and Engineering – University of Bordeaux 1, 2011, p.49.

That is, innovation starts from basic research → applied research → then the development of invention into an innovative form offered as a product in the market.

2. Dynamic Model in Industry for Innovation Management (1994) (Utlerback):

This model suggests that the rate of innovation for the process and product follows a general model over time. The innovation rate of the product passes through several phases¹:

- ✓ **(1) Human Phase:** In which many experiments, product designs, and processes take place.
- ✓ **(2) Transitional Phase:** Here the rate of innovation in the process slows down, where the product stabilizes in the market achieving better satisfaction of customer desires. However, some industries enter a special phase in which the rate of innovation for the process and product overlaps. At this stage, emphasis is placed on cost, collection, and proportion.

Second: The Modern Model

Several models have appeared since the beginning of the 21st century, including:

1. Adoption Innovation Model (2000) (Kotler):

This model sees innovation through three stages²:

(a) Awareness Stage: Where the consumer is aware of innovation but lacks information.

¹ Sabah Qassem, Faid Ali Fad, "Requirements for Organisational Effectiveness Control within the Framework of Applied Innovation Management in Business Organizations (An Applied Study)," Tikrit Journal of Administrative and Economic Sciences, Tikrit University, Iraq, Vol. 7, No. 21, 2011, pp. 126–127.

² Same reference.

(b) Influence Stage: Which includes the steps: attention → interest.

(c) Behavior Stage: Which includes the steps: judgment → adoption.

2. Innovation Mix Model (2003) (Salicrn):

This model consists of four elements: product, process, individual, and environment. It should not be confused with the elements of the marketing mix, commonly known as the "4 Ps" (product, price, place, promotion)¹.

A- The Creative Product:

The author of this model sees that the creative product operates based on three criteria: (*novelty, approach, and feasibility*). The first criterion, novelty, refers to the originality of the product, meaning that the product attracts customers due to its distinctive characteristics. There are two sub-criteria for novelty: the first refers to a clear change in the product's features, and the second involves generating new ideas in the market context. This is often what happens when competitive institutions produce successful products by maintaining concepts that add advantages to their creative product.

The second criterion for product creativity is the approach, which must be appropriate for solving any problem. In other words, the creative product should present a response or solution to existing problems.

The third and final criterion is feasibility, which relates to how the product will be in its final form; i.e., the product may be a prototype or sample. This criterion measures the energy and effort put into its

¹ Najah Mohamed Al-Taher, "Innovation with a Marketing Mix and Its Impact on Marketing Excellence Control – A Case Study in Al-Wissam Company for Dairy and Food Products in Karbala," Master's Thesis in Business Administration (Unpublished), University of Kufa, Iraq, 2006, pp. 36–37.

technical and physical composition, such as attraction, packaging method, wrapping, and cover.

B- The Creative Process:

It is related to the application that leads to creative products. Creativity is a process characterized by a clear and distinct stage for individuals and work teams, progressing and evolving by generating creative ideas to present innovative products. However, some researchers argue that the creative process is natural and occurs spontaneously, at least for some individuals. They understand the process as something easily attainable by anyone who seeks an innovative result, which requires that the creative process be applicable and successful.

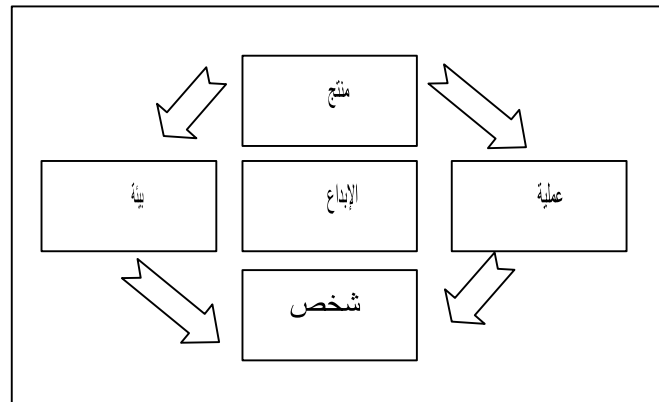
C- The Creative Individual:

Based on the existence of individual and subjective differences among people, as each tries to display their strengths or uniqueness in every step of the creative process. In addition, individual differences are realized through the environmental conditions of the team. Collective creativity (teamwork) contributes significantly to the successful creative output compared to individual creativity.

D- The Creative Environment:

It relates to the atmosphere or culture that facilitates and encourages creativity. Therefore, it is necessary to provide an environment through which creativity can emerge and grow.

From this model, we notice that creativity means new ways of thinking and continuous improvements that require novelty. It is a comprehensive and integrated process that includes steps mixing vision and clear analysis of the skills and competencies possessed by creative individuals.

Figure No. (08): Creative Mix Model

Source: Naghta Mohamed Al-Taher, Previous Reference, p.37

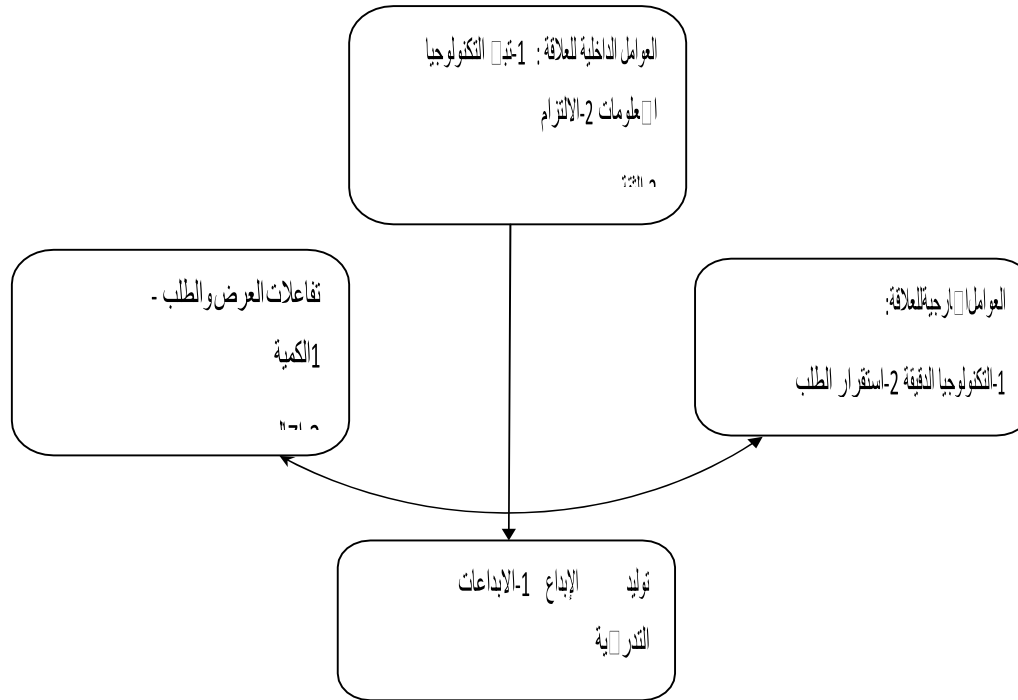
3. The Organizational Creativity Management and Production Model (Subrota et al., 2004):

This model manages and produces organizational creativity through supply chain relationships. It includes four stages: ¹

- ✓ The stage of interaction between supply and demand through quantity, availability, and form;
- ✓ The stage of recognizing the internal environment of relationships through embedded technology, demand stability, and network connections;
- ✓ The stage of generating incremental innovations and disruptive innovations;
- ✓ A summary of the previous stages is shown in:

¹ Sabah Qassem, Faïd Ali Fad, "Requirements for Organizational Effectiveness Control within the Framework of Applied Innovation Management in Business Organizations (An Applied Study)," Tikrit Journal of Administrative and Economic Sciences, Tikrit University, Iraq, Vol. 7, No. 21, 2011, pp. 126–127.

Figure No. (09): Creativity Management Model from Supply Chain Relationships



Source: Sabhiya Qasim, Fayed Ali Afid, Previous Reference, p.127

Third: The Strategic Dimension Model

This is a set of models that have taken the creative process at the strategic dimension level within organizations. Among these models is the following:

1. The Integrated Framework Model for Innovation Processes (Jones, 2007)

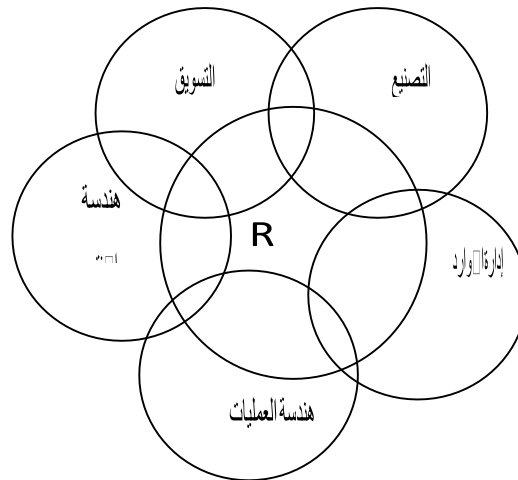
Activating the creative process provides an appropriate environment represented essentially by¹:

¹ Taher Hassan Mansour Al-Ghali, "The Role of Knowledge Production in Enhancing Organizational Innovation," Administrative Studies Journal, Vol. 4, No. 7, September 2011, Basra University, Iraq, pp. 187-188.

- ✓ Creating a context that helps generate knowledge at various levels within the organization and operates to establish innovative ideas that are considered a main input to reach a product that meets customer needs.
- ✓ The existence of visionary leadership in the organization based on continuous creative science.

Based on this, top management works on studying the competitive framework in which the organization operates, and accordingly identifying the characteristics of competition in the sector in which it operates. Jones sees that it has become necessary for research and development activities to be considered a core function alongside other activities and a main driver of innovation in the organization, as illustrated in the following figure.

Figure 10: Innovation Process in an Integrated Framework



Source: Tahar Hassan Mansour Al-Ghalib, *The Role of Knowledge Production in Enhancing Organizational Innovation*, Administrative Studies Journal, Vol. 4, No. 7, September 2011, University of Basra, Iraq, pp. 187-188.

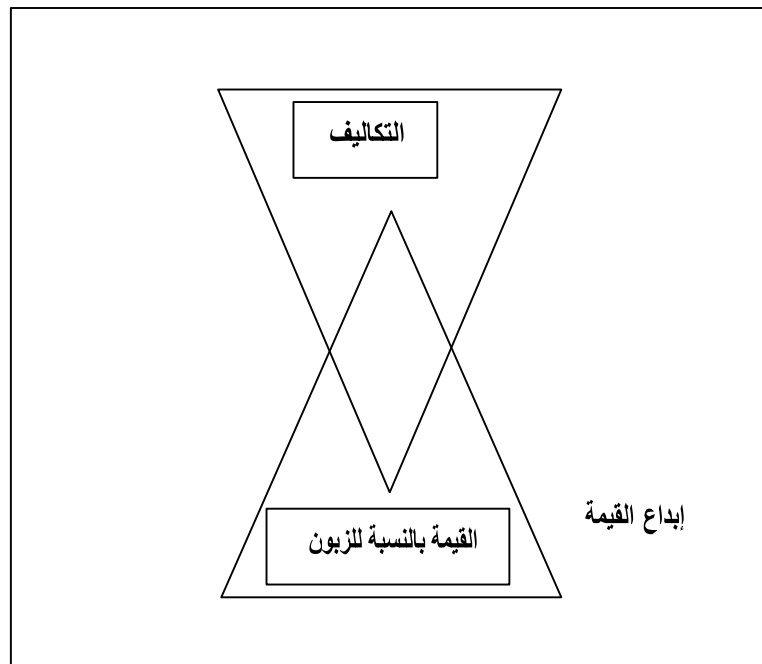
2. Value Innovation Model

It is defined by Golder & Tellis (2002) as creating a leap in value for both customers and the organization, and opening up new market spaces with targeted coverage (1).

This model's principle focuses on the equality between value and its creation because value without the ability to innovate means focusing on gradually increasing value, which improves value but is insufficient to make the organization stand out in the market. Likewise, innovation without value targets long-term goals that customers require and cannot adopt.

Moubargne Kim believes that value innovation only occurs when organizations balance between the infrastructure, resources, price, and cost. This is illustrated in the following figure:

Figure 11: Dynamics of Value Innovation



Source: Afed Dahesh Jalab & Hashem Fawzi Dabbas Al-Abadi, *Marketing According to the Perspective of Contemporary Philosophers and Theorists*, Dar Al-Awraq for Publishing and Distribution, Amman, 2010, pp. 783-786.

From the figure, it becomes clear that value innovation is achieved only when the organization balances benefit, price, and cost appropriately. It also requires system guidance as a whole, to create a leap in value for both customers and the organization itself¹.

Al et Ropert (2008) clarified that there are three (03) activities related to the innovation process, which are²:

- ✓ The stage of acquiring knowledge;
- ✓ The stage of transforming knowledge into tangible innovations (a new product or a new process)
- ✓ Exploiting innovation in order to generate high value.

Thus, completing the innovation process allows for providing market information before creating value at each of the aforementioned stages.

Discussion Questions

Answer the following questions briefly:

1. Identify and analyze the factors that influence the choice of the appropriate innovation model in an organization.
2. Specify the advantages and disadvantages of each innovation model.
3. What is the most appropriate innovation model for SMEs?
4. What are the requirements for implementing value innovation in SMEs?

¹ Afed Dahesh Jalab and Hashim Fawzi Dabbas Al-Abadi, Marketing According to Philosophical and Contemporary Perspectives, Dar Al-Awraq for Publishing and Distribution, Amman, 2010, pp. 783-786.

² Same reference, pp. 785-786.

5. What is the relationship between the development of innovation models and the evolution of management theories?
6. What is the relationship between marketing innovation and technological innovation?
7. What are the difficulties faced in implementing modern innovation models in organizations in general, and in small and medium enterprises in particular?
8. Provide real-life examples of marketing innovations in organizations.
9. Analyze the effects of marketing innovation on organizational performance.

Chapter Six: Organizational Innovation

First: The Concept of Organizational Innovation and the Influencing Factors

- 1.The Concept of Organizational Innovation:
- 2.Factors Influencing Organizational Innovation:

Second: Sources of Organizational Innovation and Creative Ideas

- 1.Sources of Organizational Innovation:
- 2.The Nominal or Pictorial Group Technique:
- 3.The Delphi Method:67

Third: Factors that Promote Organizational Creativity

Fourth: Strategies that Support Organizational Creativity

- 1.Participation:
- 2.Training and Development:
- 3.Organizational Culture
- 4.Organizational Communication

Discussion Questions

Organizational innovation is considered one of the important forms of innovation at the institutional level, and this is what we will attempt to address in this chapter.

First: The Concept of Organizational Innovation and the Influencing Factors

1. The Concept of Organizational Innovation:

There are several definitions that we present below:

- **Hage (1999)** defined it as: *“The practice or process that results in the emergence of a new idea, behavior, product, service, technology, or any new administrative practice, leading to a type of change in the environment, processes, or outputs of institutions.”*
 - This definition focuses on any process that results in new administrative practices reflected in the institution’s outputs¹.
- **Daft (2001)** defined it as:
 - *“The process of adopting a new idea or behavior in the actual context, business sector, market, or the general environment of the institution.”*
 - We observe that Daft emphasizes the importance of new ideas or behaviors as the foundation of organizational innovation².
- **Sylyman (2001)** defined it as:
 - *“A process resulting from a set of factors that provide the appropriate organizational environment, which includes the existence of a work environment conducive to generating new ideas.”*

¹ Akef Lutfi Al-Hadhawanah, Managing Creativity and Innovation in Business Organizations, Dar Al-Hamed for Publishing, Amman, Jordan, 2011, p. 33.

² Same previous reference, p. 34.

This definition focuses on the necessity of providing a suitable climate for generating new ideas¹.

Based on the above, organizational innovation can be defined as:
“The various processes that contribute to generating new ideas or behaviors, stemming essentially from the organizational climate, which affect the institution’s outputs.”

2. Factors Influencing Organizational Innovation:

According to **Willians (2001)**, several influencing factors include²:

- ✓ **Cultural factors (organizational culture):** These are represented by the beliefs and values shared by the organization's members, contributing to internal integration.
- ✓ **Organizational structure:** Should be characterized by flexibility.
- ✓ **Formation of work teams:** The formation of teams comprising individuals with different skills and experiences facilitates the exchange and transfer of information and communication between them.
- ✓ **Administrative practices:** Such as participation in decision-making, fair performance appraisal, and the ability to adapt designs to surrounding conditions—all of which positively affect the presentation of creative ideas and actions.

¹ Akef Lutfi Al-Hadhawanah, same reference, p. 34.

² Same reference, pp. 74–75.

Second: Sources of Organizational Innovation and Creative Ideas

1. Sources of Organizational Innovation:

For an organization to stand out in innovation and continuous development, it must search for the main sources of innovation. **Peter Drucker (P. Drucker)** identified seven potential sources of innovation, which are¹:

- **Unexpected source:** Includes unexpected success, unexpected failure, and unexpected external events.

Source of incongruities between reality as it is and as it should be:

This discrepancy indicates an opportunity for innovation and includes:

- ✓ Rising demand with lack of profitability,
 - ✓ Contradictions between reality and related assumptions,
 - ✓ Contradictions in economic facts,
 - ✓ Differences between perceived and real consumer values and expectations.
- **Innovation based on the need to process a sequence of operations.**
 - **Industry or market structure:** The market must evolve due to competition or changes in customer needs and expectations. This change is a creative opportunity, including:
 - ✓ Rapid response to change,

¹ Siham Chihani, The Role of Corporate Culture in Organizational Innovation – A Case Study of Mobilis Company, Master's Thesis in Management Sciences (unpublished), Specialization: Business Administration, Saad Dahlab University – Blida, 2008, pp. 17–21.

- ✓ Anticipation of opportunities,
- ✓ Indicators of change.

2. The Nominal or Pictorial Group Technique:

In this technique, interactions between group members are minimized. The main objective is to reduce the dominance of one person's ideas over those of others. The key steps followed are:

- ✓ Each individual independently writes down their ideas related to the problem being addressed on a slip of paper;
- ✓ Their ideas are then presented by the session leader without any discussion until all group members have shared their ideas;
- ✓ A discussion is then opened, but criticism is prohibited;
- ✓ Afterwards, each individual secretly evaluates the presented ideas, then the session leader reviews the ideas that received the most interest, followed by a second vote to reach a collective decision.

3. The Delphi Method:

This method does not require members to be in the same place. It consists of a series of questionnaires sent to a number of experts to gather their individual opinions on a specific problem. The responses are then collected, categorized, and ranked according to the degree of consensus. The results are sent back to the participants, and the process is repeated until a general agreement is reached on the proposed solutions.

Third: Factors that Promote Organizational Creativity

Studies have shown that there are several factors that help promote organizational creativity within an institution, including¹:

- ✓ Focusing on the general objectives of the institution;
- ✓ Encouraging employees to propose ideas and recognizing them;
- ✓ Activating communication within the institution in all its forms;
- ✓ Adapting to environmental changes and responding to various transformations in the institutional environment;
- ✓ Supporting competition among employees to generate new creative ideas;
- ✓ Valuing diverse new ideas and working toward their effective implementation.

Fourth: Strategies that Support Organizational Creativity**1. Participation:**

This involves the participation of both supervisors and subordinates in various institutional matters, which promotes greater coordination and harmony, thus fostering a better organizational climate. Participation also acts as a positive moral motivator for employees, enhancing morale and increasing job satisfaction.

2. Training and Development:

Aimed at identifying, evaluating, and developing the core competencies of human resources—namely knowledge and

¹ Rafaat Abdel Halim Al-Faouri, previous reference, p. 176

skills—this strategy helps mitigate performance weaknesses by ensuring increased knowledge and skill levels at all administrative levels.

3. Organizational Culture

The institution's culture contributes to shaping a distinct identity for employees that differentiates them from those in other institutions and strengthens relationship-building and stability within the organization's system.

4. Organizational Communication

Discussion Questions

Answer the following questions briefly:

1. It is said that organizational creativity is directly linked to the organizational culture of an institution. Discuss this statement.
2. Identify the advantages and disadvantages of organizational creativity.
3. What is the appropriate form of marketing creativity in SMEs?
4. What are the requirements for organizational creativity in SMEs?
5. Analyze the constraints of organizational creativity in institutions.
6. What are the mechanisms for activating organizational creativity in institutions?
7. Determine the relationship between organizational creativity and reengineering.
8. What are the challenges facing organizational creativity in institutions in general, and in small and medium-sized enterprises in particular?
9. Provide real-world examples of organizational creativity practices in Algeria and around the world.

Chapter Seven: Technological Innovation

First: Its Concept and Characteristics

- 1.The Concept of Technological Innovation
- 2.Its Importance
- 3.Its Characteristics

Secondly: Classifications of Technological Innovation

- 1.Criterion of the Nature of Technological Innovation:
- 2.Criterion of the Degree of Technological Innovation:

Third: The difference between organizational-administrative innovation and technological innovation

Discussion Questions

Technological innovation is considered one of the forms of innovation at the organizational level, which will be the focus in this section. Its importance, characteristics, classifications, and its relation to organizational innovation will be clarified.

First: Its Concept and Characteristics

Several definitions have been proposed for technological innovation, and it possesses a number of distinctive features.

1. The Concept of Technological Innovation

Multiple definitions have been provided for the term "technological innovation," among which are the following:

a. Definition by the U.S. National Science Foundation:

"The introduction or improvement of products, processes, or services for the market."

From this definition, it becomes clear that technological innovation takes five forms, as follows:

- ✓ A completely new product or an improvement to an existing product in the market;
- ✓ A completely new process or an improvement to an existing process;
- ✓ Services.

It should be noted that many studies exclude the last form (related to services), perhaps considering that a product can be either a tangible good or a service¹.

¹ Omar Wasfi Aqli and Mohamed Nasser Al-Din Nasser, The Role of Organizational Characteristics in Supporting Productive Innovation in Investment Projects: A Field Study in the

b. Definition by Blom & Aker:

"A set of scientific, technical, organizational, financial, and commercial steps—including investments in new knowledge—prepared to lead to the implementation of new or improved processes and products from a technical perspective."

We notice from this definition its focus on investment in knowledge, which is seen as the active element in implementing various processes and products¹.

Based on the above, technological innovation can be defined as:

"The scientific and technical steps aimed at introducing or improving products or processes for the market, ensuring a leading experience in launching new products in the industry."

2. Its Importance

The importance of technological innovation can be highlighted as follows²:

- ✓ Improving customer service through flexibility and adaptation to consumer needs;
- ✓ Increasing the organization's ability to compete by rapidly introducing new products and altering the production process;
- ✓ Enhancing the institution's productivity by achieving efficiency and effectiveness in performance and accomplishing objectives

Syrian Arab Republic, Tanmiat Al-Rafidain Journal, No. 106, Vol. 34, 2012, University of Mosul, Iraq, p. 161.

¹ Firdaws Mahmoud Abbas, The Impact of Adopting Technical Innovation in Improving Product Quality to Achieve Competitive Advantage (An Applied Case Study at the General Company for Vegetable Oil Industry), Journal of the College of Education, Al-Mustansiriya University – Iraq, Vol. 01, No. 04, 2010, p. 254.

² Firdous Mahmoud Abbas, Previous reference, p. 255.

through the rational use of resources and energy, which contributes to increasing sales and profits.

Others also add additional elements, which can be summarized as¹:

- ✓ Creating a suitable climate that enables the organization to present and develop new products and processes to meet customers' needs and desires in the market;
- ✓ Achieving the organization's strategic goals in terms of excellence, survival, and growth;
- ✓ Enhancing and stimulating the overall performance of the institution².

3. Its Characteristics

To distinguish technological innovation technically, it must exhibit a set of characteristics, which are summarized as follows³:

- ✓ It results from the application of agreed-upon technological knowledge. This means that any novelty based on imprecise information leading to ineffective results cannot be considered technological innovation;

¹ Safwan Yassin Al-Rawi, The Impact of Reengineering Stages on Technological Innovation: An Exploratory Study in the State Company for the Pharmaceutical and Medical Supplies Industry, Nineveh, Tikrit University Journal of Administrative and Economic Sciences, Vol. 03, No. 07, Tikrit University – Iraq, 2007, p. 7.

² Sultan Abdulrahman and Raafat Assi Hussein, Information Technology and Its Impact on Technological Innovation, Tikrit University Journal of Administrative and Economic Sciences, Tikrit University – Iraq, Vol. 03, No. 08, 2007, p. 50.

³ Noor Khalil Mahmoud Asaad, Talent Management and Its Impact on Technological Innovation and the Role of Technological Competencies: An Applied Study on Mobile Communications Companies in the Hashemite Kingdom of Jordan, Master's Thesis in E-Business, Middle East University, Amman – Jordan, May 2011, p.

- ✓ It must be linked to production and productivity. That is, any innovation that does not lead to improved production processes, better use of production factors, the provision of new products, or the enhancement of existing ones is not considered technological innovation in the proper sense;
- ✓ It should not be limited in its market diffusion, i.e., it must be widely effective and efficient, as it is a key factor in competition;
- ✓ It must contribute to cost control.

Secondly: Classifications of Technological Innovation

There are two main criteria for classifying technological innovations, which are:

1. Criterion of the Nature of Technological Innovation:

Based on the second definition, technological innovation can be classified according to its nature into two types, namely¹:

A. Product Technological Innovation: This refers to innovations related to product design (materials, equipment, tools, etc.) and involves putting a new product into implementation or marketing, or improving it technologically or in terms of specific features. In other words, it involves making changes to the specifications or characteristics of the product to better meet certain desires or fulfill certain needs more effectively².

B. Process Technological Innovation: This refers to innovations in the methods used to produce goods or services. The goal is to improve

¹ Eng. Saïd Oukil, *The Economics and Management of Technological Innovation*, previous reference, p. 33.

² Valenduc Gérard and Warrant Françoise, "Technological Innovation in the Service of Sustainable Development", Namur: Fondation Travail – Université, February 2001, p. 3

performance from both technical and economic perspectives simultaneously, which results in positive outcomes such as increased output and reduced cost per unit.

It is worth noting that the relationship between product technological innovation and process technological innovation varies depending on the nature of the product. In the case of industrial products, any change in the product often necessitates a change in the production method. However, for consumer products, the relationship is not necessarily direct—except in the case of a fundamentally new product. Replacing a material or component in production does not always require changing the equipment or technical method¹.

2. Criterion of the Degree of Technological Innovation:

According to the first definition of technological innovation, it can also be classified based on its degree into two categories:

A. Incremental (Partial) Technological Innovation: Also referred to as improvement, this is defined as “making small additions and partial modifications either to existing products or to current production operations and methods.” The adoption of partial technological innovation by an enterprise represents only the first step. The second step involves carrying out improvements and achieving the desired outcomes—whether related to the improved new product, the modified process, or the adjusted production method².

Advantages of Incremental Technological Innovation:

¹Eng. Saïd Oukil, previous reference, pp. 34–35.

² Najm Aboud Najm, *Innovation Management: Concepts and Modern Experiences*, 1st edition, Dar Wael for Publishing, Amman – Jordan, 2003, pp. 174.167

There are several advantages to this type of technological innovation, which we summarize as follows¹:

- ✓ It does not take a long time, because it requires prior technical knowledge already embodied in the new product;
- ✓ It does not require large resources (material, human, financial).

Risks of Incremental Technological Innovation:

✓ This innovation also has risks related to its implementation. We summarize them as follows:

- ✓ Excessive improvements may lead to extreme variety, which can cause customer confusion;
- ✓ Improvement is often just a result of following the leader or market leaders, so it does not achieve breakthrough leadership in market share except in some cases, especially when improvements accumulate to represent fundamental innovations or when some problems have radical innovation at their core.

B. Radical Technological Innovation:

This can be considered a qualitative break between two elements of the process, product, or methods, where in this type there is a discontinuity in previous technology.

Radical technological innovation, like incremental innovation, has advantages that serve the institution for exploitation, but also has drawbacks that may reduce or avoid it to achieve its goals.

- ✓ Advantages of Radical Technological Innovation:
We summarize some of these as follows¹:

¹ Bertrand Bellon, L'innovation créatrice, Économica, Paris, 1997, p. 05.

- ✓ It leads to the creation of new markets for technologies and new products, thus allowing the institution to define products relative to itself;
- ✓ It may require large investments in many cases, and thus has a big impact on most long-term problems, so it could achieve large profits.
- ✓ Risks of Radical Technological Innovation:
Despite the above-mentioned advantages of this type of innovation, it can have some risks, summarized as follows²:
- ✓ High costs, as this type of innovation requires large investments in its various stages, requiring the institution to search for multiple sources to finance these projects;
- ✓ The long time span, where the duration of technological innovation from the idea to its final form may take several months and sometimes up to two decades;
- ✓ The high probability of failure, as a study indicated that the American economy introduces approximately 10,000 new products every year, 80% of which fail either at their inception or in their early stages, and the remaining 20% of new products include only about 5% that are truly new products, such as breakthrough technologies that meet market demand.

¹ Abdou Abdoum, Innovation Management: Concepts and Recent Experiences, Previous Reference, p. 172.

² Abdou Abdoum, Innovation Management: Concepts and Recent Experiences, Previous Reference, pp. 173-174

Third: The difference between organizational-administrative innovation and technological innovation

Daft (2001) clarified that there is a fundamental difference between them, which appears from the fact that technological innovation begins from the base of the organizational pyramid up to its top, meaning that the creative process is produced and supported by the lower administrative levels within the institution and technical units. On the other hand, administrative innovation begins from the top of the organizational pyramid down to its base, where management in the pyramid supports and encourages this type of innovation.¹

Some researchers consider that institutions focus more on the technical side of innovation than on the administrative or organizational side, which causes the emergence of an organizational gap that negatively impacts the institution's performance significantly. Studies have shown that institutions exhibiting this gap tend to perform better.²

Discussion Questions

Please answer the following questions briefly:

1. Discuss the objectives aimed at by institutions when implementing technological innovations.
2. Compare the different forms of technological innovation.
3. What is the appropriate form of technological innovation in SMEs?
4. What are the requirements for technological innovation in SMEs?
5. Define the relationship between technological innovation and administrative innovation.

¹ Akef Lotfi, previous reference, p. 57.

² Same previous reference, p. 57.

6. What is the relationship between organizational culture and technological innovation?
7. What are the threats facing technological innovation in institutions in general, and specifically in small and medium-sized enterprises?
8. Provide real examples of technological innovation in Algeria and globally.
9. What are the effects of technological innovation on the performance of the institution?

Chapter Eight: Process Innovation

First: The Concept of Process Innovation and Its Importance

1. Concept of Process Innovation
2. Importance of Process Innovation

Second: Inputs of Process Innovation and Influencing Factors

1. Approaches to Process Innovation:
2. Factors Affecting Process Innovation:
3. Requirements of Process Innovation

Discussion Questions

Process innovation refers to the most recent forms of technological innovation at the organizational level, as it stems from developing new processes or redesigning existing ones to meet customer needs.

First: The Concept of Process Innovation and Its Importance

We will attempt to clarify the concept of process innovation and demonstrate its importance in the innovative activities of the organization through the following:

1. Concept of Process Innovation:

Before approaching the concept of process innovation, we will first address the concept of a process or process innovation.

- **Process:** The concept of a process is broad, encompassing all activities involved in producing new products or modifying them at the micro level (the unit of production). Some define it as the collection of activities that create value for the customer¹. Processes are linked to technological development, as they represent the most applied field of innovations and the outcomes of research and development². Thus, technology is considered the most influential factor in the development of products (goods and services). This is demonstrated by the efficient application of Japanese companies in this regard³.

¹ Séverine le Laarne and Sylvie Blanco, *Management of Innovation*, Pearson Education, France, p. 22.

² Eyad Mahmoud Al-Rahim, Dina Hassan, *The Impact of Scientific Innovation on Product Design: A Case Study in the Public Company for Electrical Industries*, Iraqi Journal of Administrative Sciences, Issue 77, Karbala University - Iraq, p. 69.

³ Sam Aboud Sam, *The Japanese Approach to Operations Management (Strategy, Systems, and Methods)*, Previous Reference, p. 46.

- **Process Innovation:** It is the development and introduction of new technology into the production process within the organization. What distinguishes this type of technological innovation is that it may be intangible, to a lesser extent than product innovation. Also, process innovation does not necessarily have to be followed by product innovation, such as conducting new productive scientific processes¹.

2. Importance of Process Innovation

The importance of process innovation is shown in the following²:

- **Intensity of Market Competition:** In the context of the dynamic environment in which the organization operates, competition forces it to seek innovations and work actively to maintain its market position.
- **Information Technology:** Information technology tools have witnessed remarkable development and have contributed additions to goods or services in the form of easy designs or everything that the internet network supports.

Second: Inputs of Process Innovation and Influencing Factors

Process innovation has several inputs and multiple influencing factors, which we will clarify in this section.

¹ Jean Louis Caccomo, *The Epic of Innovation: Technological Innovation and Economic Evolution*, L'Harmattan, Paris, France, 2008, p. 32.

² Eyad Mahmoud Al-Rahim, Dina Hassan, *Previous Reference*, p. 63.

1. Approaches to Process Innovation:

This type of innovation generally has several approaches for study and analysis. Among these are the following¹:

- **Design-oriented approach:** In this framework, scientific innovation is viewed as aiming to design new products and processes, in order to quickly respond to changes in consumer needs and desires in the market.
- **Strategic approach:** Scientific innovation takes on a strategic dimension, which is reconsidered in light of opportunities and threats in the external environment, aligning with the institution's capabilities in a way that ensures survival and growth.
- **Technological approach:** In this framework, scientific innovation is linked to technology, as these approaches originate from creative operational centers, based on applying ideas and developing new products.
- **Informational approach:** According to this approach, scientific innovation is the result of continuous development in information and communication technology, which generates many innovations and improvements in products.

2. Factors Affecting Process Innovation:

Among the most important points to mention are:

A. Designing a new productive process: Scientific design definitions include the following²:

Noor-Radford defines it as the testing and arranging of the equipment required for the transformation process, integrating labor

¹ Eyad Mahmoud Al-Rahim, Dina Hassan, Previous Reference, pp. 63–64.

² Eyad Mahmoud Al-Rahim, Dina Hassan, Previous Reference, p. 69.

power and other resources with the equipment. This definition clarifies that the basis of designing a new productive scientific process primarily involves arranging inputs to produce outputs.

Al et Slack define it as:

- ✓ At the strategic level, designing an operations network through which the customer obtains products and services.
- ✓ At the scientific level, organizing the physical, technological, and human resources facilitating the operations.

Based on these definitions, there are two levels of science involved:

- ✓ At the strategic level, it focuses on designing the operations network through which the customer receives products;
- ✓ At the scientific level, it relates to the arrangement of physical, technological, and human resources.

From these definitions, a scientific design of a new productive process is a task of organizing equipment and all sources of labor power and arranging them to enable the customer to receive outputs.

B. Life cycle of the productive process:

Steven classifies the life cycle of the productive process into three main stages:

- ✓ Beginning
- ✓ Middle
- ✓ End

It is not necessary that these stages align with the product life cycle stages. Table 2 below illustrates this:

Table No. (3) Life Cycle of the Production Process

Innovation Type	Stage Characteristics	Stage	Sequence
Preservation Innovation	Administrative innovation appears in marketing tools such as packaging and product marketing, production becomes more flexible and responsive to introducing technological innovations.	Consumption function, characteristics of the workshop, and response to local changes in product design, wide variety in input quality, limited organizational control over resources.	Initial / First
Technological Innovation	Focuses on facilitating product flow in production lines, increasing productive capacity, thus a higher level of innovation.	Beginning to mechanize things and limited institutional control over resources, limited control due to increased production volume, reducing unit production cost, or the start of production processes on push	Intermediate / Second

Innovation Type	Stage Characteristics	Stage	Sequence
		flow and some assembly lines.	
Technological Innovation	In the later stage of the production process, innovation focuses on cost reduction, i.e., relying on low-cost innovations.	Main production operations become mechanized, offering fewer industrial innovations and may involve continuous flow production process.	Final / Third

Source: Iyad Mahmoud Al-Rahim, Dina Hassan, Previous Reference, pp. 69-70

2- Existing Productive Process Improvement:

Also called partial innovation in the production process. Several definitions have been provided, some of which are as follows:

- Defined by Ritzman & Krajewski as: Procedures, activities, methods, techniques, and performance of productive operations through systematic study¹.
- Humphrey defines the process as activities, methods, practices, and tools that should be used to produce a certain product.

¹ Fardous Mahmoud Abbas, Previous Reference, p. 259.

3 Requirements of Process Innovation:

Process improvement requires the following:

- ✓ Understanding the current situation to develop the process;
- ✓ Developing a clear future vision of the desired process;
- ✓ Listing the activities required to implement the process improvement;
- ✓ Providing necessary resources to implement the plan;
- ✓ Controlling implementation.

According to the above, process innovation requires a systematic study of activities, procedures, methods, practices, and tools to perform the process in the best possible way.

Note: Evans states the process aims to achieve a high and continuous quality level in process performance.

Discussion Questions

Try to answer the following questions briefly:

1. Define the relationship between organizational innovation and process innovation?
2. What are the obstacles that process innovation may encounter the most?
3. What are the characteristics of process innovation in SMEs?
4. What are the requirements of process innovation in institutions?
5. Define the difficulties that process innovation may face?
6. What are the current solutions for process innovation in Algerian institutions?
7. Briefly define the effects of process innovation on the performance of human resources?
8. Mention realistic examples of process innovation?

Chapter Nine: Product Innovation

First: The Concept of Product Innovation

Second: Classifications of Product Innovation

1.Introducing a New Product:

2.Improving the Current (Existing) Product

3.Objectives of Product Innovation

Discussion Questions 92

Product innovation is considered the second type of technological innovation. It also has a basic kind which we clarify as follows:

First: The Concept of Product Innovation

Product innovation has several definitions, as well as several classifications and objectives that we will try to clarify through the following:

- ✓ According to Jean-Couis Caccono, it is the introduction of a new product. This innovation must be tangible (visible) to customers¹. From this definition, we notice that product innovation is the new tangible material product that is apparent to customers.
- ✓ It refers to the offering of a new (good or service) or a new process applied to the means or its uses, and it usually implies that the technological content of the good or service or the usage method has changed². That is, product innovation takes the form of a new product, whether entirely new or developed, and primarily focuses on the technological content.

From the above, it can be said that product innovation is that new or developed product among the products that is apparent to customers.

Second: Classifications of Product Innovation

Based on the previous definition, this type of innovation can be classified into two kinds:

¹ Jean Louis Caccomo, Op.cit., p. 31.

² Mohieddine Rahmouni, Determinants of Innovation Behavior of Enterprises in Tunisia, Doctoral Thesis (unpublished) in Economic Sciences, Montesquieu-Bordeaux IV University, France, July 2011, p. 14.

1. Introducing a New Product:

According to Parsons & Dartmple, it is the process of generating ideas about new goods and services and linking them to additions in existing production lines, where they are successful commercially or in marketing¹.

From this definition, it appears that the essence of introducing a new product is the result of linking ideas in the form of projects, providing additions to production lines that are entirely different from existing products (old ones). Accordingly, the sources for generating new ideas can be summarized in the following points²:

- **Marketing Research:** This research has become a primary source for any institution to obtain new product ideas, as it reflects the desires and tastes of consumers;
- **Research and Development:** As we mentioned earlier, research and development activities are fundamental in any creative process. This is because they contribute to the introduction of new products to meet the needs and desires of customers.

2. Improving the Current (Existing) Product

Its Concept: Kotler & Armstrong define it as: “The development of original products, product processes, product modifications, and brand improvements developed by the institution through its efforts in research and development.”³

¹ Mohamed Abdel Zain Abdel Aoun, Mohamed Fadel, Evaluation of Hotel Product Innovations (Field Study), Journal of Management and Economics, Issue 86, 2011, pp. 281-282.

² Same reference.

³ Nizar Abdel Zaid Rashid Al-Tawari and Fares Mohamed Al-Naqshbandi, Knowledge-Based Marketing: An Approach to Distinguished Marketing Performance, First Edition, Al-Waraq Publishing and Distribution House, Amman - Jordan, 2013, p. 113.

From what has been said, it can be noted that product modification (improvement) is carried out by making partial modifications to one of its constituent elements. Therefore, there is no product that can remain on the market for a long time without undergoing modifications¹.

Consequently, any institution that does not work on developing or improving its product will face the risk of falling behind and losing compared to other competing institutions.

3. Objectives of Product Innovation

Studies have indicated the existence of several objectives that institutions seek to achieve through undertaking this type of technological innovation, among which are the following²:

- ✓ Strengthening the institution's competitive points and providing energy from human resources;
- ✓ Meeting customer needs;
- ✓ Achieving growth in the institution's sales;
- ✓ Implementing improvements on existing products.

Discussion Questions

Try to briefly answer the following questions:

1. Compare between product innovation and process innovation?
2. What are the fields in which product innovation is most likely to occur?
3. What are the characteristics of product innovation in SMEs?

¹ Mohamed Abdel Zain Abdel Aoun, Mohamed Fadel, Previous reference, pp. 282-283.

² Nizar Abdel Zaid Rashid Al-Tawari and Fares Mohamed Al-Naqshbandi, Previous reference, pp. 115-116.

4. What are the requirements for product innovation in institutions?
5. What are the difficulties that product innovation might face?
6. What are the realities of product innovation in Algerian institutions?
7. Mention the impacts of product innovation on the institution's performance?
8. Give realistic examples of process innovation?

Chapter Ten: Marketing Innovation

First: Marketing Innovation (Its Concept and Main Requirements)

1.Its Concept:

2.Main Requirements for Marketing Innovation:

Second: Stages and Fields of Marketing Innovation

1.Stages of Marketing Innovation

2.Fields of Marketing Innovation

Discussion Questions

In addition to technological innovation of both types (process and product), there is another form of innovation in the marketing domain, which we will try to define in this chapter.

First: Marketing Innovation (Its Concept and Main Requirements)

1. Its Concept:

The concept of marketing innovation is broad and several definitions have been offered for it, including the following: “Introducing new ideas or removing traditional barriers in the practical application within marketing practices.”¹ That is, marketing innovation does not stop at generating the new idea; rather, it goes beyond that to applying this idea practically. “It is the successful exploitation of new ideas,” and by new ideas here, we mean marketing ideas. Marketing innovation aims at satisfying the consumer better than competitors and achieving success among them as well as within the capacities and possibilities of the organization.

It should be noted that marketing innovation may include one of the four marketing mix elements (product, price, promotion, and distribution) or all of them. It may also extend to other fields such as: innovation in marketing methods, which will be clarified later.

2. Main Requirements for Marketing Innovation:

There are several requirements, including the following:

¹ Ata Allah Fahd Sarhan, The Role of Innovation and Marketing Creativity of Banking Services and Consumer Products in Achieving Competitive Advantage for Jordanian Commercial Banks, Satellite Issue, Seventh of October University - Libya, Issue (Cover unavailable), Year (Cover unavailable), p. 247.

A. Administrative and Organizational Requirements¹: These are essentially linked to the core principles of organization within the institution, including:

- ✓ Convincing top management: That is, convincing them of the necessity and importance of marketing innovation and their special role in the competitive environment with other organizations and in achieving its goals. This is to create an organizational climate that enables the presence and continuation of this innovation, considering it an integral part of the institution's strategy.
- ✓ Coordination and integration among departments concerned with innovative activities: That is, the necessity of having coordination and integration among various functions involved in innovative activities or including marketing management and its assistants, within the organizational climate, as a basic requirement for the presence and dominance of marketing innovation creativity.

B. Requirements Related to Marketing Information: This type of information is considered highly important, as it must be available to benefit from it in marketing innovation. It mainly concerns the security of marketing information and the reliability of the related information.

Second: Stages and Fields of Marketing Innovation

1. Stages of Marketing Innovation

The marketing innovation process includes several successive stages that can be summarized as follows¹:

¹ Same previous reference, pp. 248-249.

- ✓ **Identifying customer needs and desires:** This is done by continuously monitoring customer desires, then analyzing them, aiming to satisfy them and to use technology as a catalyst in their work;
- ✓ **Generating innovative ideas:** After studying customer needs and desires, the organization works on generating innovative ideas, which can be in any element of the marketing mix, starting from products and services, prices, distribution, and enabling the introduction of new ideas by different methods;
- ✓ **Screening innovative ideas:** As a result of the number of ideas obtained from the previous stage, logical and most feasible ideas are selected for practical application of marketing innovation, which aligns with the organization's goals. This includes evaluating innovative ideas based on specific criteria and choosing the best among them;
- ✓ **Implementing innovation:** This is the final stage where the practical crystallization of innovation takes place, becoming something tangible and an application of marketing activity.

2. Fields of Marketing Innovation

A. Innovation in the Product Field: The product is considered the main element in the marketing mix, or the element on which other elements of this mix depend. Innovation plays a fundamental role in the product lifecycle, aiming to reach new products either for the market or to introduce modifications or improvements related to existing products².

¹ Same previous reference, pp. 249-250.

² Naeem Hafidh Abu Sha'ah, Innovative Marketing, Arab Organization for Administrative Development, Cairo – Egypt, 2003, pp. 111-112.

Although innovation in this area significantly affects the survival of business organizations in many of their goals, it is characterized by a high risk level. Some studies have shown that the failure rate varies around 30%, and in many cases, it rises to 95%¹. Therefore, business organizations must carefully manage the risks related to innovation in a certain product by passing through different stages that innovation in the product should be known for. These stages can be summarized as follows²:

- Generating and selecting opportunities for innovating new products;
- Identifying the needs and desires of customers in the market;
- Generating ideas for innovating new products;
- Evaluating ideas and concepts to innovate new products;
- Assessing the economic feasibility of innovating new products;
- Effectively creating new products;
- Selecting the new product;
- Testing the new product in the market;
- Introducing the product in a limited way to the market;
- Evaluating the performance of the new product in the market.

B. Innovation in the field of pricing: Price is considered one of the most important variables of marketing strategies and decisions, in terms of its impact on revenues and profits, its effect on demand for products,

¹ Samia Taloul, Marketing and Competitive Advantages: A Case Study of Saidal Pharmaceutical Company in Algeria, Doctoral Thesis (unpublished) in Institutional Management, University of Laghouat – Batna, 2007-2008, p. 244.

² Naeem Hafidh Abu Sha'ah, same previous reference, p. 252

and also because it is the most flexible element of the marketing mix. (1) Innovation in pricing is not necessarily related to searching for a way to set a low price or discount prices, because it should always take into account the characteristics of the targeted consumer. There are many innovative methods in the field of pricing, including the following¹:

- Competitive pricing through advertising that its prices are lower than competitors, or performing refusals on the prices of some products during certain periods;
- Bundle pricing method, i.e., differentiating by selling a number of products each at a limit, and selling them as a group in one package;
- Obtaining comprehensive price advantages with annual subscription cards;
- Psychological (mental) pricing.

C. Innovation in the field of promotion: Promotion activity mainly revolves around communication between the organization and the different targeted parties from it, especially customers. This activity consists of elements known as the promotional mix, which are: advertising, personal selling, sales promotion, and publicity (public relations). Promotion is considered one of the most important stages of innovation after the product, in terms of its spread and application. This appears through innovation in different promotional elements, which can be clarified as follows²:

Innovation in advertising: The goal of advertising is to provide the message recipient with information about a product they are interested in buying, thus increasing their awareness of this

¹ Samia Taloul, same previous reference, p. 155

² Same previous reference, pp. 252-255

information. This is done through strong linkage between the product and the benefit.

And this can be refined through innovation in advertising, which requires taking into account several observations, including the following:

- The necessity to test the innovative advertisement before deciding to use it on a wide scale;
- The necessity to consider the prevailing social and ethical values in society;
- Regarding advertisements that could harm competitors directly or indirectly;
- Innovation in the field of personal selling: the salesperson is considered one of the essential elements in the marketing information system, and the salesperson must focus primarily on the client, then on the product, because he is the link between the organization and the customers.

No matter how skilled the salespeople are, organizations continue to search for ways to reduce the difference in sales volume and their costs. Some of the methods include:

- Selling through distribution: the organization seeks rapid market coverage by distributing products and their sales forces that are split between sales representatives. However, with the increase in the organization's business size, it is discovered that this approach is more economical when forming private sales teams;
- Increasing the ratio of inside sales teams compared to outside sales teams, as the more salespeople and customers accept dealing with e-commerce, the lower the costs of personal selling;

- Increasing the productivity of salespeople by eliminating direct supervision pressures through sales managers and by recording each of them in specific cases;
- Innovation in publishing: If publishing is done in a visual format and based on essential facts, innovation in this regard is usually not in the form of a fixed formula but rather in the timing of its publication and the suitable means used for that.

Public relations are also considered an important source for disseminating information about the organization in the media. There are basically three types of public relations efforts:

- The first is institutional: dealing with the organization's daily operations;
- The second is defensive: defending the organization against any attack;
- The third is marketing: developing programs to support marketing efforts, which helps establish the organization's image and the expected strategic position for each product.

Regarding innovation in distribution: there are several creative distribution methods, among them the following¹:

Direct selling, considered one of the important innovations in direct distribution;

- Various innovations in Super Market stores;
- Hyper Market stores, which are innovative forms of product distribution, combined with marketing in Super Market stores, and marketing within brand chains.

¹ Same previous reference, pp. 256-257

E. Innovation in Marketing Research: This is achieved through reaching innovative ideas or concepts that go beyond the usual research methods and their applications to solve problems that the marketing researcher may face. The problem or difficulty may lie in the method used to collect data, in the design of the research itself, or in the selection of the sample or similar difficulties.

Discussion Questions

Try to answer the following questions briefly:

1. It is said that marketing innovation does not necessarily include all elements of the marketing mix. Explain this?
2. Define the advantages and disadvantages of different types of marketing innovation.
3. What is the appropriate form of marketing innovation in product design?
4. What are the requirements for marketing innovation in product design?
5. What are the mechanisms to activate innovation within organizations?
6. Define the relationship between marketing innovation and administrative innovation?
7. What is the relationship between marketing innovation and technological innovation?
8. What are the difficulties facing marketing innovation in organizations in general, and especially in small and medium enterprises?
9. Provide real examples of marketing innovation pioneers in Algeria and world wide ?

Chapter Eleven: Innovation in Small and Medium Enterprises

First: Characteristics of Innovation in Small and Medium Enterprises

Second: Effects of Innovation on Small and Medium Enterprises

Third. The reality of innovation in small and medium Algerian enterprises.

Discussion Questions

Small and medium enterprises (SMEs) are considered the basic pillar for the economies of countries, whether developed or developing. This chapter attempts to highlight innovation in this type of enterprise.

First: Characteristics of Innovation in Small and Medium Enterprises

Ahmad Ahad (Ahmad) focused in his study on companies to identify the characteristics of the most innovative companies. He concluded that the most important of these traits are:

- ✓ The existence of a clear philosophy and mission for the enterprise that emphasizes innovation and considers innovation one of the main strategic pillars of the enterprise.
- ✓ Attention to the human element and continuous research about their distinguished talents, developing their abilities, and providing an appropriate environment and culture for innovation.
- ✓ Interaction and integration of efforts among different employees within the enterprise.
- ✓ Providing departments and units for innovation and offering opportunities for risk-taking in these departments and the ability to learn from failure.
- ✓ The existence of open communication channels with the higher management levels within the enterprise.
- ✓ Encouraging experimentation, following up on new ideas, and putting them to the test.
- ✓ Attention to both the external and internal environment and continuous interaction with customers.
- ✓ Long-term planning with a focus on foresight policies and reward systems.
- ✓ Emphasis on appropriate work design.

- ✓ Acceptance of failure and appreciation of rewards for both failure and success.

A comparative study conducted on the innovation environment in small and medium American and Canadian enterprises by Boomer and Jalajas showed that the innovation environment does not differ significantly between these countries. However, the study indicated that the most important influencing factors are the existence of a work environment characterized by challenges and support provided by the enterprise.

Therefore, innovation in these countries may be related to other factors such as the industrial structure, competitiveness, and the degree of innovation in both the countries and the large enterprises operating in them.

Second: Effects of Innovation on Small and Medium Enterprises

Innovation plays an effective role in the growth of small and medium enterprises, beyond its role in overcoming the intensity of competition and challenges arising from the business cycle and environmental changes. Therefore, innovation is considered a fundamental element within small and medium enterprises to increase their ability to succeed in the long term and to gain competitive strength characterized by sustainable competitive success.

A summary of the role of innovation in small and medium enterprises can be highlighted in the following points¹: Generating new ideas and ways to identify problems and propose solutions; thus, it is one

¹ El Yass's story, the role of innovation in improving the performance of small and medium enterprises, Meeting point of innovation in the Algerian economic institution: Enhancing competitive capacity, University Center of Ahras Market, pp. 14-16

Chapter Eleven: Innovation in Small and Medium Enterprises

of the essential knowledge inputs that small and medium enterprises rely on to achieve competitive success from one side, and it develops creativity and flexibility among individuals within these enterprises from another.

- ✓ Serving customers by focusing on their needs and enhancing the productivity, efficiency, and effectiveness of the enterprise in achieving goals using economic resources and energies.
- ✓ Increasing the enterprise's ability to compete by providing new goods and services and relying on new or improved processes to create new opportunities in new markets.
- ✓ Making small and medium enterprises more socially responsible.
- ✓ Innovation involves many contradictory situations that may arise, and innovation alone is capable of managing them, including:
- ✓ Conflicts between actual reality and what the enterprise shows.
- ✓ Unexpected events.
- ✓ Operational needs that the small and medium enterprises meet.
- ✓ Changes in industry, market, geographical shifts, values, perceptions, and awareness.
- ✓ It requires small and medium enterprises to rely on research and technology to produce knowledge that supports competitive forces, as well as the structure that encourages innovation, which generates new knowledge applied to develop new goods or services that reach a market segment. This is based on the knowledge foundation functioning within innovation.

Therefore, innovation enables small and medium enterprises to create new products quickly or to modify and develop existing products

rapidly, thus possessing the advantage of quick response to the varying needs of consumers.

Third. The reality of innovation in small and medium Algerian enterprises.

Regarding the relationship between small and medium enterprises and innovation, various studies and reports in Algeria have pointed to the following¹:

- ✓ The relationship between small and medium enterprises and universities is weakly supported;
- ✓ The inability of small and medium enterprises to innovate stems from the lack of innovation frameworks, research and development, as well as the incapacity of research centers to effectively and tangibly transfer their results to the enterprises;
- ✓ The current technological awareness spread in small and medium enterprises is poorly organized within a framework of clear procedures and precise objectives;
- ✓ The lack of awareness among managers of small and medium enterprises regarding innovation issues is a fundamental factor in weakening their competitiveness and impeding it. This is due to the lack of interest in close cooperation with universities and research centers;
- ✓ Activities related to research and development are generally discouraged due to a lack of supporting procedures and insufficient funding, in addition to the difficulties related to marketing new products;

¹ Ministry of SMEs and Handicrafts, (date accessed: May 20, 2007). Policy of support for innovation in SMEs, (Online). URL: <http://www.univ-mascara.dz/POLITIQUESAPPUIPME.doc>

- ✓ Research is considered an expensive system that requires large investments and integrates the research process around some ministries, industries, national and international organizations, thus producing scientific and technical information.

Discussion Questions

Try to answer the following questions briefly:

1. What are the definitions of innovation in small and medium enterprises (SMEs)?
2. How can the innovation process be activated in SMEs?
3. What are the most important characteristics of administrative innovation in SMEs?
4. What is the appropriate innovation model that fits the characteristics of SMEs?
5. Define the appropriate technological innovation in SMEs?
6. Compare the innovation process in SMEs and large companies?
7. In your opinion, what is the impact of innovation on SME performance?
8. Provide examples of innovation in small and medium enterprises?

Conclusion

Conclusion

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