The Role of Organizational DNA in Achieving Sustainable Competitive Advantage: A Study on Telecommunication Sector in Egypt

Author Details: [(1)]**Prof. Dr. Wageeh A. Nafei**-University of Sadat City, Menoufia, Egypt
[(2)]**Dr. Manal A. Ghoneim**- October High Institute for Engineering & Technology, 6 Th of October, Egypt

Abstract

Purpose: *This paper attempts to highlight the significant role of organizational DNA in improving Sustainable Competitive Advantage (SCA).*

Research Design/Methodology: *Using Booz Allen Hamilton, 2002; Neilson, et al., 2003; 2004; Booz, 2004; Neilson, et al., 2005; Holoday, 2005; Remecker & Bowdin, 2005; Neilson, 2006; Vanmullem & Hondeghem, 2007; Soroush, et al., 2013 of organizational DNA, the study develops a number of hypotheses and tests them. This research is an applied form in terms of its goals and descriptive in terms of the method of data collection. Three groups of employees at industrial companies were examined. Of the 355 questionnaires that were distributed, 300 usable questionnaires were returned, a response rate of 84%.*

Findings: *This study reveals that the four building blocks of organizational DNA (organizational structure, decision rights, motivators, and information) have a significantly direct effect on SCA.*

Practical implications: *The study suggests that the industrial companies can improve SCA by influencing its organizational DNA, specifically, by developing the organizational structure, decision rights, motivators, and information. The study provided a set of recommendations including the necessity to pay more attention to the dimensions of organizational DNA as of a key source for organizations to enhance the competitive advantage which is of prime significance for SCA.*

Originality/value: *The study observes that there is a critical shortage of studying organizational DNA in Egypt and that a greater understanding of the factors that influence the SCA, including organizational structure, decision rights, motivators, and information, is of great importance. Therefore, this study is to examine the relationship between organizational DNA and SCA among employees in the pharmaceutical industrial in Egypt.*

Keywords: *organizational DNA, sustainable competitive advantage*

1. Introduction

Organizational DNA is one of the metaphors that have been recently considered in organization and management subjects that describe organizations with a genetic approach. Analysis, discovery, classification and description of inheritance facts and variations are considered as the important targets in genetics (Soroush, et al., 2013).

Similarity among living creatures and their relatives and ancestors refers to inheritance. But variations are regarded as the difference between any living creature and other creatures. Hence, the initiative paradigm of organizational DNA is based on the principle that each organization has exclusive genetic characteristics like any living organism and the characteristics are shown by the constructing main and natural elements (DNA). Therefore, by combining the reality of biology and genetics with the management science, effective steps could be made in improving and developing the organizations (Soroush, et al., 2013). The organizational DNA has an effective role in the identification of organizations and their leadership and management functions such as decisions, organizational structure, group work and communications (Naderi, 2009)

Management, as a science, presents a new vision of organization based on the concept of organizational DNA. It also helps explain its performance. Booz Allen Company for administrative consultations, based in the USA, was the first to use this term upon its foundation in 2002, using an international questionnaire that encompassed 100 states, 23 sectors, and eight departments inside each company. The aim was to recognize the unique characteristics of the organization that define its character. Each organization, it was revealed, enjoyed its own unique traits distinguishing it from other organizations, even those operating in the same field. This urged many researchers to attempt to detect such traits which

are regarded as the organizational DNA. There were four variables or chromosomes that define the organization gene (gene of performance). They are decision rights, information, motivators, and structure (Neilson, 2004).

Success of any organization is based on the inculcating of suitable values among employees, along with correct information, financial and moral incentives and a suitable environment. Such success should match the personality of each individual in the organization and realize its common interest. This was why Booz Allen Hamilton Company for administrative consultations in the USA tried to find facts to recognize the unique genes of each organization that crystallize its character. This gave birth to the new term of organizational DNA, in 2002, defining organizational variables for each organization affecting motives of employees towards work. Such motives and level of performance at work is influenced by usage of suitable motivation techniques, individual performance of some managers, the different cultures of some employees and organizations, the professional careers, the organizational structure, the choice of the suitable strategy from the perspective of top management, leadership styles, span of supervision, degree of decentralization, delegation of authority, availability and accuracy of information and cognizance of traits unique to each distinct person (Neilson, 2006).The industrial companies have the important economical roles today in the growth and dynamism of the community. Thus, the models and researches that could help increase the effectiveness of organizations seem to be essential and vital. Therefore, identifying organizational DNA could provide great aids in improving these organizations. Hence, this research aims at identifying organizational DNA of the industrial companies in Egypt.

Competitive advantage is the position occupied by the organization against competitors, and creativity leads the organization to achieve competitive advantage. It is the ability to carry out various activities in the organization at the lowest level of cost compared to competitors (Porter, 1985). It also works to discover new methods that are more effective than those used by competitors by producing values and benefits for the customer that outweigh the values and benefits achieved by competitors (Correia et al., 2020).

SCA contains the elements that guarantee the organization's continuity of maintaining this advantage for the longest possible period of time (Saleh, 2019).

SCA works to implement a value-creating strategy that is not imitated in the past and can be imitated in the future by competitors (Mahdi et al., 2019).

SCA is the organization's ability to improve and maintain its competitive position in the market and to survive and excel against its competitors over a long period of time (Kadir et al., 2018).

The dimensions of SCA are differentiation, the least cost, appropriate timing, innovation, and core competency (Pratono et al., 2019; Singh & Sharma, 2018; Adams & Lamant, 2003; Hall, 1993; Conner, 1991).It should be noted that social and technological challenges played a major role in enhancing SCA (Hasseeb et al., 2019).

There is a significant impact of market orientation on product innovation, that generating market information on market behavioral orientation has a significant impact on product innovation, and that the exchange of market information and response to market information had a significant impact on product innovation (Na et al., 2019).

The dimensions of knowledge management also have a positive relationship with SCA (Mahdi et al., 2019). There is also a positive effect between product innovation and market leadership on SCA (Kuncoro & Suriani, 2018).

It is worth noting that entrepreneurial orientation, marketing orientation, and knowledge management orientation have a significant positive impact on SCA (Guimaraes et al., 2018).

New innovations in product design, packaging, and pricing are also developing a SCA (Quaye & Mensah, 2018).

The resource-based view that involves achieving SCA depends on the organization's possession of distinct, scarce and valuable resources that cannot be imitated by competitors (Maker & Korir, 2017).

The human and leadership capabilities, infrastructure, technological capabilities, and the reputation of the organization positively affect the achievement of SCA (Nzyoka et al., 2017).

Finally, there is a significant effect of intellectual capital and knowledge management on SCA (Osman & Ngah, 2016).

2. Literature Review

2.1. Organizational DNA

2.1.1. Organizational DNA Concept

Organizational DNA is a technique or means used to pinpoint difficulties facing an organization and inhibiting its performance, along with ways to overcome such difficulties (Thomas, 2007).

Organizational DNA is a metaphorical term denoting the fundamental factors that define the character of an organization and help explain its performance (David, et al., 2006).

Organizational DNA is a system that attempts to discover the organization by pinpointing its strong and weak points, along with defining remedies (Gharmy, 2006).

Organizational DNA includes four principal factors that unify and distinguish the character of an organization; namely, decision rights, information, motivators, and structure (Neilson, 2006).

Organizational DNA is a metaphor or a theory, involving elements that together describe the identity of the organization and helps in expressing the organizational activities. As the DNA in nature describes required aspects for creation of a unique living creature, organizational DNA could express the OP according to four definitions of structure, the right to make decisions, motives and information of organizational DNA (Neilson, et al., 2005).

Organizational DNA is the employment of simple rules to create fruitful relations and lay down expectations of employees' behavior (Holoday, 2005).

There are four main blocks constructing organizational DNA. They are regulations and manners of decisions, information, stimulants (motives), and structure (Booz, 2004). It is a metaphor for the underlying factors that together define an organization’s “personality” and help explain its performance. The organizational DNA framework was developed by Booz & Company to give organizations an easy, accessible way to identify and remedy the roadblocks that impede results and impact its success (Neilson, et al., 2003; 2004).

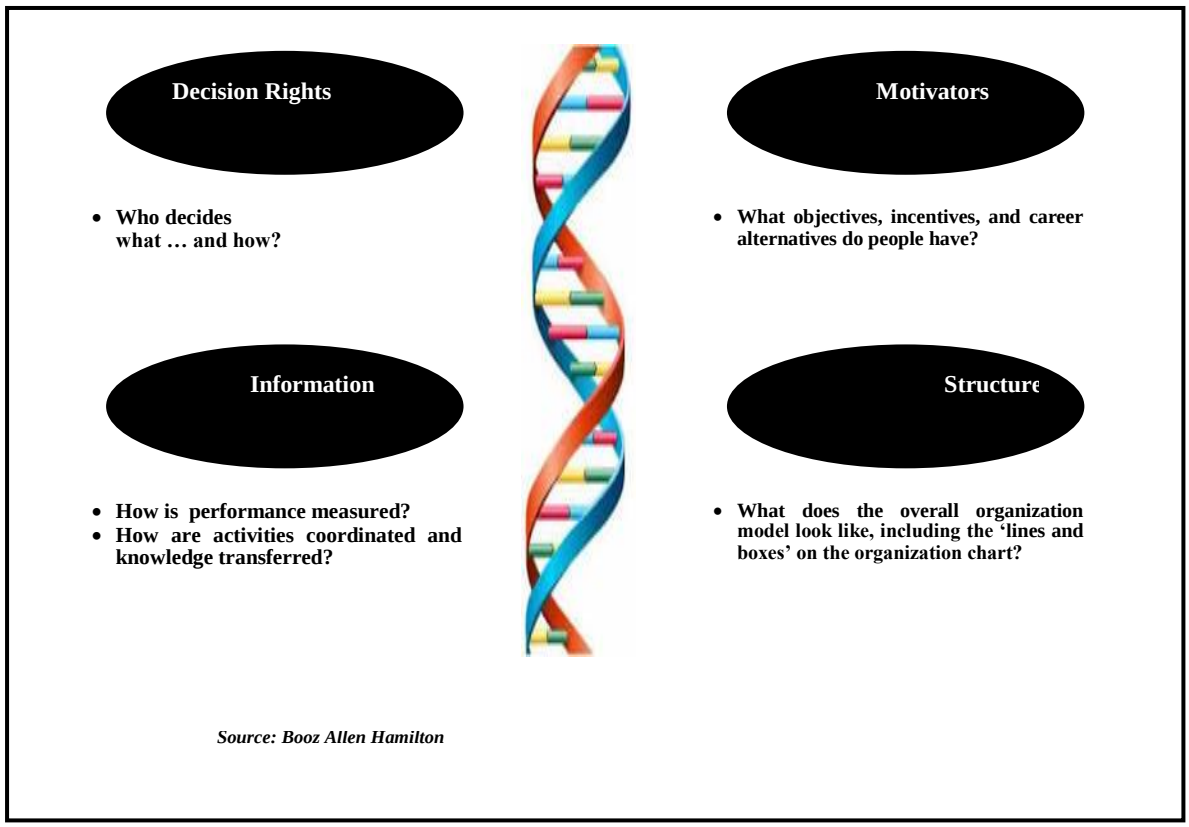
Organizational DNA expresses a method of analysis, ideology, elaboration and thinking about organizations, in which their models, management functions, leadership and other notions of organizations are considered. It uses quite diverse approaches for identification of organizations instead of organizations forms and models, by considering the affairs like team works, decision-making and development of human workforce, as separate or at least independent variables (Honold & Silverman, 2002).

2.1.2. Organizational DNA Dimensions

The DNA of living organizations consists of four building blocks, which combine and recombine to express distinct identities, or personalities. These organizational building blocks (structure, decision rights, motivators, and information) largely determine how a firm looks and behaves, internally and externally (See Figure 1) (Source: Booz Allen Hamilton; Neilson, 2006).

Figure (1)

The Four Building Blocks of Organizational DNA



According to the above figure, the DNA of a living organization has four bases that, combined in myriad ways, define an organization's unique traits. These bases are (Neilson, et al., 2003; 2004):

1. ***Decision Rights.*** Who decides what? How many people are involved in a decision process? Where does one person's decision-making authority end and another's begin?.

   It is the definition of the basic techniques of actual decision taking in the organization, besides efficiency of organization's work, speed of supplying products, good services, and time needed to get the outcome. Decision rights are the basic task that should be tackled by organizations that suffer functional imbalance as they are the cornerstone of efficient development.

   Decision Rights means the underlying mechanism of how decisions are truly made (Hamilton, 2005).

   Decision Rights means firstly, making decisions authorities and responsibilities as clear as possible and secondly, appoint "process owners" the business unit or functional managers who lead the revitalization of business processes and who will be accountable for its success- and empower them (Bordia et al., 2005).

2. ***Motivators.*** What objectives, incentives, and career alternatives do people have? How are people rewarded, financially and nonfinancially, for what they achieve? What are they encouraged to care about, by whatever means, explicit or implicit?

   They are the means employed by an organization to stimulate and motivate its employees for better performance. They are not limited to finances, but include material and moral means of motivation to urge employees to do their utmost for motivators. Motivators help employees match their own goals with those of the organization.

   Motivators take part in shaping behavior and in influencing OP. Motivators include more than money, they also include nonfinancial aspects like goals, preference, and accomplishment (Ivancevich & Matteson, 2002). Balancing between positive (financial and nonfinancial) and negative (punishment)

motivational considerations is one of the main issues that managers must attend (Thompson & Stricland, 2003).

Motivation is a powerful tool for furthering the organization's strategic goals. First, awards have a major impact on employee attitudes. Second, employee compensation is typically a significant organizational cost and thus requires close scrutiny (Noe et al, 1994).

3. ***Information.*** What metrics are used to measure performance? How are activities coordinated, and how is knowledge transferred? How are expectations and progress communicated? Who knows what? Who needs to know what? How is information transferred from the people who have it to the people who require it?

   It is the basic means for the transfer and dissemination of knowledge inside an organization from holders of information to those in need of it. It is the mover of activities at the organization and may be employed to measure employees' performance as bad information affect the remaining components of DNA, especially decision rights and motivators.

   Without accurate information, decision makers cannot take decisive steps and seize available market opportunities, while employees do not gain the appreciation they deserve.

   Information can play two critical roles in today's organizations that are organizational response to business pressures (Turban et al., 1999), and enhance key business functions (Wheelen & Hunger, 2004).

   Information explains what metrics are used to measure performance? How are activities coordinated, and how is knowledge transferred? How are expectations & progress communicated? Who know what? Who need to know what? (Neilson et al., 2005).

4. ***Structure.*** What does the organizational hierarchy look like? How are the lines and boxes in the organization chart connected? How many layers are in the hierarchy, and how many direct reports does each layer have?. It is the organizational map including administrative levels, direct reports, professional career, transfers, and promotions inside an organization. Structure is the clearest of the four components of DNA as it is the launching pad of organizational change programs.

   Structure should not be the starting point, but the logical outcome of the options relating to the other three determinants; decision rights, information, and motivators. It is the climax not the basis of efforts of reorganization (Govindarajan, & Trimble, 2006).

   Structure is the sum total of the ways in which the organization divides its labor into distinct tasks to ensure effective communication, coordination, and integration of efforts across departments (Hodge & Anthony, 1991; Daft, 2001).

   The structure, multiple organization layers and narrow span of control often result in excess bureaucracy and bottlenecked decision making. Executions must draw attention toward two remedies. First, rooting out and eliminating or redeploying shadow staff-people performing tasks that duplicate the performed elsewhere in organization-resources are a key to improve OP. Second, managing the career path and ensuring rotations in different geographies, functions, and roles is important to the development of well-rounded senior managers of product development (Bordia et al., 2005).

Constructing organizational blocks and their combinations determine the behavior of an organization and success or failure in achieving organizational goals. It is believed by this approach that competent people in an organization, who are the main and principle forces of successful organizations, are merited by proper values, equipped by correct information and motivated by appropriateness rewards. It is the main challenge to provide unique rows and proper relations of the organizational constructive blocks that cause the personal interests of people to conform with the organization's operating programs. The only appropriate condition is that the four constructive blocks in the organization to operate with each other and solve the organization problems as regards the organizational goals (Neilson, et al., 2005).

2.2. Sustainable Competitive Advantage

2.2.1. Sustainable Competitive Advantage Concept

Competitive advantage is the position that the organization occupies against competitors, and competitive advantage arises as soon as the organization discovers new ways that are more effective than competitors, or in other words, the competitive advantage arises from the value that the organization can create for its customers, and this definition focuses on that creativity leads the organization to achieving the competitive advantage, and that judging it is related to the values obtained by the customer (Porter, 1985).

Competitive advantage is the ability to engage in various activities in the organization at the lowest level of cost compared to competitors (Porter, Porter).

Competitive advantage is the discovery of new methods that are more effective than those used by competitors by producing values and benefits for the customer that outweigh the values and benefits achieved by competitors (Correia et al., 2020).

The first to put forward the idea of the concept of SCA is (George Day, 1984), indicating that different models of strategies can be obtained for the purpose of helping the organization to survive, but the fact on which it is based in achieving SCA is what he presented (1985, Porter) in his well-known model in determining competition strategies that have been linked to the environment through the products offered by the organization, and are compatible with the customer's needs and capabilities.

SCA is the developed model of the competitive advantage that the organization targets in the market, because it contains the elements that guarantee the organization the continuity of maintaining this advantage for the longest possible period of time. The most important characteristic of this definition is that it focuses on the quality dimension, which ensures the continuity of its position in competitive markets (Saleh, 2019).

SCA is the implementation of a value-creating strategy that is not imitated in the past and can be imitated in the future by competitors. The most important characteristic of this definition is that it focuses on the essence of SCA, which is creativity, which is one of the dimensions of SCA (Mahdi et al., 2019).

SCA is the organization’s ability to improve and maintain its competitive position in the market and to survive and excel against its competitors over a long period of time. The most important characteristic of this definition is that it focuses on the element of efficiency, which is one of the dimensions of SCA (Kadir et al., 2018).

2.2.2. Sustainable Competitive Advantage Dimensions

The dimensions of SCA are differentiation, the least cost, appropriate timing, innovation, and core competency (Pratono et al., 2019; Singh & Sharma, 2018; Adams & Lamant, 2003; Hall, 1993; Conner, 1991):

2.2.2.1. Differentiation

Differentiation means providing the unique brand, distinguished technology, customer service and products to gain a large market share compared to competitors. It is a competitive strategy that involves the uniqueness of different characteristics in the good or service provided to customers, in a way that is perceived by the customer as something unique or distinctive, and it can represent one of the basic barriers to competitors. The most important areas of differentiation are (1) differentiation based on technical differentiation, (2) differentiation on the basis of providing greater services to customers, (3) differentiation on the basis of quality, (4) differentiation on the basis that the organization provides more value to the customer for the amount paid (Pratono et al. al., 2019).

Differentiation is in distinguishing the product or service provided by the organization, and creating something that is seen within the industry as being unique. By creating a high degree of distinction, the organization can find a distinctive competitive position in the field of competition (Matos, 2015).

Differentiation achieves several advantages for business organizations represented in providing distinguished service to customers accompanied by outstanding quality, and a close relationship with the customer (Porter, 1985).

2.2.2.2. The Least Expensive

Business organizations that compete through the lowest cost, and organizations seek a major goal of achieving a low cost for their products and services, and the lowest cost is the organization's ability to provide a less expensive good or service compared to competing organizations, which ultimately leads to profitable returns, and the organization can enjoy the advantage of lower cost by going to the market and achieving a lower price for the product or service compared to the prices of competitors, which leads to gaining a higher market share while maintaining profitability (Quairel-Lanoizelee, 2016).

2.2.2.3. Appropriate Timing

Competitive management is a time-related process. The speed of change in the competitive environment has made the world a small village. With the beginning of the twenty-first century, the focus on time has increased as an influencing factor, as time management allows the organization to achieve competitive advantage (Sapkauskiene & Leitoniene, 2016).

Organizations are witnessing a new era in which geographical borders are fading and affected by the time factor and the activation of the high speed factor that shortens time which is an absolute thing that is always characterized by succession and continuity, regardless of the fact that it is one of the external factors. Time has several characteristics (1) that it is available to everyone and everyone has the right to use and exploit it without restrictions or conditions, (2) that it can be exploited and invested without limits or restrictions, (3) that it cannot be saved, stored or kept (4) that it is not recoverable Or take advantage again, (5) that it cannot be manufactured or produced, and it cannot be purchased or obtained from any other source, and therefore it is considered an expensive asset, as time is a real wealth (Rynasiewiz, 2015).

2.2.2.4. Innovation

Creativity is the presentation of an idea and its implementation in new ways, and creativity encourages research and discovery, the development of traditional experiences and the adoption of new organizational forms (Perez et al., 2017).

Innovation means the ability to properly produce and apply new ideas, so organizations with creative strategies have processes that quickly implement, test, evaluate and review ideas to improve the performance of the organization (Bolatana et al., 2016).

Innovation is the ability to produce or provide a new, valuable service, and innovation is an integrated and programmed unit for any organization and arranged logically, for a group of factors that lead the organization to achieve the desired results in light of the goals, vision and mission of the organization. It can be a new solution to a problem. There are several characteristics of innovation, which are (1) the ability of the mind to discover new relationships (2) a mental process that must end in making a positive change in the practical reality of the surrounding environment, (3) the introduction of a new element in a new place, or an existing place, to perform a new job Which leads to better results, or new results (Perez et al., 2017).

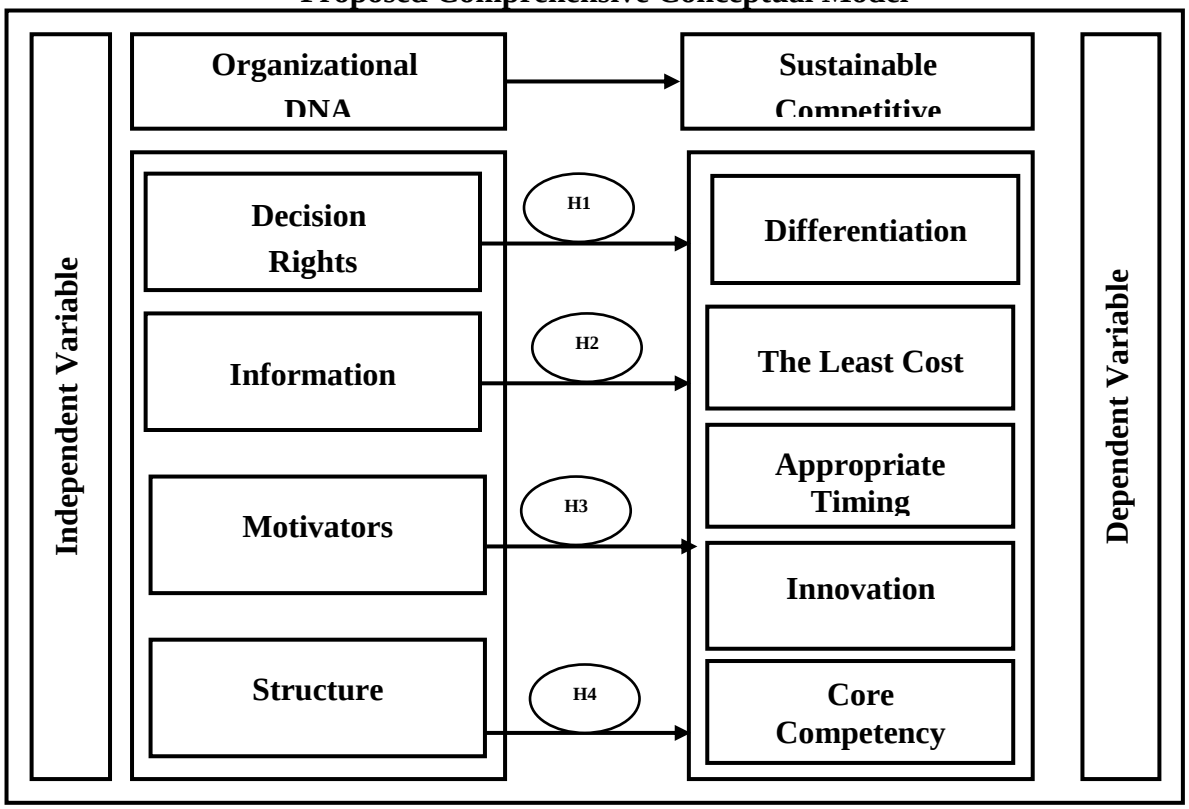
2.2.2.5. Core Competency

Core competencies are things that the organization can do well, and provide advantages to the customer that are difficult for competitors to imitate (Prahalad & Hamel, 1990).

Core competencies take different forms, represented in knowledge or close relationships with customers and stakeholders. Not all competencies in the organization are essential. Rather, core competencies are those competencies that allow organizations to have a superior advantage, and they are the body of knowledge that distinguishes the organization and provides it with a SCA over others. Organizations are a variety of final products and services in the present and the future, and thus are an essential element in determining the SCA (Agha et al., 2012).

3. Research Model

Figure (2)
Proposed Comprehensive Conceptual Model



The research framework suggests that organizational DNA in an organization have an impact on SCA.

Organizational DNA as measured consists of decision rights, information, motivators, and structure (Booz Allen Hamilton, 2002; Neilson, et al., 2003; 2004; Booz, 2004; Neilson, et al., 2005; Holoday, 2005; Remecker & Bowdin, 2005; Neilson, 2006; Vijay & Chrise, 2006; Vanmullem & Hondeghem, 2007; and Soroush, et al., 2013).

SCA is measured in terms of differentiation, the least cost, appropriate timing, innovation, and core competency (Pratono et al., 2019; Singh & Sharma, 2018; Adams & Lamant, 2003; Hall, 1993; Conner, 1991).

4. Research Questions

The research problem has two sources. The first is to be found in previous studies that dealt with the relationship between Organizational DNA and SCA. This called for the researcher to test this relationship in the Egyptian environment. The second is the pilot study, which was conducted through interview with (30) employees at Pharmaceutical industrial. The researcher found several indicators. The important role could be played by Organizational DNA in affecting SCA. The research questions are as follows:

Q1: The relationship between organizational DNA (decision rights) and SCA at Telecommunication Sector in Egypt.

Q2: The nature of the relationship between organizational DNA (information) and SCA at Telecommunication Sector in Egypt.

Q3: The extent of the relationship between organizational DNA (motivators) and SCA at Telecommunication Sector in Egypt.

Q4: The nature and the extent of the relationship between organizational DNA (structure) and SCA at Telecommunication Sector in Egypt.

5. Research Hypotheses

The following hypotheses were developed to decide if there is a significant correlation between Organizational DNA and SCA.

H1: Organizational DNA (decision rights) has no significant effect on SCA at Telecommunication Sector in Egypt.

H2: Organizational DNA (information) has no significant impact on SCA at Telecommunication Sector in Egypt.

H3: Organizational DNA (motivators) has no significant effect on SCA at Telecommunication Sector in Egypt.

H4: Organizational DNA (structure) has no significant influence on SCA at Telecommunication Sector in Egypt.

6. Research Population and Sample

The population of the study included all employees at Telecommunication sector in Egypt. The total population is 56800 employees. Determination of respondent sample size was calculated using the formula (Daniel, 1999) as follows:

$$n = \frac{N \times (Z)^2 \times P\,(1\text{-}P)}{d^2\,(N\text{-}1) + (Z)^2 \times P\,(1\text{-}P)}$$

A number of samples, obtained by 381 employees at Telecommunication sector in Egypt, are shown in Table (1).

Table (1) Distribution of the Sample Size

Telecommunication Sector in Egypt	Numbers	Percentage	Sample Size
1. Telecom Egypt	33000	58%	381X 58% = 221
2. Vodafone	7800	14%	381X 14% = 54
3. Orange	8000	14%	381X 14% = 53
4. Télécommunications	8000	14%	381X 14% = 53
Total	**56800**	**100%**	**381X 100% = 381**

Source: Personnel Department at Telecommunication Sector in Egypt, 2020

Table (2) Characteristics of Items of the Sample

Demographic Variables		Frequency	Percentage
1. Gender	Male	210	70%
	Female	90	30%
	Total	**300**	**100%**
2. Marital Status	Single	110	37%
	Married	190	63%
	Total	**300**	**100%**
3. Age	From 30 to 45	180	60%
	Above 45	120	40%
	Total	**300**	**100%**
4. Educational Level	University	240	80%
	Post Graduate	60	20%
	Total	**300**	**100%**
5. Period of Experience	From 5 to 10	200	67%
	More than 10	100	33%
	Total	**300**	**100%**

8. Research Variables and Methods of Measuring

The 64-item scale of organizational DNA section is based on Booz Allen Hamilton, 2002; Neilson, et al., 2003; 2004; Booz, 2004; Neilson, et al., 2005; Holoday, 2005; Remecker & Bowdin, 2005; Neilson, 2006; Vijay & Chrise, 2006; Vanmullem & Hondeghem, 2007; and Soroush, et al., 2013. There were 18 items measuring decision rights, 17 items measuring information, 15 items measuring motivators, and 14 items measuring structure.

The 18-item scale SCA is based on Pratono et al., 2019; Singh & Sharma, 2018; Adams & Lamant, 2003; Hall, 1993; Conner, 1991. There were four items measuring differentiation, three items measuring the least cost, four items measuring appropriate timing, three items measuring innovation, and four items measuring core competency.

Responses to all items scales were anchored on a five (5) point Likert scale for each statement which ranges from (5) "full agreement," (4) for "agree," (3) for "neutral," (2) for "disagree," and (1) for "full disagreement."

9. Data Analysis and Hypotheses Testing

9.1. Coding of Variables

Table (3)
Description and Measuring of the Research Variables

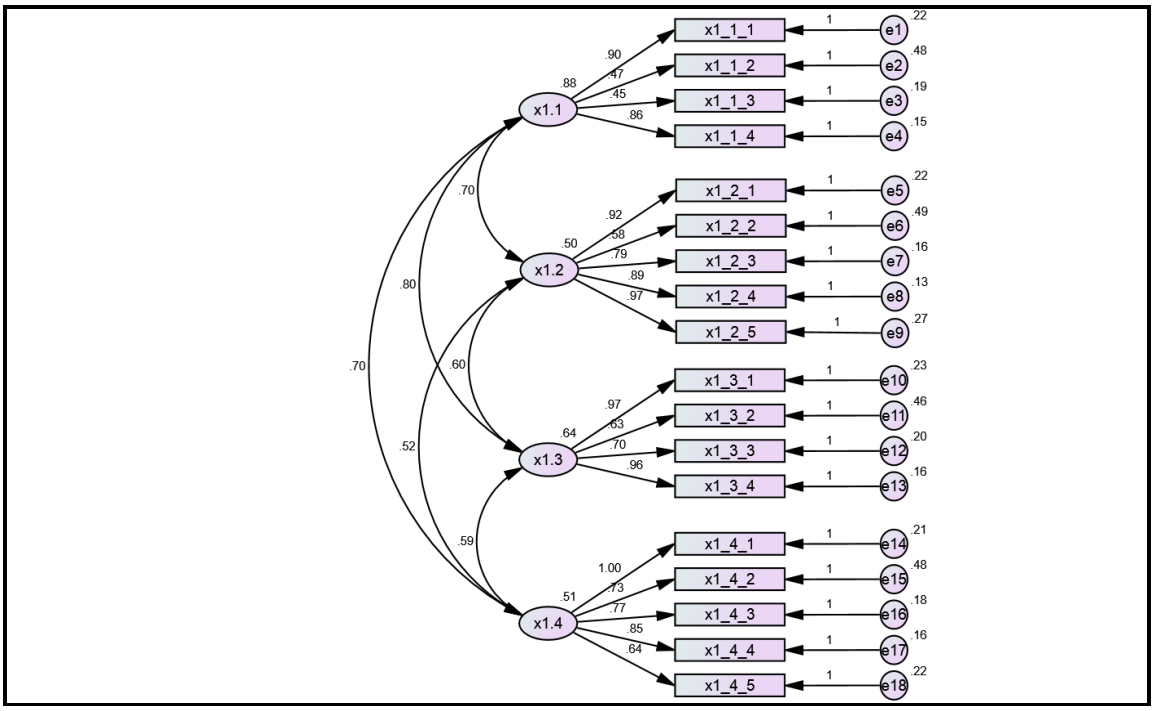
Main Variables		Sub-Variables	Number of Statement	Methods of Measuring Variables
Independent Variable	Organizational DNA	Decision Rights	18	Booz Allen Hamilton, 2002; Neilson, et al., 2003; 2004; 2005, Booz, 2004; Holoday, 2005; Remecker & Bowdin, 2005; Neilson, 2006; Vijay & Chrise, 2006; Vanmullem & Hondeghem, 2007; and Soroush, et al., 2013
		Information	17	
		Motivators	15	
		Structure	14	
Total Organizational DNA			64	
Dependent Variable	Sustainable Competitive Advantage	Differentiation	4	Pratono et al., 2019; Singh & Sharma, 2018; Adams & Lamant, 2003; Hall, 1993; Conner, 1991
		The Least Cost	3	
		Appropriate Timing	4	
		Innovation	3	
		Core Competency	4	
Total SCA			**18**	

9.2. Construct Validity

9.2.1. Decision Rights

The researcher used Confirmatory Factor Analysis (CFA) for decision rights. This can be illustrated by the following figure:

Figure (3) CFA for Decision Rights



From the previous figure, it is clear that all the statement of decision rights are greater than 0.50, which corresponds to GFI. This is a good indicator of all other statistical analysis. The quality indicators for decision rights can be illustrated in the following table:

Table (4) Quality Indicators for decision rights Using AMOS Analysis

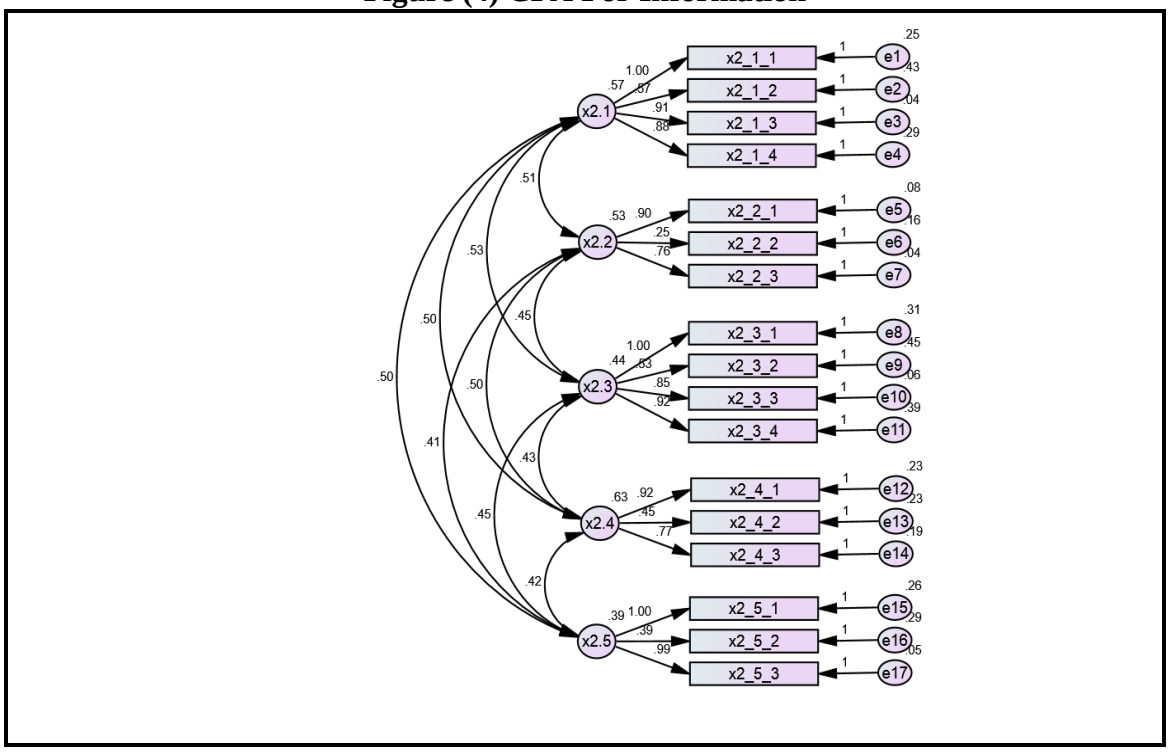
Test the Quality of the Model Acceptance Condition (Daire et al., 2008)	Test Value
X^2 / Degree of freedom >5	448.369
P. value > 0.5	0.000
Goodness of fit Index (GFI) > 0.90	0.692
Tuker-Lewis Index (TLI) > 0.95	0.752
Comparative Fit Index (CFI) > 0.90	0.838
Normed Fit Index (NFI) > 0.90	0.832
Incremental Fit Index (IFI) > 0.95	0.839
Relative Fit Index (RFI) > 0.90	0.745
Root Mean Square Residual (RMR) < 0.5	0.077
Root Mean Square Error of Approximation (RMSEA) < 0.5	0.135

In light of the above-mentioned indicators, it is clear that the previous indicators are good for making all other statistical analysis.

9.2.2. Information

The researcher used CFA for information. This can be illustrated by the following figure:

Figure (4) CFA For Information



According to Figure (2), it is clear that all the statement of information are greater than 0.50. This is a good indicator of all other statistical analysis. The quality indicators for information can be illustrated in the following table:

Table (5) Quality Indicators for information Using AMOS Analysis

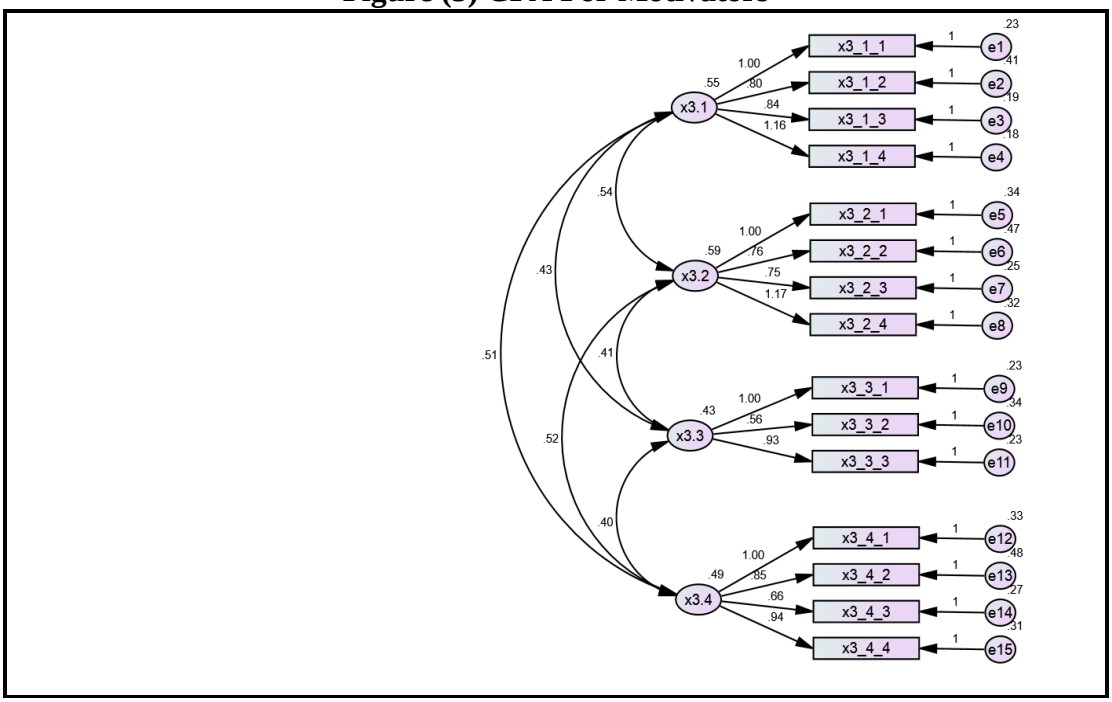
Test the Quality of the Model Acceptante Condition (Daire et al., 2008)	Test Value
X^2 / Degree of freedom < 5	466.247
P. value > 0.5	0.000
Goodness of fit Index (GFI) > 0.90	0.707
Tuker-Lewis Index (TLI) > 0.95	0.792
Comparative Fit Index (CFI) > 0.95	0.873
Normed Fit Index (NFI) > 0.90	0.864
Incremental Fit Index (IFI) > 0.95	0.874
Relative Fit Index (RFI) > 0.90	0.781
Root Mean Square Residual (RMR) < 0.5	0.055
Root Mean Square Error of Approximation (RMSEA) < 0.5	0.169

In light of the above-mentioned indicators, it is clear that the previous indicators are good for making all other statistical analysis.

9.2.3. Motivators

The researcher used Confirmatory Factor Analysis (CFA) for motivators. This can be illustrated by the following figure:

Figure (5) CFA For Motivators



From the previous figure, it is clear that all the statement of motivators are greater than 0.50, which corresponds to GFI. This is a good indicator of all other statistical analysis. The quality indicators for motivators can be illustrated in the following table:

Table (6) Quality Indicators for Motivators Using AMOS Analysis

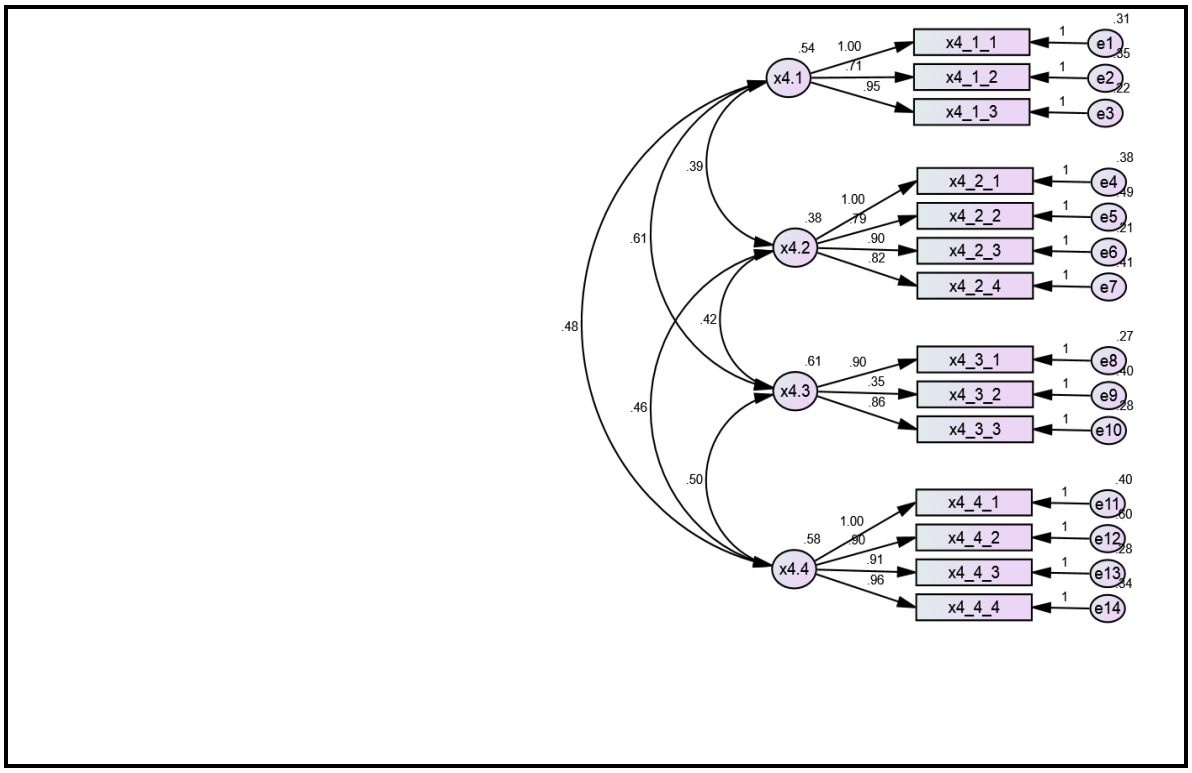
Test the Quality of the Model Acceptance Condition (Daire et al., 2008)	Test Value
X^2 / Degree of freedom >5	691.673
P. value > 0.5	0.000
Goodness of fit Index (GFI) > 0.90	0.775
Tuker-Lewis Index (TLI) > 0.95	0.775
Comparative Fit Index (CFI) > 0.90	0.820
Normed Fit Index (NFI) > 0.90	0.801
Incremental Fit Index (IFI) > 0.95	0.821
Relative Fit Index (RFI) > 0.90	0.752
Root Mean Square Residual (RMR) < 0.5	0.041
Root Mean Square Error of Approximation (RMSEA) < 0.5	0.156

In light of the above-mentioned indicators, it is clear that the previous indicators are good for making all other statistical analysis.

9.2.4. Structure

The researcher used CFA for structure. This can be illustrated by the following figure:

Figure (6) CFA For Structure



According to Figure (2), it is clear that all the statement of structure are greater than 0.50. This is a good indicator of all other statistical analysis. The quality indicators for structure can be illustrated in the following table:

Table (7) Quality Indicators for Structure Using AMOS Analysis

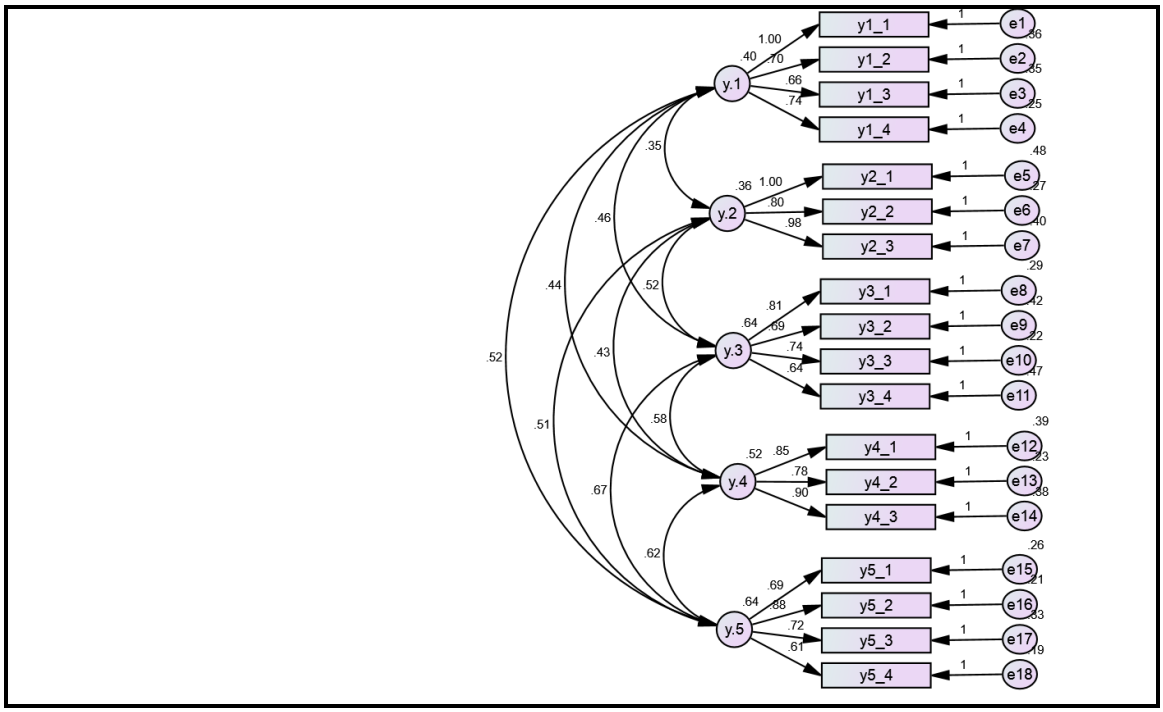
Test the Quality of the Model Acceptance Condition (Daire et al., 2008)	Test Value
X^2 / Degree of freedom < 5	503.610
P. value > 0.5	0.000
Goodness of fit Index (GFI) > 0.90	0.829
Tuker-Lewis Index (TLI) > 0.95	0.801
Comparative Fit Index (CFI) > 0.95	0.845
Normed Fit Index (NFI) > 0.90	0.825
Incremental Fit Index (IFI) > 0.95	0.846
Relative Fit Index (RFI) > 0.90	0.775
Root Mean Square Residual (RMR) < 0.5	0.047
Root Mean Square Error of Approximation (RMSEA) < 0.5	0.143

In light of the above-mentioned indicators, it is clear that the previous indicators are good for making all other statistical analysis.

9.2.5. Sustainable Competitive Advantage

The researcher used CFA for Sustainable Competitive Advantage. This can be illustrated by the following figure:

Figure (7) CFA For SCA



According to Figure (2), it is clear that all the statement of SCA are greater than 0.50. This is a good indicator of all other statistical analysis. The quality indicators for SCA can be illustrated in the following table:

Table (8) Quality Indicators for SCA Using AMOS Analysis

Test the Quality of the Model Acceptance Condition (Daire et al., 2008)	Test Value
X^2 / Degree of freedom < 5	1282.682
P. value > 0.5	0.000
Goodness of fit Index (GFI) > 0.90	0.741
Tuker-Lewis Index (TLI) > 0.95	0.804
Comparative Fit Index (CFI) > 0.95	0.834
Normed Fit Index (NFI) > 0.90	0.818
Incremental Fit Index (IFI) > 0.95	0.835
Relative Fit Index (RFI) > 0.90	0.787
Root Mean Square Residual (RMR) < 0.5	0.109
Root Mean Square Error of Approximation (RMSEA) < 0.5	0.197

In light of the above-mentioned indicators, it is clear that the previous indicators are good for making all other statistical analysis.

9.3. Descriptive Analysis

Table (9)
The mean and standard deviations of Organizational DNA and SCA

Variables	The Dimension	Mean	Standard Deviation
Decision Rights	Organizational Culture	3.88	0.687
	Organization Strategy	3.94	0.662
	Leadership Styles	3.90	0.751
	Degree of Decentralization	3.87	0.647
	Total Measurement	**3.90**	**0.666**
Information	Availability of Information	3.89	0.701
	Appropriateness of Information	3.66	0.496
	Timing to Obtain Information	3.91	0.689
	Cost of Information	3.80	0.627
	Communication Systems	3.77	0.562
	Total Measurement	**3.82**	**0.584**
Motivators	Wage	3.95	0.751
	Teamwork	3.91	0.768
	Financial Rewards and Incentives	3.82	0.626
	Promotion and Advancement	3.96	0.676
	Total Measurement	**3.91**	**0.642**
Structure	Size of Organization	3.80	0.720
	Professional Career	3.84	0.697
	Span of Supervision	3.87	0.639
	Compliance with Regulations	3.91	0.807
	Total Measurement	**3.86**	**0.646**
SCA	Differentiation	4.33	0.567
	The Least Cost	4.10	0.662
	Appropriate Timing	4.05	0.654
	Innovation	4.19	0.700
	Core Competency	4.21	0.629
	Total Measurement	**4.18**	**0.585**

According to Table (3), the different facets of decision rights are examined. Most respondents identified the presence of organizational culture (M=3.88, SD=0.687). This was followed by organizational strategy (M=3.94, SD=0.662), leadership style (M=3.90, SD=0.751), degree of decentralization (M=3.87, SD=0.647) and the total measurement for decision rights (M=3.906, SD=0.666).

The different facets of information are investigated. Most respondents identified the presence of availability of information (M=3.89, SD=0.701). This was followed by appropriateness of information (M=3.66, SD=0.496), timing to obtain information (M=3.91, SD=0.689), cost of information (M=3.80,

SD=0.627), availability of right communication systems (M=3.77, SD=0.562), and the total measurement for information (M=3.82, SD=0.584).

The different facets of motivators are studied. Most respondents identified the presence of wage (M=3.95, SD=0.751). This was followed by teamwork (M=3.91, SD=0.768), financial rewards and incentives (M=3.82, SD=0.626), opportunities for promotion and advancement (M=3.96, SD=0.676), and the total measurement for motivators (M=3.91, SD=0.642).

The different facets of organizational structure are examined. Most respondents identified the presence of organizational size (M=3.80, SD=0.720). This was followed by professional career (M=3.84, SD=0.697), span of supervision (M=3.87, SD=0.639), degree of compliance with law and regulations (M=3.91, SD=0.807) and the total measurement for organizational structure (M=3.86, SD=0.646).

Regarding to SCA, most of the respondents identified the differentiation (M=4.33, SD=0.567), The least cost (M=4.10, SD=0.662), appropriate timing (M=4.05, SD=0.654), innovation (M=4.19, SD=0.700), core competency (M=4.21, SD=0.629), and total SCA (M=4.18, SD=0.585).

9.4. Evaluating Reliability

Table (10) Reliability of Organizational DNA and SCA

Variables	Dimension	Number of Statement	ACC
Decision Rights	Organizational Culture	4	0.840
	Organization Strategy	5	0.876
	Leadership Styles	4	0.870
	Degree of Decentralization	5	0.876
	Total Measurement	**18**	**0.968**
Information	Availability of Information	4	0.878
	Appropriateness of Information	3	0.793
	Timing to Obtain Information	4	0.848
	Cost of Information	3	0.785
	Communication Systems	3	0.743
	Total Measurement	**17**	**0.959**
Motivators	Wage	4	0.882
	Teamwork	4	0.846
	Financial Rewards and Incentives	3	0.758
	Promotion and Advancement	4	0.809
	Total Measurement	**15**	**0.943**
Structure	Size of Organization	3	0.803
	Professional Career	4	0.792
	Span of Supervision	3	0.692
	Compliance with Regulations	4	0.845
	Total Measurement	**14**	**0.931**
Sustainable Competitive Advantage	Differentiation	4	0.764
	The Least Cost	3	0.706
	Appropriate Timing	4	0.798
	Innovation	3	0.783
	Core Competency	4	0.838
	Total Measurement	**18**	**0.949**

Table (10) presents the reliability of organizational DNA. The 18 items of decision rights scales are reliable due to the fact that the ACC is 0.968. The organizational culture, which consists of 4 items, is reliable since the ACC is 0.840. The 5 items related to organizational strategy are reliable as ACC is 0.876. Furthermore, the leadership style, which consists of 4 items, is reliable due to the fact that the ACC is 0.870. The 5 items related to degree of decentralization are reliable since ACC is 0.876. Thus, the reliability of decision rights can be acceptable.

The 17 items of information scales are reliable due to the fact that the ACC is 0.959. The availability of information, which consists of four items, is reliable since the ACC is 0.878. The three items related to appropriateness of information are reliable as ACC is 0.793. Furthermore, the timing to obtain information, which consists of four items, is reliable due to the fact that the ACC is 0.848. The three items related to cost of information are reliable since ACC is 0.785 while the last three items related to communication systems is reliable as the ACC is 0.743. Thus, the reliability of information can be acceptable.

The 15 items of motivators scales are reliable because the ACC is 0.943. The wage, which consists of 4 items, is reliable since the ACC is 0.882. The four items related to teamwork are reliable as ACC is 0.846. Furthermore, the financial rewards and incentives, which consists of three items, is reliable due to the fact that the ACC is 0.758. The 4 items related to opportunities for promotion and advancement are reliable since ACC is 0.809. Thus, the reliability of motivators can be acceptable.

The 14 items of organizational structure scales are reliable due to the fact that the ACC is 0.931. The organizational size, which consists of three items, is reliable since the ACC is 0.803. The four items related to professional career are reliable as ACC is 0.792. The three items related to span of supervision are reliable since ACC is 0.692 while the last four items related to degree of compliance with law and regulations is reliable as the ACC is 0.845. Thus, the reliability of organizational structure can be acceptable.

The 18 items of SCA are reliable because the ACC is 0.949. Differentiation, which consists of 4 items, is reliable because the ACC is 0.764. The 3 items related to the least cost are reliable because the ACC is 0.706 while the 4 items of appropriate timing are reliable because the ACC is 0.798. The 3 items related to innovation are reliable because the ACC is 0.783 while the 4 items of core competency are reliable because the ACC is 0.838. Thus, the internal consistency of SCA can be acceptable.

9.5. The Means, St. Deviations and Correlation among Variables

Table (11) Means, Standard Deviations and Intercorrelations among Variables

Variables	Mean	Std. Deviation	Organizational DNA	SCA
Organizational DNA	4.05	0.634	1	
Sustainable Competitive Advantage	4.18	0.585	0.863**	1

Table (11) shows correlation coefficients between Organizational DNA and SCA. Organizational DNA is (Mean=4.05; SD=0.634), while SCA is (Mean=4.18; SD= 0.585). Also, the correlation between Organizational DNA and SCA is (R=0.863; P <0.01).

9.6. The Correlation between Organizational DNA (Decision Rights) and SCA

Table (12) Correlation Matrix between ORGANIZATIONAL DNA and SCA

Research Variables	1	2	3	4	5
Organizational Culture	1				
Organization Strategy	0.940**	1			
Leadership Styles	0.949**	0.943**	1		
Degree of Decentralization	0.924**	0.921**	0.919**	1	
Sustainable Competitive Advantage	0.796**	0.800**	0.784**	0.803**	1

Based on Table (12), correlation between decision rights (organizational culture) and SCA is 0.796 whereas Organizational DNA (organizational strategy) and SCA shows correlation value of 0.800. Also, Organizational DNA (leadership styles) and SCA is 0.784 Organizational DNA (degree of decentralization) and SCA shows correlation value of 0.803. The overall correlation between Organizational DNA (Decision Rights) and SCA is 0.820.

9.7. MRA for Organizational DNA (Decision Rights) and SCA

The relationship between organizational DNA (Decision Rights) and SCA is determined. The first hypothesis to be tested is:

H1: Organizational DNA (Decision Rights) has no significant effect on SCA at Telecommunication Sector in Egypt.

Table (13) MRA Results for Organizational DNA (Decision Rights) and SCA

The Variables of Decision Rights	Beta	R	R^2
Organizational Culture	0.204*	0.796	0.633
Organization Strategy	0.289*	0.800	0.640
Leadership Styles	0.019	0.784	0.614
Degree of Decentralization	0.366**	0.803	0.644
▪ MCC		0.820	
▪ DC		0.673	
▪ Calculated F		151.467	
▪ Degree of Freedom		4, 295	
▪ Indexed F		3.31	
▪ Level of Significance		0.000	

According to Table (13), the MRA resulted in the R^2 of 0.673. This means that the SCA can be explained by the dimensions of organizational DNA. Furthermore, differences in the SCA can be interpreted by organizational DNA. Accordingly, it was decided to reject the null hypothesis which states that the organizational DNA (decision rights) has no significant effect on SCA. The alternative hypothesis has been accepted because the model of MRA has shown that there was a fundamental relationship between organizational DNA (decision rights) and SCA at the level of statistical significance level of 0.01.

9.8. The Correlation between Organizational DNA (Information) and SCA

Table (14) Correlation Matrix between ORGANIZATIONAL DNA and SCA

Research Variables	1	2	3	4	5	6
Availability of Information	1					
Appropriateness of Information	0.882**	1				
Timing to Obtain Information	0.965**	0.855**	1			
Cost of Information	0.731**	0.720**	0.692**	1		
Communication Systems	0.928**	0.845**	0.907**	0.761**	1	
Sustainable Competitive Advantage	0.829**	0.744**	0.821**	0.645**	0.779**	1

Based on Table (14), correlation between Information (availability of information) and SCA is 0.829 whereas Information (appropriateness of information) and SCA shows correlation value of 0.744. Information (timing of obtain information) and SCA is 0.821 Information (cost of information) and SCA shows correlation value of 0.645 whereas information (communication systems) and SCA shows correlation value of 0.779. The overall correlation between Organizational DNA (Information) and SCA is 0.835.

9.9. MRA for Organizational DNA (Information) and SCA

The relationship between organizational DNA (Information) and SCA is determined. The second hypothesis to be tested is:

H2: Organizational DNA (Information) has no significant impact on SCA at Telecommunication Sector in Egypt.

Table (15) MRA Results for Organizational DNA (Information) and SCA

The Variables of Information	Beta	R	R^2
Availability of Information	0.448**	0.829	0.687
Appropriateness of Information	0.022**	0.744	0.553
Timing to Obtain Information	0.323**	0.821	0.674
Cost of Information	0.092**	0.645	0.416
Communication Systems	0.019**	0.779	0.606
▪ MCC	0.835		
▪ DC	0.698		
▪ Calculated F	135.915		
▪ Degree of Freedom	5, 294		
▪ Indexed F	3.01		
▪ Level of Significance	0.000		

According to Table (15), organizational DNA dimension may interpret the total differentiation in SCA as a whole (R^2=0,698), and for each dimension. Furthermore, the variables of organizational DNA better interpret differences in the SCA. For the results of a structural analysis of the MRA model, the direct effect of organizational DNA (Information) and SCA is obtained. Because R is 0.835. So, there is enough empirical evidence to reject the null hypothesis.

9.10. The Correlation between Organizational DNA (Motivators) and SCA

Table (16) Correlation Matrix between ORGANIZATIONAL DNA and SCA

Research Variables	1	2	3	4	5
Wage	1				
Teamwork	0.809**	1			
Financial Reward and Incentives	0.721**	0.655**	1		
Promotion and Advancement	0.808**	0.784**	0.667**	1	
Sustainable Competitive Advantage	0.813**	0.773**	0.681**	0.752**	1

Based on Table (16), correlation between motivators (wage) and SCA is 0.813 whereas motivators (teamwork) and SCA shows correlation value of 0.773. Also, motivators (financial reward and incentives) and SCA is 0.681. Motivators (promotion and advancement) and SCA shows correlation value of 0.752. The overall correlation between Organizational DNA (Motivators) and SCA is 0.846.

9.11. MRA for Organizational DNA (Motivators) and SCA

The relationship between organizational DNA (Motivators) and SCA is determined. The third hypothesis to be tested is:

H3: Organizational DNA (Motivators) has no significant impact on SCA at Telecommunication Sector in Egypt.

Table (17) MRA Results for Organizational DNA (Motivators) and SCA

The Variables of Motivators	Beta	R	R^2
Wage	0.393**	0.813	0.660
Teamwork	0.249**	0.773	0.597
Financial Reward and Incentives	0.136**	0.681	0.463
Promotion and Advancement	0.148**	0.752	0.565
▪ MCC ▪ DC ▪ Calculated F ▪ Degree of Freedom ▪ Indexed F ▪ Level of Significance	0.846 0.716 185.913 4, 295 3.31 0.000		
** P < .01			

According to Table (17), the MRA resulted in the R^2 of 0.716. This means that the SCA can be explained by the dimensions of organizational DNA. Furthermore, the differences in the SCA can be interpreted by organizational DNA. Accordingly, it was decided to reject the null hypothesis. The alternative hypothesis has been accepted because the model of MRA has shown that there was a fundamental relationship between organizational DNA (Motivators) and SCA at the level of statistical significance level of 0.01.

9.12. The Correlation between Organizational DNA (Structure) and SCA

Table (18) Correlation Matrix between ORGANIZATIONAL DNA and SCA

Research Variables	1	2	3	4	5
Size of Organization	1				
Professional Career	0.726**	1			
Span of Supervision	0.848**	0.660**	1		
Compliance with regulations	0.709**	0.817**	0.642**	1	
Sustainable Competitive Advantage	0.690**	0.766**	0.637**	0.769**	1

Based on Table (18), correlation between Structure (size of organization) and SCA is 0.690 whereas Structure (professional career) and SCA shows correlation value of 0.766. Also, Structure (span of supervision) and SCA is 0.637 Structure (compliance with regulation) and SCA shows correlation value of 0.769. The overall correlation between Organizational DNA (Structure) and SCA is 0.816.

9.13. MRA for Organizational DNA (Structure) and SCA

The relationship between organizational DNA (Structure) and SCA is determined. The fourth hypothesis to be tested is:

H4: Organizational DNA (Structure) has no significant impact on SCA at Telecommunication Sector in Egypt.

Table (19) MRA Results for Organizational DNA (Structure) and SCA

The Variables of Organizational Structure	Beta	R	R^2
Size of Organization	0.130*	0.690	0.476
Professional Career	0.325**	0.766	0.586
Span of Supervision	0.083	0.637	0.405
Compliance with regulations	0.358**	0.769	0.591
▪ MCC		0.816	
▪ DC		0.667	
▪ Calculated F		147.463	
▪ Degree of Freedom		4, 295	
▪ Indexed F		3.31	
▪ Level of Significance		0.000	

According to Table (19), organizational DNA dimension may interpret the total differentiation in SCA as a whole (R^2 =0,667), and for each dimension. Furthermore, the variables of organizational DNA better interpret differences in the SCA. Accordingly, the null hypothesis is rejected and the alternative hypothesis has been accepted. This is because the model of MRA has shown that there was a fundamental relationship between organizational DNA (Structure) and SCA at the statistical significance level of 0.01.

10. Research Results

The present study on analyzing the relationship between organizational DNA and SCA at Telecommunication Sector in Egypt has revealed the following results:

1. The results revealed that organizational DNA (Decision Rights) significantly and positively influences on SCA at Telecommunication Sector in Egypt.
2. This study concluded that the organizational DNA (Information) was positively related with SCA at Telecommunication Sector in Egypt.
3. Motivators, which are an integral part of organizational DNA, positively correlated with SCA at Telecommunication Sector in Egypt.
4. Structure as a component of organizational DNA proved to be in positive relation with SCA at Telecommunication Sector in Egypt.

11. Recommendations

The managers at Telecommunication Sector in Egypt might be able to improve SCA through the following:

1. Broader usage of the various means of ***motivation***, especially wages, besides granting cash incentives and chances of progress and promotion. This will highly improve SCA at Telecommunication Sector in Egypt, as the field study has proved.
2. Reconstructing organizational ***structures*** of Telecommunication sector in Egypt, besides paying attention to analyzing, describing and assessing jobs. The field study has proved the adverse effect of existing structures on SCA.
3. Relying on ***information*** and trying to update them as the basic mover of activities and tasks accomplishment. They are vital for decision taking and assessment of employees' performance as the field study has affirmed the positive impact of accurate information on SCA at Telecommunication Sector in Egypt.
4. Adopting more ***decentralization and delegation of authority***, besides granting employees freedom in practicing their work. This will entail their feeling of empowerment as the field study has concluded the

existence of a strong positive impact of decentralization and authority delegation on SCA at Telecommunication Sector in Egypt.

5. The managers and authorities of industrial sector should be more attentive towards organizational factors; especially decision making, inter-personal relations, and views towards benefits. This could lead to conformity of the factors, and more success and effectiveness of the industrial sector in the community.
6. The authorization process in the industrial companies may be a good issue. This process (empowerment) must be closely related with expectations in the form of a set of performance-based outcomes.
7. Trying to assess and rank individuals in Telecommunication sector in Egypt to create a real sense of differentiation that is both motivating and rewarding.
8. Fast progression will encourage rapid advancement to senior levels in vertical function for building cross- functional understanding and collaboration teams at Telecommunication Sector in Egypt.
9. It is necessary, for Egyptian organizations, to have a systematic approach to organizational changes. To do that, senior leadership must set and communicate the vision for their subordinates and enable teams to act as change agents to lead the change efforts.
10. Egyptian organizations should construct their own electronic communication network, based on telecommunication technologies. The massive network allows enterprise wide communication over an intranet, as well enabling the organizations to communicate with customer, suppliers and other business partners in the outside world (using private networks and the internet).

12. Limitations and Future Research

There are some limitations of this study. Firstly, the data was collected from employees at Telecommunication Sector in Egypt. Therefore, the generalization of the results must be made with caution, especially in case of applying to a different country. Secondly, findings may not be generalized to other industrial companies in Egypt. Thirdly, a small sample is used in this study.

There are several areas for future research. The present study helped in defining organizational DNA as accepted by the researchers concerned. It has related such DNA and performance of employees. Still, more research is needed in the following topics (1) measuring the impact of organizational DNA on the development of the creative aptitudes of employees, (2) outlining a proposal model for the relationship between organizational DNA and strategies for confronting organizational conflict, and (3) conducting a study on the impact of organizational DNA on the phenomenon of functional alienation in the governmental sector.

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