

The use of organizational DNA in discriminating innovative organizations (case study of private Algerian enterprises)

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Abstract:

This study investigates the use of organizational DNA as a management tool in distinguishing innovative organizations. Relying on the descriptive and analytic approach questionnaires were distributed to an exploratory sample of 20 private Algerian enterprises. based on the discriminant analysis results, the study confirms the impact of the four organizational chromosomes in discriminating the innovation levels within an organization. where an innovative organization has a good quality of its organizational DNA, therefor we suggest managers looking to realize innovative targets use new techniques that focus on indicators of efficacy and modernity in all aspects of the organizational process such as decision rights, motivators, information, and organizational structure.

Keywords: organizational DNA, innovation, innovative organizations, discriminant analysis

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I- Introduction:

In today's world, innovative achievement whether in products or processes, managerial or technical ...etc is one of the most important goals pursued by most organizations, as the innovation orientation does not rely on the type of strategies adopted as much as it depends on uniqueness in implementing and applying these strategies, thus innovative organizations have specialized characteristics assure them realizing their targeted goals.

On the other hand, Organizations are complex entities and are formed of numerous and diverse aspects. and developing their external success needs comprehensive internal management that seeks to be compatible with their goals. one of the recent means used in understanding the strength of organizational management is the organizational DNA tool which is based on examining the four organizational chromosomes namely decision rights, motivators, structure, and information, where we assume that these chromosomes change between innovative and non-innovative organizations.

The purpose of this study is to identify the characteristics of innovative organizations and then discussing the use of organizational DNA components in distinguishing innovative organizations. By answering the following problematic:

- **Does the organizational DNA has a role in distinguishing innovative organizations?**

According the previous studies such as “The influence of organizational DNA on innovation performance: An empirical study in a sample of Iraqi industrial organizations” by Rashid and Chalab that aimed to explain the theoretical ideas and practical experience of Hamilton’s studies related to organizational DNA and innovation performance. And then answer the Two fundamental questions about how well or badly the four orgDNA building blocks are aligned in Iraqi industrial organizations (organizational stereotypes)?.and to which extent the alignment of orgDNA building blocks can influence innovation performance. The results obtained by these researchers indicated that four blocks of organizational DNA had a positively significant relationship with innovation performance. As well the good alignment between organizational DNA building blocks leads to innovation faster. Also the study intituled “Organizational Genes (DNA) and their Effect on Organizational Creativity in The Presence of Strategic Agility as an Intermediate Variable” by (Al-Silwadi and Ghoneim,2022) that demonstrated the impact of regulatory genes on organizational innovation in pharmaceutical companies in Palestine, with the presence of strategic agility as a mediating variable, by identifying the levels of application of the dimensions of organizational genes and the extent of the presence of dimensions of organizational creativity as well as the level of strategic agility with its dimensions in the companies under study. results confirmed that there is an effect between regulatory genes and organizational innovation, but this effect is partial and not entirely. We can propose the following hypotheses:

- H0: there are no differences between the groups' mean due to organizational DNA components.

- H1: there are differences between the groups' mean due to organizational DNA components.

II. The theoretical framework of the study.

1. Organizational DNA:

Organizational DNA is considered one of the methods of modern management that analyze the internal characteristics of organizations under the principle that like any living organism, each organization has genetic genes that distinguish it from other organizations. Historically, the use of the term organizational DNA goes back to Booz Hamilton Company, which sought to give organizations an easy and accessible way to identify and address problems and difficulties that impede and affect their success. according to (Honold & Silverman, 2002) Organizational DNA is “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”. while Nilson et al see Organizational DNA 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.

Through our research in this field of organizational DNA, we can define it as a technique concerned with verifying the quality of the four building blocks that are exclusively present in each organization, where the identity of each organization is determined by analyzing its organizational DNA via examining the nature of its organizational structure, the incentives (motivators) it adopts, the quality of its information, as well as the clarity of its decision rights.

1.1 Organizational DNA building blocks:

for the rules of the organizational DNA, previous studies indicated that there are many different ones according to the opinions of the researchers. for example, Isabelle Denervaud and Olivier Chatin explained in their book “DNA Profiling: The Innovative Company: How to Increase Creative Ability in Business” four organizational bases are actors, ideation, emotion, and collaboration, which are depended in describing the enterprise's ability to innovate. As for Khorasgani and Bahrami, it consists of the following building blocks: the organization's mission, the organizational structure, management style, and work teams, Khorasgani (Nosouhi, & Bahrami, 2015, p. 1392). otherwise, most researchers have agreed that the rules of the organizational DNA are those adopted by Booz Hamilton, represented in the organizational structure, decision rights, information, and motivators where:

- **Organizational structure:** is one of the most important and clear building blocks of the organizational DNA (Badwan, 2018, p. 31), as it is considered the main pillar for the success of any organization if it is flexible and adaptive, giving workers freedom and urging them to unleash their creativity and share their knowledge and opinions. The structure expresses the set of methods adopted by

the institution in organizing tasks, defining the main roles of workers, identifying the information exchange system, defining coordination mechanisms, and the necessary patterns of interaction between the different departments and their workers” (qaryouti, 2006, p. 50) on the other hand, the organizational structure shows the procedures and controls lines of authority and the decision-making process as the means adopted by the institution in dividing the work horizontally and vertically through the main and sub-units entrusted with the completion of work. Establishing an appropriate structure often requires experimenting with more than one plan in order to unify and coordinate multiple organizational activities to obtain an efficient flow of business.

The chromosome of the organizational structure is determined by four genes: size of organization, professional career, span of supervision, and compliance with regulations.

- **Decision rights:** one of the priorities of organizing is before the organization carries out its activities, it must draw up a constitution that stipulates who will decide what and under what circumstances, this procedure is called decision rights, which requires the enactment of rules for the most common work situations because decisions are made continuously and at different levels, whether strategic, administrative or operational, programmed or unprogrammed, routine or non-routine, individual, collective and so on. Clearly defining decision-making rights is essential to avoid inefficiencies in the decision-making process. Decision rights can be defined by answering three main questions (Mallon, 2020):
 - Who are the individuals or groups empowered to make decisions?
 - What decisions must be made?
 - How do operating processes and tools help support decision-making?

Decision rights chromosome is determined by a group of organizational genes, namely organization’s culture, leadership style, degree of decentralization, and the gene of organization’s strategy (Nafei, 2015) and (badawan, 2018).

- **Information:** the strength of organizations nowadays lies in their ability to obtain sound and accurate resources for information at all levels, as employees at various levels of the organization need quality information to carry out their tasks to the fullest. That necessitates setting up a special information system that accommodates the huge amount of data, processes it, stores it, and protects it from loss and espionage. The information chromosome consists of two organizational genes, which are the reliability of the information and relevance of information.
- **Motivators:** managers must find creative ways in which they can develop and enhance employee performance. Motivation has been described as the forces that reinforce employee behavior and enhance the orientation towards continuity. It is considered as "a set of factors that stimulate the desire and motivation of the individual to provide all his capabilities and energies for perform his work efficiently and the achieve organization's goals. Accordingly, we can say that motivators are the set of means and methods used by the organization to urge its employees to do their best at work, and it is not limited to the financial aspect

only, but it includes material and immaterial methods that help employees reach their personal goals by achieving the goals of their organization. Motivators chromosome is determined by four organizational genes, namely wage teamwork, financial rewards and incentives, promotion and advancement.

2. Innovation:

The word innovation comes from the Latin INNOVATUS, which means to change or renovate. This definition allows two different interpretations: renovate: action of modifying what already exists. Change: creation and introduction of something new, either a product, a concept, a service, etc (Traki & Boukrif, 2015, p. 4). Innovation is a vital element because it reflects the organization's tendency to engage in and support new ideas through experiences and innovative processes that contribute to the development of new products, services, technologies, or processes (Mullins, 2005, p. 51).

Innovative organizations introduce something new whether it's a new product, a new market strategy, a new method, and so on. As a result, reinvigorating the organization and promoting new value and growth. Innovation needs creative leaders to come up with or listen to (from employees) creative ideas and then use strategic planning and decision-making to implement the new business ideas successfully. and therefore, when an organization innovates, it can either improve its existing products, processes, or methodologies, or it can create new ones from scratch.

2.1 Characteristics of innovative organization:

Innovative organization seek for generating new ideas, improving products, gaining competitive advantage, improving the brand, attracting top employees, and increasing employee satisfaction (Indeed team, 2022), and on its way to achieving these purposes it adapts to have the following set of characteristics:

In an innovative organization, executives create collaborative and transparent cultures, giving employees permission to ask questions, make suggestions, and collaborate. They share also their most recent market data, customer feedback, and the latest trends (Victor, 2016).

The innovative organization provides its employees with a trusted environment for the following reasons: highly creative ideas often initially sound stupid. If workers are afraid of ridicule for sharing outrageous ideas, they will not participate in such ideas. Likewise, if they think managers will steal their thoughts and claim them as their own, employees will not share thoughts (Jeffrey, 2012).

Delegating tasks to the right employees by determining which tasks are best for which employees. This can ameliorate employees' performance and, give them room to be creative (Indeed team, 2022).

The most critical element for an innovative organization is encouraging a positive outlook on failure where the employees know that they can fail without endangering their careers,

they are more willing to take on risky, innovative projects that offer huge potential rewards to their companies.

Investment for supporting innovation: investing in time means giving time to employees to experiment. Also training employees on collective behaviors. Research and development, which include investment in applied technology, clinical trials, capital equipment, labs, training employees on new technologies, and regulatory evaluation.

Focusing on the customers: innovative organizing looks for the perfect solution for the client. Not just answering customer needs by bringing new values to them, improving services, products, and processes but more achieving customer wow-feeling and overcoming customers' needs (INSEAD, 2011).

3. The relationship between organizational DNA building blocks and innovation:

In order to determine the relationship between innovation and organizational DNA, we investigate its relationship with each component of the fourth building blocks organizational structure, decision rights, motivators and information as follow:

3.1 Organizational structure and innovation:

The researchers discussed the critical importance of the appropriate organizational structure for organizations, in order to be innovative, they need to adopt more flexible and flatter structures, to facilitate the embodiment of innovation requirements.

In a study conducted on 140 managers in industrial organizations in the Republic of South Korea. It revealed that centralized structures reduce employee innovation. as well as the organization is more centralized, more employees become reluctant to generate creative ideas. this study also emphasized that defining work procedures (higher level of formalization) rather than allowing individuals to decide how to get things done restricts the opportunities for employees of organizations to interact and communicate with each other (Dedahanov, Rhee, & Yoon, 2017, p. 342). Also, high compliance with regulations restricts individuals' initiative to develop and propose ideas related to new services and products. Likewise, autonomy can promote innovative behaviours and generate ideas.

3.2 Decision rights and innovation:

Previous research has confirmed that decision-making rights influence creativity. Nicholas Bloom argues that innovative organizations with rapidly changing industries usually require decision-making powers to be placed in the hands of employees at different levels, and not just high-level managers. It is characterized by the decentralization of decisions, especially decisions related to innovative activities, such as entering new technological fields, developing products and services, as well as launch or terminating research and development projects. Moreover, the existence of brilliant employees within a highly commanded and controlled system does not give an excellent result, on the contrary, all innovative procedures disappear (Lee, 2014) because employees who have crazy ideas and creative thoughts are highly independent and self-directed.

3.3 Motivators and innovation:

Employees' willingness and ability to engage in innovative behaviour are mainly affected by the type of rewards and reinforcements provided to them. The study of Searle and Ball (2003) confirmed that although some organizations adopt the innovation orientation, they may fail to achieve it if they are not able to translate it into practical policies to manage their human resources. For organizations willing to reach this point, they are obliged to conclude a deal with their employees that implies the transfer of knowledge and creative ideas in exchange for providing them with independence, giving them challenged goals and tasks, giving thanks and appreciation promptly, and of course, financial rewards that may sometimes include a percentage of the returns and profits that their ideas achieve otherwise organizations will face reluctance of employees to pass on what is on their minds. As a good example, we find Google that allows its employees to use 20% of their working time in experimenting and pursuing their ideas outside the projects they are currently working on. This has led to some of the most profitable products Google has ever created namely AdSense and Google News (Gribanova, Rizhamadze, & Åbelt, 2020, p. 4).

3.4 Information and innovation:

Information plays a vital role in all institutions, especially innovative ones, as organizations can achieve a highly competitive advantage when they receive information as one of the assets of the enterprise, as the high reliability and relevance of this resource enable managers to predict the future and then dominate and change the market. On the other hand, needless to say, that poor-quality information negatively affects innovation, novelty, and modernity. Nonaka and Takeuchi (1995) see innovation as an intensive process of information and knowledge, so the quality of information is an element that may enhance creativity in institutions. We find also that focusing on the quality of information stimulates experimentation and search for opportunities and encourages the integration of new innovative projects. recently researches show that the existence of problems in coordinating information limits the level of innovation in organizations, as the asymmetry of information horizontally within teams negatively affects creativity because it prevents team members from engaging in solving interrelated problems (Huang, Lao, & McPhee, 2019, p. 2)

III. The experimental framework for the study.

1. Methods and Materials:

- **Study sample:** The study targeted an exploratory sample of 20 private Algerian enterprises (table01), where 200 paper and electronic questionnaires were distributed and 170 were retrieved. After filtering the retrieved questionnaires, the total number of respondents reached 158, which is sufficient as an exploratory sample (Huot, 2003, p. 27).

Table(1): sample study enterprises

Enterprise	State	Enterprise	State
AT PHARMA	AIN DEFLA	ETB ACHOURI TOUFIK	AIN DEFLA

BENITALA	SIDI BEL ABBÈS	GOUDJIL	EL BAYADH
BIOMIL	TLEMCEN	HAMOUD BOUALEM	BLIDA
BRANDT	SETIF	IFRI	BÉJAÏA
BRIKSI	TLEMCEN	IRIS	SETIF
CEVITAL	ALGIERS	KESSAL	EL BAYADH
CHIALI	SIDI BEL ABBÈS	KHERBOUCHE	TLEMCEN
DJEZZY	SIDI BEL ABBÈS	MOULINS	EL BAYADH
EDEN	SIDI BEL ABBÈS	NCA ROUIBA	ALGIERS
ELNOURASI CORPORATION	MILA	SOSEMIE	BLIDA

Source: prepared by theresearchers

- **Data collection tool:** based on the previous studies we established a questionnaire consisting of five axes representing decision rights, motivators, information, structure and innovation. Includes 49 items with a seven-point Likert scale (1 Strongly disagree to 7 Strongly agree), in addition to the general information of the enterprise.
- **Study variables:** The adopted variables of the study described in the following table:

Table (2): variables of the study

Independent variables	Items	Dependent variable	Items
Decision rights	7	Innovation	11
Motivators	10		
Information	9		
Structure	7		

- Source: prepared by the researchers

2. statistical methods:

in order to analyze the data gathered, we relied on a group of Statistical Methods like Cronbach's alpha, normality tests and outliers and discriminant analysis. using SPSS V25 program

2.1 Normality tests and outliers:

To test the normality of the data, we use the skewness coefficient to determine the symmetry of the data distribution, and the Kurtosis coefficient to measure the flatness or elongation of the data distribution curve so that the acceptance range for the normal distribution is as follows: Skewness [-2,+2] (Kurtosis) [-7, +7] (Kadri & Martat, 2019, p. 67)

- Table(3): the lower and upper limits of the normal law (Org DNA)

Items	Skewness	kurtosis	items	Skewness	kurtosis
D1	-,561	-1,027	I1	-,052	-1,131
D2	-,415	-1,072	I2	,030	-,791
D3	-,375	-,928	I3	-,346	-,966
D4	-,082	-1,141	I4	-,563	-,969
D5	,079	-1,308	I5	-,350	-,090
D6	-,297	-1,170	I6	-,230	-1,147
D7	-,380	-,936	I7	-,324	-1,164

M1	-,056	-1,308	I8	-,464	-,980
M2	,074	-1,060	I9	-,394	-,968
M3	-,199	-1,168	S1	-,515	-1,084
M4	-,016	-1,213	S2	-,232	-1,124
M5	-,106	-,999	S3	-,107	-1,355
M6	-,555	-,858	S4	-,267	-1,084
M7	-,613	-,892	S5	-,201	-1,076
M8	-,908	-,548	S6	-,015	-1,035
M9	-,195	-,966	S7	-,182	-,912
M10	-,018	-,833			
lower limit value				-,908	-1,355
upper limit value				,079	-,090

Source: prepared by theresearchers based SPSS outputs

the table above shows that all the values of the coefficients of skewness and kurtosis were within the ranges corresponding to the normal distribution, where the lower limit values for the coefficients were -0.908 and -1.355, respectively. Likewise, the upper limit values for skewness and kurtosis are 0.079 and -0.090, respectively.

- Table(4): the lower and upper limits of the normal law (innovation)

Items	Skewness	Kurtosis	items	Skewness	Kurtosis
V1	-,372	-1,131	V7	-,167	-,872
V2	-,394	-,859	V8	-,312	-1,122
V3	-,415	-,861	V9	-,326	-,889
V4	-,121	-1,173	V10	-,199	-1,119
V5	-,258	-,876	V11	-,404	-,789
V6	-,193	-1,103			
lower limit value				-,415	-1,173
upper limit value				-,121	-,789

Source: prepared by theresearchers based SPSS outputs

through the table above we see that the recorded skewness values range between the value -0,415 and -0,121 to be within the range of acceptance for the normal distribution, and the values of kurtosis ranged from the value -1,173 and -0,789 to be also within the accepted interval.

2.2 Multicollinearity test:

To ensure that the independent variables are not linearly correlated with each other, we use the Variance Inflation Factor, whose value must be less than (10) in conjunction with the Tolerance Index, whose value must exceed the threshold of (0.05) (Al-Khalidah & Shura, 2018, p. 569).

- Table(5): Multicollinearity results.

		Tolerance	VIF
decision rights	Motivators	,383	2,614
	Information	,394	2,535
	Structure	,334	2,994

Source: SPSS outputs

It seems clear from this table that there is no correlation between the independent variables, as all values of the VIF are less than 10 and all values of tolerance are greater than 0.05.

2.3 Cronbach's alpha:

To check the reliability of the instrument used we use the Alpha Cronbach's test as it is presented in the table below:

- **Table(6): Alpha Cronbach's test**

Cronbach's Alpha	Number of elements
,965	49

Source: SPSS outputs

The value of Cronbach's Alpha recorded is 0,965 (ranges of 0.8 and up to 1.00) which indicates the high reliability of the used instrument. (Daud, Ismail, Khidzir, & Abdullah, 2018, p. 1030) .

3.3. Discriminat analysis:

In order to answer the research problematic, we use discriminant analysis as it is presented in the following steps:

- **Table(7): Group statistics**

INNOV		Mean	Standard deviation	Comment
non-innovative	D-Rights	3,0260	1,35197	Fairly low
	Motivators	2,7545	,73398	Fairly low
	Information	3,0606	1,21347	Fairly low
	Structure	2,4286	1,01820	Low
medium-innovative	D-Rights	3,8534	1,04718	Medium
	Motivators	3,5592	,92897	Fairly low
	Information	3,7968	,98739	Medium
	Structure	3,6259	1,00555	Medium
Innovative	D-Rights	5,3602	,92452	High
	Motivators	5,2197	,80793	Fairly high
	Information	5,1362	,92166	Fairly high
	Structure	5,2555	,98381	Fairly high

- Source: prepared by the researchers based on SPSS.25 outputs

the table above expresses that the higher we go from innovative level to another, the higher the quality of the chromosomes, as their means for non-innovative enterprises range between low and fairly low levels, which indicates poor quality for each chromosome: decision rights, motivators, information, and organizational structure.

As for the medium-innovative enterprises, the arithmetic mean of the four building blocks varied between fairly low and medium, thus expressing a poor quality for the motivators chromosome and medium quality for decision rights, information, and organizational structure.

On the other hand, the arithmetic means of the four chromosomes increased when moving to the higher level, where they ranged between fairly high and high mean, which indicates that building blocks: decision rights, motivators, information, and organizational structure are of good quality within innovative enterprises.

3. Tests of Equality Group of Means

At this stage, we test whether the used variables represent a basis for separating the groups.

- **Table (8): Tests of Equality Group of Means**

	Wilks' Lambda	F	Sig.
D- Rights	,597	52,242	,000
Motivators	,476	85,416	,000
Information	,633	44,944	,000
Structure	,528	69,359	,000

Source: SPSS outputs

According to the Table (8) above, we notice that the Wilks' Lambda index for the four variables tend towards zero at a significant level of 0.00. This means the components of the organizational DNA serve as the basis for discriminating the three levels of innovation.

▪ Choosing the discriminant function:

The SPSS program proposed two distinct functions, one of which must be chosen, depending on the ratio of variance and Canonical Correlation as follows:

- **Table(9): Eigenvalues**

Eigenvalues				
Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	1,359 ^a	99,2	99,2	,759
2	,011 ^a	,8	100,0	,105

Source: SPSS outputs

From the table(9), we notice that the variance ratio for the first function is estimated at 99,1%, while the variance ratio for the second function is estimated at 0,8 %. This means that the volume of information interpreted by the first function is higher than that of the second function.

On the other hand, we see that the Canonical Correlation value between the dependent variable (innovation) and the independent variables (components of the organizational DNA) is estimated at 0.759, which presents a strong correlation, while it is estimated at only 0.105 for the second function, which expresses a weak correlation.

Moreover, the following table shows that the value of Wilks' Lambda is estimated at 0.419 (getting closer to zero), while its value for the second function is 0.989 and therefore, we choose the first discriminant function for this study.

- **Table(10): Wilks' Lambda**

Wilks' Lambda				
Test of Function(s)	Wilks' Lambda	Chi-square	Df	Sig
1	,419	133,433	8	,000
2	,989	1,691	3	,639

Source: SPSS outputs

As for the Chi-square value which is significant at 0.000, we can approve the importance of using the four-building blocks of organizational DNA in discriminating the three levels of innovative enterprises.

▪ **Estimation of the discriminant function coefficients:**

- **Table(11): Canonical Discriminant Function Coefficients**

	Function	
	1	2
D-Rights (X1)	,208	,036
Motivators (X2)	,657	-,959
Information (X3)	,017	-,394
Structure (X4)	,407	1,203
(Constant)	-5,540	,484
Unstandardized coefficients		

Source: SPSS outputs

According to the table above the discriminant function is as follows:

$$Z = -5,54 + 0,208 X1 + 0,657 X2 + 0,017 X3 + 0,407 X4$$

This function shows that the use of the right motivators has the greatest impact in achieving innovation for enterprises, followed by the chromosome of the organizational structure, then the decision rights, and finally the information chromosome which has the lowest impact on realising innovation.

▪ **Ranking results:**

The table above show the the validity of the model obtained:

Table (12): Classification results

Classification Results ^a						
		innovation	Intended group membership			Total
			1	2	3	
Original	Effective	1	8	3	0	11
		2	20	46	10	76
		3	1	10	60	71
	%	1	72,7	27,3	,0	100,0
		2	26,3	60,5	13,2	100,0
		3	1,4	14,1	84,5	100,0
a. 72.2% of the original observations are classified correctly.						

The results obtained from the discriminant analysis are satisfactory since the rate of good classification for the sample is 72.2%, which exceeds 50%. where:

- ✓ Of the 11 responses classified a priori in the "non innovative " class: 8 were correctly classified by the model, i.e. a correct classification rate of 72.2%. and 3 are incorrectly classified, i.e. an error rate of 27.3%.
- ✓ Of the 76 responses classified a priori in the "medium innovative" class: 46 are well classified, i.e. a good classification rate of 60.5 %, and 30 are badly classified, i.e. an error rate of 49.5%.
- ✓ Of the 71 responses classified a priori in the " innovative " class: 60 were correctly classified by the model, i.e. a correct classification rate of 84.5%. and 11 are incorrectly classified, i.e. an error rate of 15.5%.

3. Results discussion:

According to the discriminant function:

$$Z = -5,54 + 0,208 X1 + 0,657X2 + 0,017X3 + 0,407 X4$$

we can approve that the innovative organization can be discriminated by analysing its four organizational building blocks, where motivators contribute 65.7% in distinguishing between the three levels of innovation, while the organizational structure contributes 40.7% in discrimination. also, the decision rights impact discrimination up to 20,8%. Otherwise, the information chromosome has the lowest impact (1.7%) on the distinction between innovative and non-innovative organizations

In other words

- There are differences between the groups mean due to decision rights chromosome.
- There are differences between the groups mean due to motivators chromosome.
- There are differences between the groups mean due to information chromosome.
- There are differences between the groups mean due to organizational chromosome.

Thereby we reject the null hypothesis and accept the alternative hypothesis that suggested there are differences between the groups' mean due to organizational DNA components.

Conclusion:

Over the past few years, innovation has been referred to as essential in a constantly changing market, which generated great research interest due to its importance in achieving growth and resilience for the organizations that adopted it as a strategy, this prompted researchers to study the characteristics of innovative organizations and its success factors, as is the case for our study where we tried to find out if the internal composition of organizations makes them more innovative, while we chose the organizational DNA to

analyse the structure of the institution and find out its strength. From the results obtained, we can conclude that:

organizations can achieve the highest levels of innovation by integrating a good quality for their four organizational rules: decision rights, motivators, information, and organizational structure, as the flexible and flat organizational structure provides independence for employees and, supports their initiatives to express ideas that help achieve the objectives of their organizations.

The delegation of decision rights to department heads and managers at different levels also helps to give better results. in an innovative organization work climate is based on creating safe spaces for experimentation and failure, which stimulates employees to reveal their crazy ideas and take risks in achieving them, in addition to that organizations can achieve a highly competitive advantage when paying the necessary attention to the information chromosome.

Therefore, we suggest managers looking to realize innovative targets use new techniques that focus on indicators of efficacy and modernity in all aspects of the organizational process such as the clarity of decision rights, the use of the right motivators, providing information, and constructing a flexible organizational structure.

Bibliography:

- Dedahanov, A., Rhee, C., & Yoon, J. (2017). Organizational structure and innovation performance: Is employee innovative behavior a missing link? *Career Development International*, 22(4), 334-350. doi:<https://doi.org/10.1108/CDI-12-2016-0234>
- Gribanova, S., Rizhamadze, K., & Åbelt, A. (2020). The Role of Motivation Among IT professionals To Foster Innovation: SMEs Focus. *European Journal of Business and Management Research*, 5(5), 1-6.
- Nafei, W. (2015). The Role of Organizational DNA in Improving Organizational Performance: A Study on the Industrial Companies in Egypt. *International Business Research*, 8(1), 117-131. doi:10.5539/ibr.v8n1p117
- Daud, K., Ismail, A., Khidzir, N., & Abdullah, F. (2018). Validity and reliability of instrument to measure social media skills among small and medium entrepreneurs at Pengkalan Datu River. *International Journal of Development and Sustainability*, 7(3), 1026-1037. Retrieved from <https://isdsnet.com/ijds-v7n3-15.pdf>
- Huang, K., Lao, B., & McPhee, G. (2019). Internal Information Quality and Firm Innovation. 1-50. SSRN.
- Indeed team. (2022, 06 25). *12 Key Characteristics of a Culture of Innovation (With Tips)*. Retrieved 03 10, 2023, from <https://www.indeed.com/career-advice/career-development/characteristics-of-culture-of-innovation>
- INSEAD. (2011, 08 09). *The DNA of the World's Most Innovative Companies.[video]*. Consulté le 02 25, 2023, sur <https://www.youtube.com/watch?v=TtsM9VGNIII>
- Jeffrey , B. (2012, 12 18). *The Seven Essential Characteristics of Innovative Companies*. Retrieved 03 01, 2023, from <https://innovationmanagement.se/2012/12/18/the-seven-essential-characteristics-of-innovative-companies/>

- Kadri , A., & Martat, m. (2019). Methods To Ensure The Normal Distribution Data By Using Some Statistical Rules And The Programs (Excel / Spss / And Liserel) And the Results Of Breaching It Practical Examples. *Journal of Psychological and Educational Studies*, 8(1), 61-81. doi:<https://www.asjp.cerist.dz/en/article/105417>
- Lee, L. (2014, 08 18). *Nicholas Bloom: Innovation Requires Delegating Authority*. Retrieved from Stanford Graduate School of Business: <https://www.gsb.stanford.edu/insights/nicholas-bloom-innovation-requires-delegating-authority>
- Mallon, D. (2020, 02 28). *Getting decision rights right: How effective organizational decision-making*. Retrieved 08 20, 2020, from deloitte. insight: <https://www2.deloitte.com/us/en/insights/topics/talent/organizational-decision-making.html>
- Mullins, L. (2005). *Management and Organisational Behaviour*. Prentice (7th ed.). UK: Prentice hall. doi:<http://www.mim.ac.mw/books/Management%20&%20Organizational%20Behaviour,%207th%20edition.pdf>
- Traki, D., & Boukrif , M. (2015). Innovation Et Développement Managériale : Le Cas Des Entreprises Agroalimentaires Dans La Wilaya De Béjaia. *Annales de l'Université de Guelma*, 9(2), 1-30. doi:<https://www.asjp.cerist.dz/en/article/28689>
- Victor, A. (2016, 11 16). *Six Traits of Highly Innovative Companies*. Consulté le 03 08, 2023, sur <https://innovationone.io/six-traits-highly-innovative-companies/>