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option: urban planning

Geographical based marketing and commercial spaces creation: a case study for Djelfa City

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Dedication

This graduation note I dedicate to my beloved parents, thank you for your endless support and great confidence in my abilities. I am indebted to you for all the success I have achieved and I look forward to a bright future under your care and to my friends who provided me with full support and adequate assistance that made me who I am today

abstract :

In this work, we relied on the theory of hierarchical analysis, which they based on 5 basic criteria that we selected to know the weights of each of them and enter the latter into the Geographic Information Systems Program and collect, study, analyze and finally output them in the form of maps that allow us to know the appropriate spatial convenience of the supermarket in the city of djelfa, where the result showed us that the most suitable places are in the city center and South and a little from the East and West, and in terms of its geographical location and loyalty make it a very suitable advantage for building and erecting major commercial centers in the future.

Keywords: Geographic Information Systems, suitability, hierarchical analysis theory, geo-marketing

ملخص :

في هذا العمل قمنا بالإعتماد على نظرية التحليل الهرمي التي بدورها تعتمد على 5 معايير اساسي قمنا بإختيارها ليتم معرفة أوزان كل منها وإدخال هذه الأخيرة في برنامج نظم المعلومات الجغرافية والقيام بجمع بيانات ودراستها وتحليلها واخراجها في الاخير على شكل خرائط تسمح لنا بمعرفة الملائمة المكانية المناسبة للسوبرماركت في مدينة الجلفة ، حيث أظهرت لنا النتيجة أن أنسب الأماكن موجودة في وسط المدينة وجنوبها وقليلًا من شرقها وغربها ومن حيث مكانتها الجغرافية ولائيا تجعلها ذو ميزة مناسبة جدا لبناء واقامة مراكز تجارية كبرى مستقبلا.

الكلمات المفتاحية : نظم المعلومات الجغرافي ، الملائمة المكانية ، نظرية التحليل الهرمي ، التسويق الجغرافي

Résumé :

Dans ce travail, nous nous sommes appuyés sur la théorie de l'analyse hiérarchique, qu'ils ont basée sur 5 critères de base que nous avons sélectionnés pour connaître les poids de chacun d'eux et entrer ces derniers dans le Programme des Systèmes d'information Géographique et les collecter, étudier, analyser et enfin les sortir sous la forme de cartes qui nous permettent de connaître la commodité spatiale appropriée du supermarché de la ville de djelfa, où le résultat nous a montré que les endroits les plus appropriés se trouvent au centre-ville et au Sud et un peu à l'Est et à l'Ouest, et en termes de situation géographique et de fidélité, cela en fait un avantage très approprié pour la construction et l'érection de grands centres commerciaux à l'avenir.

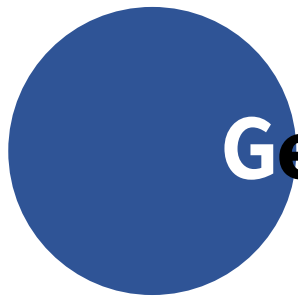
Mots clés: Systèmes d'information géographique, aptitude, théorie de l'analyse hiérarchique, géomarketing

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General Introduction

General introduction:

In the dynamic landscape of business and Commerce, the confluence of cutting-edge technologies, strategic decision-making and market response defines the essence of modern marketing .At the intersection of this multifaceted field lies the power of geographic information systems (GIS) and the analytical hierarchy process method (AHP), providing a transformative lens through which organizations can not only understand their markets, but also chart a course for precision-based marketing strategies .This introduction serves as a gateway to the complex world of marketing, GIS, and AHP and is a journey that delves into the complexities of these interconnected worlds.

The world of marketing is a world of constant flow, shaped by changing consumer behaviors, emerging technologies, and an ever-evolving competitive landscape .It is a world in which brands strive not only to gain market share but also to resonate in the hearts and minds of consumers .In the following pages, we will traverse this dynamic terrain, exploring the basic principles of marketing in the digital age, where data-driven insights, spatial awareness, and informed decision-making prevail.

At the heart of this exploration lies the transformative potential of GIS, often considered the Geospatial Intelligence of modern business, empowers organizations to harness the power of location data .It is a tool that transcends traditional boundaries, enabling marketers to decipher spatial patterns, demographic trends, and consumer preferences with unparalleled accuracy .Through GIS, a digital map becomes a canvas on which marketing strategies are not only formulated, but also fine-tuned, enabling companies to deliver personalized messages and experiences to their target audiences.

The AHP in turn emerges as a methodological compass that guides organizations through the complexities of the decision-making process .It is a process that offers a structured approach to evaluating and prioritizing alternatives, a methodology that finds particular resonance in the multifaceted landscape of marketing .In the pages that will unfold, we will delve into the principles of AHP, explore how it enables organizations to navigate the complex web of marketing options, from product development to campaign optimization, clearly and accurately.

This journey into the world of marketing, they're is a testament to the evolving nature of business in the digital age .As we navigate this terrain, we will discover how these three worlds intersect and synergize, providing a holistic approach to marketing strategy that goes beyond conventional wisdom .Together they form a triad of knowledge, where data-driven insights are combined with spatial awareness and decision acumen to create a powerful formula for success.

In the next steps, we will embark on a multidimensional exploration a journey that takes us through the basic principles of marketing, the transformative capabilities of GIS, and the structured methodologies of AHP .We will delve into case studies, real-world applications, and the symbiotic relationship that binds these three areas together .This journey invites us to understand not only the " what is "of marketing but also the" where "and" how " in an era where accuracy and agility are of paramount importance.

So welcome to the journey of discovery and insight - a journey that goes beyond traditional boundaries and begins in search of knowledge at the intersection of marketing, of them .As we embark on this expedition, let us be guided by curiosity, reason and the tireless pursuit of excellence, because through the convergence of these fields we are lighting the way towards a future in which marketing is not just a strategy but a science - .Master data-informed science, site-oriented, and polished with decision-making acumen.

The problem of research:

In light of the population increase witnessed by the city of Djelfa and the increase of facilities, needs, as well as products and supplies that every citizen and resident of the city needs, and the presence of the latter in commercial centers more due to their daily use by the residents and the distribution of these centers in the big city of transportation, shopping and storage made us ask and reach these following questions:

- Is the distribution of the supermarket in the city of djelfa a suitable distribution, if it is suitable, what are the appropriate places for it?
- Are there bases and criteria for choosing suitable sites for creating a commercial center
- Is the process of hierarchical analysis effective in choosing the right site to create a commercial center?
- How can GIS applications be used to determine the appropriate locations for the establishment of a commercial center according to specific criteria?

Research hypotheses:

Using the spatial analysis tools available in information systems and with appropriate criteria, there is the possibility of determining the appropriate locations for the establishment of a business center in the city of Djelfa.

The process of hierarchical analysis is effective for giving appropriate weights to the adopted criteria for choosing a suitable location for a shopping center.

The geographical scope and some of the central and surrounding places of the city of djelfa form a good location for the establishment of a commercial center in the city.

The importance of the research

- study relied on the applied approach through the technical application of the wide analytical tools provided by geographic information systems, as well as the application of a strategy for the stages of analysis to reach the results, and the use of the descriptive approach for interpretation. The results of the final analysis.
- Scientific aspect: the importance of the research from the scientific point of view is the subject that the research deals with, the exposure to an important and relatively recent topic, and that the process of analyzing the factors influencing the success of geomarketing strategies using the theory of hierarchical analysis and spatial appropriateness .
- Practical aspect: applying the concepts of hierarchical analysis and spatial appropriateness in improving the performance of geographical marketing campaigns: a case study in the food industry sector, and assisting management

management by building an integrated and applicable model based on the use of the hierarchical analysis process in supporting the decision problem of choosing appropriate places .

- necessity acquired by the research and contributes to its realization: strengthening the understanding of the interaction of geographical factors and theoretical hierarchical analysis in the development of effective and appropriate marketing strategies for local and regional markets, with the aim of enhancing marketing success and increasing the competitiveness of companies " .

Research objectives: the objective of the study:

- The use of geographic information systems as a technology to help determine the appropriate locations for the establishment of a business center in the city of Djelfa in addition to the process of hierarchical analyses is finding suitable locations .
- Identification of influencing factors and spatial appropriateness
- Produce a digital map of the best suitable locations for the establishment of a business center in the city of djelfa, based on a set of conditions, criteria and weights .
- Clarify the importance of giving weights to the criteria adopted in the study based on the hierarchical analysis process .

Research methodology:

To conduct successful scientific research, you must follow a certain methodology, adopt a theoretical approach and collect various information from various sources .In connection with the project "geomarketing and the creation of commercial spaces in the city of Djelfa", it involved the analysis of research concepts and their use to understand the local context and identify the necessary information.

Therefore, we have embarked on a logical sequence of steps and stages to carry out our research and achieve this work, hence we mention these stages as follows:

The first stage :bibliographic research: this step contributed to the realization of our research project in a decisive way, because it allowed us to clarify and define the scope of our work, which prompted us to refer to many writers, sites, reports and research, related or similar to the topic and from our work we consulted:

- National Company for reconstruction URBATIA
- Bureau of Statistics
- Directorate of Commerce

- Directorate of Budget Control programming
- We have also enriched our knowledge and research balance with articles, research and documents from the internet to obtain the maximum amount of information and data .

The second stage: data collection :this stage was not completed easily or simply, as access to it was difficult and even prohibited for some information, while we sometimes faced a real shortage of data and data in some of these departments, however, we were able to collect basic data, namely :

- socio-economic data necessary to diagnose the current situation in the study area, we have collected these data at the level of the Regional Development Planning Department (DSPB) of the Department of urban planning and construction of the municipality of djelfa (DUC) and the service levels RGPH of APC djelfa .
- The Directorate for Budget Programming and Monitoring (DPSB)
- Data related to stores, commercial spaces and incomes for each shopping center, some of which were obtained, not all from programming and Budget Control .

In this second stage, we collected some target data, but it was not enough to meet the subject of our research, because a large part of these data either does not exist or is not up-to-date, related to the following: incomes of each shopping center and its special and necessary spaces, with all their characteristics, which prompted us to move on to the next stage.

The third stage : after collecting and analyzing the data and using the geographic information system and the theory of hierarchical analysis, which works using the factors of "population density, topographic slope, supermarket distribution, used land and proximity to roads" and measuring weights and entering them into the GIS program, we produce maps showing the latter as a result and the goal of our research, namely the appropriate spatial Existing in the city now and in the future .

The fourth stage data processing and analysis: this last stage allowed us to complete this work, which consists of development plans and convenient places for new business centers, as well as representation of some information by numbers, tables, data and maps .

We used many programs in order to realize maps and plans.

Our work is structured around three chapters:

- In the first ,we presented the current status of the city of djelfa and the socio-economic and spatial characteristics that allowed us to highlight the

- main features of our city in the topic "Geomarketing and commercial space construction ."
- In the second chapter, we provides information and concepts about geomarketing, GIS, spatial fit, data analysis, their relationship with the theory of hierarchical analysis AHP what are the most important factors helping in this .
 - In third chapter, which is the summary of our research and the achievement of the result of the AHP hierarchical analysis theory, we have reached results represented in data, analyses, tables and maps of the subject of our research and the most important places that can and cannot be created commercial spaces .

Previous studies:

- A. Parasanta study entitled "Project Risk Management : using the analytical hierarchy and decision tree methods" where AHP was used to analyze the risks in the country's oil pipeline project in India, and determined the likelihood and severity of each risk factor through the active participation of experienced people, and the decision tree data (Decision Tree Approach) was used to select appropriate responses to various predefined risks. The costs of these alternatives were identified, and the study confirmed the effectiveness of AHP, DTA in risk management in these projects, as it helped in making appropriate decisions objectively through the participation of relevant stakeholders in the subject¹ .
- B. Saaty study entitled "decision-making using the analytical hierarchy", this study aimed to encourage the use of the hierarchical analysis process method by illustrating the prevalence of AHP in decision-making and in various fields : in 1986 at the Institute for Strategic Studies in Pretoria, an organization supported by the Hakuna, AHP technology was used to analyze the conflict in South Africa and the actions recommended by it, from the


¹ Prasanta Kumar Dey ,Project Risk Management: A Combined Analytic Hierarchy Process and Decision Tree Approach, (2002).

release of Nelson Mandela to the removal of apartheid and the granting of full citizenship and equal rights to the black majority, where.²

- C. Labib study which is entitled "analytical hierarchy process and expert selection program: determinants and benefits" this study has explained that the widespread use of AHP is definitely necessary due to the ease of application and the structure of AHP that follows a hierarchical and simplified way of solving problems facing managers. And this is in addition to the presence of a supportive and easy-to-use program, the expert selection program, which greatly contributed to the success of this method.³

² Saaty, Thomas L, Decision making with the Analytical Hierarchy Process , International Journal of Services Sciences ,(2008)

³ Ishizaka Alessio, Labib Ashraf, Analytic Hierarchy Process and Expert Choice: Benefits and Limitations, (2009)



**I. Chapter One: study of
demographic-economic
and social characteristics**

Introduction:

In order to understand and analyze geomarketing and how to establish a business in our study area, it is useful for us to make a diagnosis of the main factors that contributed to the growth and spatial development⁸ 2022 ,but also 1,823,852 inhabitants in the whole state and the population of the state capital municipality are about 634,043 people representing 34.76% of the total population in 2022⁹ .

By virtue of its prestige, the agglomeration of djelfa constitutes a concentration of economic, commercial and cultural activities, in addition to its geographical location in the center of Algeria, and since being identified as a regional capital, it has played a role at the national and national levels .Regional levels .A very important managerial role.

The compilation of socio-economic information as well as its own developments allows us to analyze the characteristics of our field of study and emphasize the main factors that generate mobility, travel, mobility practices and the close relationship between urbanization and travel.

Therefore, in this chapter we will analyze the socio-economic and spatial characteristics of our research area.

⁸ A study on the state of djelfa (2022) DPAT

⁹ ONS (2022) RGBH

I- Socio-economic characteristics

1.1- Definition of the djelfa state:

historically, the sociologist Dermenghem described djelfa as the heart of Algeria, where human existence dates back to the stone age¹⁰

The state of djelfa was divided in 1974, and each territory is dominated by grassy ecosystems, covering an area of 32,280 square kilometers, with a length of more than 300 kilometers from North to South and 150 kilometers from East to West .It is located between a longitude of two degrees and 5 degrees east and a latitude of 33 degrees to 35 degrees north .It has 36 communes and 12 golf courses.

However, this figure means that the state of djelfa is bordered by eight states, of which Medea and Tismset are from the North, Messila and Biskra from the East, Raqqa from the southeast, and LA from the southwest.

The important climatic features of the region range from arid to extremely arid, this is mainly related to its axial location between the central Plains and the Middle Atlas and the transition zone between the southern foothills of the Atlas Mountains and the northern desert .This difference also translates into a difference in altitude, from 150 meters in the extreme south to 1613 meters east of Ben Jacob.

The main urban agglomerations and the basic components of the urban structure (Ain Ousara, Hassi bahbab, Djelfa, Messaad) are concentrated in the northern part of the governorate in the form of spines and along the structural axes (RN1, RN40B, RN46) which on the one hand strengthen the subordination of other cities and on the other hand, strengthened the subordination status of the northern region and the eastern region of Djelfa, on the other hand, the dependence of the North has also strengthened the region of Djelfa, especially in terms of access supply of products related to local trade and industry (agricultural products, textiles, leather, etc.)

Topographically, the state is not severely restricted, which facilitates the creation of traffic routes of a good character and well-organized travel, although this situation creates difficulties because these routes are vulnerable in times of floods and the physical and chemical nature of the soil, and nature aggravates the road .Deterioration.

¹⁰ book entitled the country of Abel published by Gallimard editions, (7)

Djelfa is located at the crossroads of the North-South (RN1) and east-west (RN46, RN40, RN40B) roads, which gives it the role of a regional crossroads. Exchanges between countries are carried out in particular through:

- Line RN1: communicates with Medea, Blida and Algeria in the North and Laghouat, Ghardaia in the South
- The RN40 :connects Medea on the northeast side and Tiaret on the Northwest Side
- RN46: allows migration to Salim and Messila localities .
- LinkRN1A: communicates with Aflou (Lagouhat)
- From the RN89 highway on the north side, it provides a connection to the state of Messila
- RNNC connection (an extension of RN1B): ensures connection to the state of Ourgla

The city of djelfa creates a strong tourist attraction due to its location in the center of the country, passing through important economic centers (RN1) and structural elements at the regional level such as the University (Zain Ashour), the Eye Hospital "Cuba-Algeria partnership "or ongoing projects, the cement plant in Sadr Valley is an example of this.

1.2- A brief history of the city of Djelfa:

the city of Djelfa is an excellent example of colonial (French) urban design, not only for defensive reasons, thus creating a fortified military City, but also as a kind of installation for the mobile nomadic population.

The French soldiers were aware of the importance of the Djelfa site during the first thirty years of occupation, as there were remains of a Quranic school on the site of the old Gendarmerie Brigade and another on the outskirts .However, from 1852 onwards, the establishment of this post confirmed the function of the military outpost in the villa watch the edge of the desert for better security management.

The French military genius of that time came up with the idea to plan the general camp in a simple plane, a rectangle from North to South, dividing the province into 16 islands with 3 horizontal streets .There is only La Zaouia of Si Cherif in this area outside the program, it is the only Cultural Center (more than 500 students) and social center (helps those in need).

The military post housed about 50 families and later (1854) saw the placement of civilians in a tower built at the same time.

"We can say that the birth of cities corresponds to three possible motives: economic, political and defensive (the third can be considered a sub-aspect of the second) .Thus, each city is distinguished from its origin by the initial selection."¹¹

On February 13, 1861, the city of djelfa was born (administratively) after Napoleon III decreed the creation of a civilian population center of 55 fires in a place called "DJELFA" by allocating lands of 1775 hectares, 92 arisas and 15 fires .centiares, which in the end was aimed only at organizing a case that had already existed for more than 5 years.

1.3- Experimental economic study:

We will deal with a series of analyzes in order to better understand the trends of this group with dependence on its evolution, the balance of its migration, its structure and the evolution of its fleet of vehicles, and these elements that represent social dimensions are themselves generators of mobility and travel.

1.4- Population development:

According to the five censuses (1966.2022 .2008 .1998 .1987 .1977) established by the National Statistics Office, we can conclude that the population of the city of Djelfa has experienced strong growth, increasing from 288,228 inhabitants in 2008 to 1,823,852 in 2022, which is almost 6 times in A period of 14 years.

Table No. 01: the development of the population of the city of djelfa from 1966 to 2008

National growth rate(%)	Rate of increase(%)	Growth	Number of people	Year
/	/	/	25628	1966
3.21	6.8	27127	52800	1977
3.08	5.5	37232	90032	1987
2.15	5.6	74094	164126	1998
1.41	5.8	124102	288228	2008

Source: RGPH (2008) ONS

Note: order to calculate the growth rate, we applied the following methodological formula:

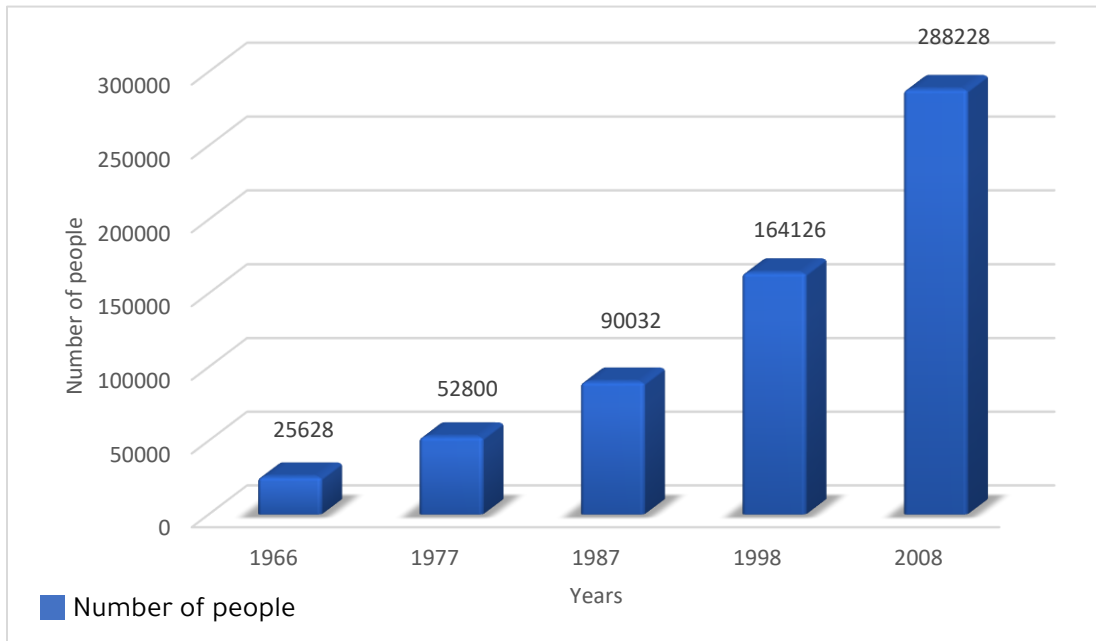
$$T = ((P_n / p_0) 1 / n - 1) \times 100$$

T :population growth rate for the period (N, N0).

Pn :the number of inhabitants during the period n.

P0 :the number of inhabitants during the initial period.

¹¹Jacqueline- Beaujeu GARNIER, "Urban geography", Armand Colin, Paris, 1997,



Source ONS (2008) RGPH

1.5- Net migration:

Net migration is the difference between Arrivals (or entries) and departures (or departures) of the population from a particular territory .In other words, net migration is equal to the difference between entrances and exits.

"Migrations are the movements of individuals moving from the place of origin (or departure) to the place of destination (or arrival) .Net migration, for a given territorial unit and period, is the difference between migration flows and migration flows over a period.¹²

Net migration can be considered a defining and indicative element in a demographic study of a region or city not only because it contributes to population growth but also generates mobility and travel .The main reason is to get to an urban center (for work, study, utilities, etc.) and then return to the starting point to visit the origin.

According to ONS data, we can distinguish two forms of net migration, namely:

¹² MERLIN. P and CHOAY. F: "Dictionary of Urban planning and development", 2005.

1.6- Internal migration:

Internal migration in the case of our study can be defined as the movement of migrants (from the state of Djelfa) who left their municipalities to settle in the municipality of Djelfa, and exits are the opposite movement, that is, leaving the city of Djelfa to settle in another municipality of the same state. Therefore, it is a migratory movement from / to all municipalities of the state from / to its capital, the city of Djelfa. Table No. 02 below shows the number of entrances to the city, the number of exits from the same city, in addition to their proportions and the migration balance, which is: number of entrances - number of exits

Table No. 02: number of migrants from and to the municipality of Djelfa from the municipalities of the state:(2008-1998)

Communes	Appetizers		Exits		Immigration
	Number	%	Number	%	
Moudjebara	213	1.56	435	7.25	222-
El gueddid	187	1.37	109	1.82	78
Hassibahbah	1193	8.74	514	8.61	679
Ain maabed	667	4.89	673	11.28	6-
Sed rahal	45	0.33	51	0.85	6-
Faid el botma	979	7.17	175	2.93	804
Birine	184	1.35	61	1.02	123
Bouiretlahdeb	34	0.25	47	0.79	13-
Zaccar	68	0.5	50	0.83	18
El khemis	109	8.0	29	0.48	80
Sidi baizid	210	1.54	82	1.37	128
M'liliha	822	6.02	236	3.95	586
El idrissia	441	3.23	89	1.64	343
Douis	37	0.27	235	3.94	198-
Hassi el ech	102	0.75	74	1.24	28
Messaed	1622	11.89	569	9.53	1053
Guettera	24	0.17	26	0.43	2-
Sidi laadjal	30	0.22	38	6.37	210-
Hadsahery	299	2.19	107	1.79	192
Guernnini	30	0.22	15	0.25	15
Selmana	34	0.25	46	0.77	12-
Ain chouhada	2	0.01	336	5.63	334-
Oum laadam	20	0.15	26	0.43	6-

Dar chioukh	1516	11 .11	109	1.82	1407
Charef	2043	14.98	138	2.31g	1905
Ben yagoub	114	0.83	136	2.27	22-
Zaafrane	675	4.94	111	1.86	564
Deldoul	15	11 .0	29	0.48	14-
Ain el ibel	521	3.82	270	4.52	251
Ain ouessara	337	2.47	906	12 .15	596-
Benhar	8	0.06	16	0.27	8-
Hassifedoul	10	0.07	24	4 .0	14-
Amourah	239	1.75	38	0.64	201
Ain fekka	99	0.72	65	0.08	34
Taadmit	39	0.28	77	1.29	38
Undisclosed	676	4.95	17	0.28	659
Total	13644	100	5968	100	7676

Source: RGPH (2008) ONS

According to Table No. 02: There are a total of 13,644 entrances to the city of Djelfa and 5,968 exits from the city (Djelfa) to other cities in the state in the period between 1998 and 2008. All this with an estimated positive migration balance of 7,676 people during these ten years. These figures were collected during the 2008 general census created by the National Bureau of Statistics (ONS).

1.7- External migration:

These are migration movements from / to other states from / to the city of djelfa .Table No. 03 shows the main migration movements to where from the city of djelfa and from where to the states of Algeria

Table No. 03: number of migrants from / to the city of Djelfa from / to States of Algeria between:(2008-1998)

Mandates	Emigrants to Djelfa	%	Immigrants from Djelfa	%	Total
Adrar	538	8.86	54	11.6	484
Laghouat	207	3.41	517	11.19	310-
Biskra	277	4.56	155	3.36	122
Blida	213	3.51	178	3.85	35
Tiaret	365	6.01	507	10.98	142
Alger	869	14.15	466	10.09	393
Medea	630	10.38	125	2.71	505
M'silla	959	15.8	305	6.6	261-
Ouargla	165	2.71	426	9.22	654
Ghardaïa	209	3.44	313	6.78	104
Other states	1589	26.18	1572	34.04	209-
Alien	58	0.95	/	/	/
Total	6069	100	4618	100	1660

Source: RGPH (2008) ONS

From Table 3: conclude that during the period between 1998 and 2008, the number of people entering the city of Djelfa from other states was 6,069 and 4,618 people left the city (Djelfa) for other states.

With an estimated positive immigration balance of 1,660 people .These figures were collected during the 2008 general census created by the National Bureau of Statistics (ONS).

1.8- The structure of the population by age and gender:

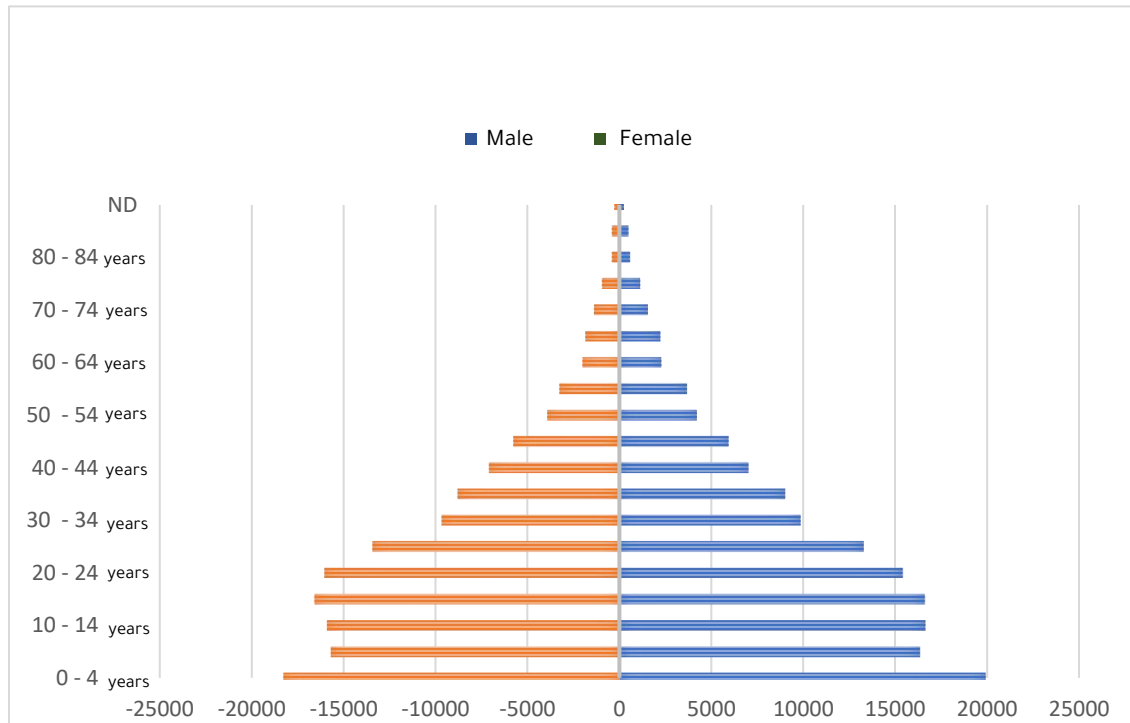
Studying the demographics by age and gender, makes it possible to highlight the gender quota and the characteristics of this population group, it can also determine whether the latter is small or not, as for the composition by gender, it allows us to give a vision of the gender balance .Table No. 04 below shows the distribution of the population of Djelfa by age groups, gender and percentage for each age group.

Table No. 04: distribution of the population of Djelfa by age and sex (2008 estimate)

Total		Feminine		Male		Segments From ages
%	Total	%	Total	%	Total	
٪13.25	38202	٪12.90	18280	٪13.60	19922	< 04 years
٪11.11	32036	٪11.07	15689	٪11.16	16347	05 years - 09 years
٪11.29	32549	٪11.21	15897	٪11.37	16652	10 years - 14 years
٪11.51	33184	٪11.70	16579	٪11.34	16605	15years - 19 years
٪10.91	31449	٪11.31	16037	٪10.52	15412	20years - 24 years
٪9.27	26725	٪9.48	13438	٪9.07	13287	25years - 29 years
٪6.78	19530	٪6.82	9674	٪6.73	9856	30years - 34 years
٪6.19	17829	٪6.22	8811	٪6.16	9018	35years - 39 years
٪4.90	14112	٪5.01	7098	٪4.79	7014	40years - 44 years
٪4.06	11706	٪4.07	5770	٪4.05	5936	45years - 49 years
٪2.83	8144	٪2.77	3926	٪2.88	4218	50years - 54 years
٪2.41	6952	٪2.30	3267	٪2.52	3685	55years - 59 years
٪1.49	4295	٪1.42	2007	٪1.56	2288	64 - 60years old
٪1.42	4081	٪1.30	1849	٪1.52	2232	65years - 69 years
٪1.02	2949	٪0.98	1391	٪1.06	1558	70years - 74 years
٪0.72	2078	٪0.67	946	٪0.77	1132	79 - 75years old
٪0.35	997	٪0.29	418	٪0.40	579	80years - 84 years
٪0.31	892	٪0.29	407	٪0.33	485	85and above
٪0.18	518	٪0.19	272	٪0.17	246	Not available
٪100	288228	٪100	141756	٪100	146472	Total

Source: RGPH (2008) ONS

Chart No. 02: age pyramid



source: (RGPH 2008) ONS

Regarding mobility and travel, it is necessary for us to make another distribution according to large age groups, this allows us to read the population that is more inclined to move, knowing that the less active segments of the population that tend to move less are:

- Grade is less than 5 years old (school age is 5 years and older) .
- Category over 60 years old (retirement age 60 and above) .

The other departments are most affected by compulsory travel, for work or for study in general .In Table No. 5 we will identify four large age categories.

Table No. 05: main age groups

Percentages	Population	Age groups
13.25%	38202	4-0years
22.40%	64585	14-5years old
58.85%	169631	59-15years old
5.30%	15292	More than 60
0.20%	518	Not available
100%	288228	Total

source: calculated by student

1.9- Demographics by economic activity:

The structure of the population according to economic activity allows us to make a cross-sectional economic reading of the active population (this is all people of working age who are in the labor market, and the National Statistics Office defined it as the total population aged 15-60 years), the working population (all people who are already employed), and then the unemployed population (All persons of working age and ability to work and they are not employed), and finally by the number of employed persons.

This study allows us to identify which features of the population tend to move the most and which are mobile for various, forced and secondary reasons.

In theory, it is this category of the population that generates the most flights .Table No. 06 allows us to determine the population structure according to its economic activity in our study area.

Table No. 06 demographics by economic activity:

Rate L Cost	The ratio of Unemployment	Population in unemployment	Rate Occupancy ratio		Population Busy	Rate From the activity%	Populati on Active	The number of persistent organic pollutants
4	∶54.91	93138	45.0 ∶9	26.5 ∶3	76493	∶58.85	169631	288228

Source: RGPH 2008 (ONS) + student accounts

2- Distribution of the working population by branch of economic activity:

In this analysis, it will be possible to identify the different sectors in which the category of the working population works there, since it is this category that tends to generate the largest number of daily trips primarily for compulsory reasons .Table No. 07 below as well as graph No. 03 give us a clear idea of the distribution of the working population according to the branch of economic activity.

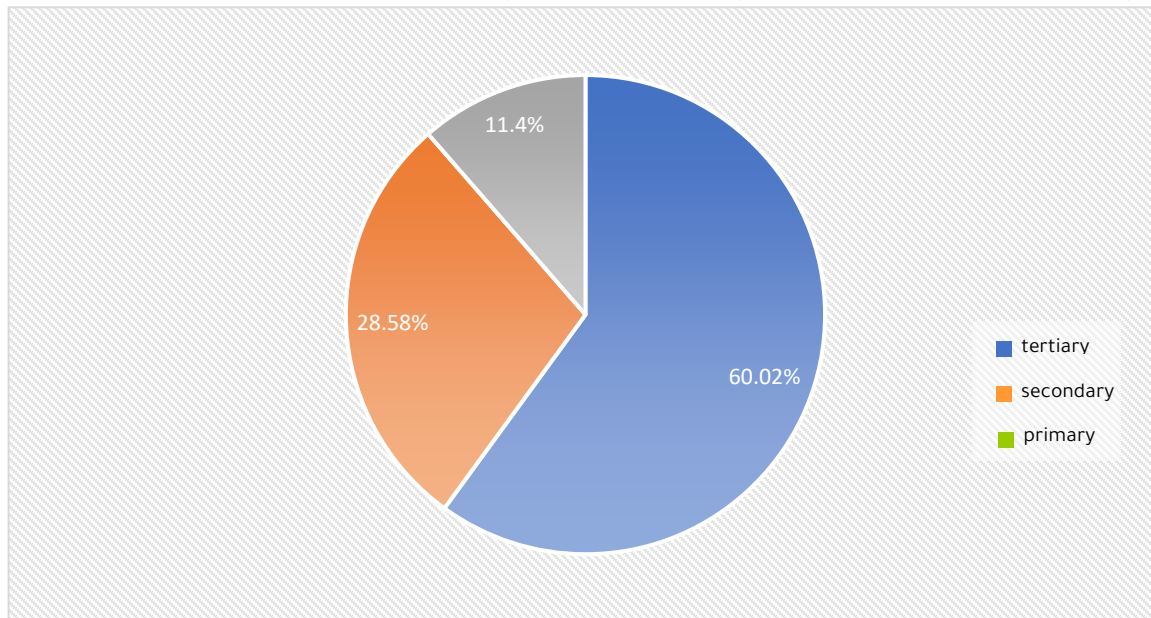
Table No. 07 distribution of the employed population by sector of economic activity:

%	Working population	Activity area
11.4	8720	Primary sector
28.58	21862	Secondary sector
60.02	45911	Service sector
100	76493	Total

Source: Review (PDAU) 2010

According to Table No. 07 and graph No. 03, We conclude that the majority of the working population is grouped mainly in the tertiary sector, that is, the service sectors with 60.02% or 45.911 which can also say 2/3 of the working population, while the secondary sector (industry and construction) comes in second place with 28.58% of the working population with 21,862 people, And finally the primary sector includes 8,720 people (agriculture).

Graph No. 03: distribution of the employed population by sector of economic activity:



Source: Review (PDAU) 2010

2.1- The development of individual status:

Faced with a glaring lack of data on the fleet of cars of the municipality of Djelfa, no service in question (the drag of the state of Djelfa or the direction of Transport) had figures related to this development, we chose to analyze the evolution of the fleet of cars of the state just to get a little closer to understanding this phenomenon indicative of mobility, as it is a fundamental social factor for understanding the efficiency of public transport .He said: the more efficient the transport is, the more we tend to abandon our own car .Table No. 08 and graph No. 04 show the evolution of this stock over the past ten years¹³.

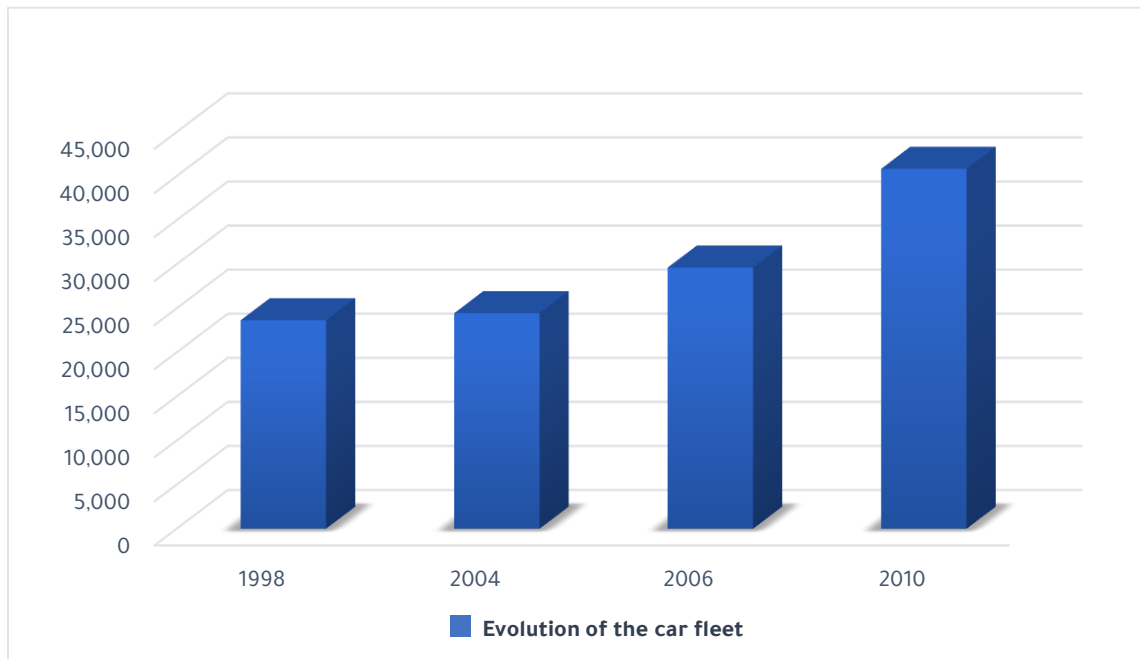
¹³ book entitled the country of Abel published by Gallimard editions, (8)

Table No. 08: the development of the parking lot in the state of Djelfa:

Evolution of the car fleet	Number of motorcycles	Number of trucks	Number Truck	Number of tourist vehicles	Year
23649	41	5.051	4542	14.015	1998
24.449	39	5315	4.769	14326	2004
29625	39	6334	5.204	16.042	2006
40833	42	10396	7.604	22791	2010

Source: NSO

According to Table No. 08 and graph No. 04, we can say that the parking lot in the state has known a strong growth from 23,649 vehicles in 1998 to 29,625 in 2006, that is, an increase of 5,976 vehicles in 12 years, and this figure has doubled in just 4 years (in 2010) or the parking lot is estimated at 40,833 vehicles with an increase of 11,208 A vehicle compared to 2006.



Source: NSO

II- physical setting:

1.1 physical and natural properties:

This study allows us to highlight the features of spatial support in which our field of research is located between possibilities and limitations, and this set of analysis allows us to better carry out the works that we are going to propose, their layouts, the degree of their ease of realization (both from the budgetary and technical side), since it is always easier to work on a flat .Their physical and natural properties are as follows:

1.2- Terrain:

the topography of the common djelfa area is generally high, with elevations ranging from 1020 m (minimum) to 1489 M (maximum)¹⁴.

Three main morphological units characterize the common space: mountains, plateaus, Hills.

- It consists-mountains: account for more than a third (39.32%) of the total area (ie.21,600 hectares) characterized by: Mount Sin-BA, Mount Wasat and Hawass cave .
- It is 4505:hectares occupy 8.20% of the total area .
- occupies the largest part of the municipal area, namely.28825 HK of the percentage of 52.48% is located in two parts :
- It forms part that runs from the southeast (of the CW164) to the southeast and east of the municipality .
- The main is located in the extreme north-eastern part of the city [8].
- The hills:
- [8]the slopes are classified into 5 categories:
- Yield %3-0low slopes
- More %8 - 3
- Grade :%12.5-8low to medium slopes .
- Height :%25-12.5medium slopes .
- more than 25%: steep slopes .

The territory of the municipality is generally low and ranges from 0 to 8% with a predominance of the stratum (0-3%) that is found at the level of plateaus in the south-west, east and north-east of the common territory .To the North and Northwest there are medium to steep slopes.

¹⁴ book entitled the country of Abel published by Gallimard editions, (8)

The layer (12.5-25%) is spread especially on the slopes of the mountains where the vegetation is dense, while the layer (more than 25%) is located along the peaks of sun Alba and Hawass cave.

1.3- The process of spatial development of the municipality of Djelfa:

The directions of mobility should be determined in relation to the development directions of the city, as can be seen: to understand mobility, one must also understand the city.

The agglomeration of the city of Djelfa was built at different stages (as shown in map No. 02) of growth and according to different types of land uses. This has led to the emergence of several urban agglomerations and a characteristic classification.

Among these various construction kits, we can cite the following:

1.3.1-The colonial nucleus:

originally, the city was made up of a group of 16 islands produced by a regular and well-proportioned network. Oriented along the main axis connecting Algiers - Aghouat (North - South).

Since 1868, a group of islands has been built by folding the second important axis down, connecting boussada with the Sharf (east-west) and in 1883, the construction occupied the entire perimeter defined by fences that were not removed until 1960 and this is due to its geographical location.

The colonial city center consists of a system of roads that form a strongly articulated but poorly differentiated contiguous area in this frame system the block behaves as an integrative unit and is an essential element of the city's structuring.

The basic limits are:

- Further to the north neighborhood of Burj .
- Further south to Al-khamisti Street .
- in the East RN1 .
- to the West is Sidi Nile Street [8] .

1.3.2-Terminal District:

displacement from the countryside due to the Industrial Revolution, disruption in all major cities and thus the case of the city of djelfa, which has suffered from this problem since 1854 with the establishment of a neighborhood: the tower north of the city center.

Normal located in the immediate vicinity of the city center. Among such neighborhoods, we mention: bottles, AMS, bill Umbridge. These neighborhoods fit into a fairly regular frame characterized by the intersection of almost perpendicular axes.

1.3.3-Irregular oceanic habitats:

these are the areas, ein Asrar ,Issa Al-Qaid, block 40. It is inhabited mostly by rural residents who, looking for work and satisfying their social, educational and health needs, build their houses according to their rural mentality, and from there produce rural-type facilities.

The gradual construction of these pieces, with the freedom of the last Assembly, gave an organic structure without a frame or a regular Trace¹⁵.

1.4- Collective housing:

the city of Djelfa has experienced a very large population surplus in recent decades .To meet the housing needs of these residents, many measures have been taken in connection with the construction.

In addition to the planned zoning operations, the mass housing program was taken into account: mass housing construction operations were launched before independence and included in the framework of the Constantine plan, HLMS were built in qanani, which were launched in 1958 and completed after independence.

It was from the second special program (70-73) that several operations for the construction of collective housing were launched .We note that since independence and until the end of the Seventies only about 200 dwellings have been completed.

The creation of two ZHUNs (East and West) was not proposed until the early eighties, which would occupy an area of 459.51 hectares and should accommodate 60,966 inhabitants for 10,160 dwellings, that is, the average occupancy rate per dwelling of 6 people, with an average density of 22 dwellings / ha.

From this proposal, so far only 2,591 residences have been built in ZHUN East and 898 residences in ZHUN West .

1.5- Customization:

the process of self-construction (subdivision) is designed to support the state task of housing construction .This task is becoming increasingly heavy with delays in completing operations and rapid growth in the number of habitats (housing seekers).

In the town of djelfa, 20 subdivisions have been launched, occupying an area of 462.68 hectares and divided into 8610 plots, of which 2806 are completed, 810 are under maintenance and 4994 are in the project.

In addition to this number of subdivisions, there are 39 cooperatives that occupy an area 25.25 hectares and are divided into 906 contracts.

¹⁵ book entitled the country of Abel published by Gallimard editions, (8)

Conclusion:

The analysis carried out by us in this first chapter has enabled us to highlight only some or one aspect of the characteristics specific to the research field in terms of the subject of our study (geomarketing of the state of djelfa).

The urban agglomerations of djelfa have experienced a demographic explosion with significant growth rates recorded over 42 years, the presence of a young and balanced population has resulted in an active population of 58.85% of the total population.

This development is due to the role of the crossroads of this city, which made it attractive with a very large migration balance (9336 immigrants over the past ten years), thanks to the employment opportunities that this city provides mainly in the tertiary sector with a share of 60.02% of the sectors of economic activity.

Such a strong growth with a convenient location that is not too rugged as it was registered in our research area led to a strong spatial development that came to meet the needs of these residents in terms of housing resulting in the creation of various types of habitats that surround the initial core of the city, as well as the emergence of spontaneous habitats.

Population growth as well as spatial development systematically indicate that there is a great need to travel for various daily or occasional reasons and by various means of travel, including those that need shopping and shopping in the supermarket on a daily or almost daily basis.

As a result, the study of the road network in the city as well as the identification of the intervention area (the center of the city of djelfa), which will lead us to the analysis of the transport that serves it, as well as the division of basins that generate trips to this area and the purposes necessary to provide more accessible commercial spaces, and to achieve a final reading of the mobility situation, we will base ourselves on the results of the household mobility survey in order to identify population trends.



II. Chapter Two: Theoretical Framework

Introduction:

In this chapter, we will learn and understand a little about geography, marketing, the importance of spatial marketing and its relationship with stores and how to set up a store. All these definitions and knowledge will guide us and lead us to know the programs and methods that will make us know how to set up stores in the most suitable geographical locations, Geographic Information Systems, spatial convenience and the theory of hierarchical analysis. This was the most important thing in this chapter and what we will also know in the subject of our research, which are means and methods that enable us to deduce geography and spatial marketing and the most important foundations and criteria for that.

I- Geographic in general: Evolution of geographic marketing:

Since the Seventies, spatial technologies in business have become more relevant in traditional marketing experienced by a new way of thinking and a new inspiration in the methods of analysis used at that time, an increasing number of extremely positive contributions have been noted in various scientific journals and other popular literature. New phrases appeared for this new technology such as "desktop mapping", "business GIS", "market information system", "micro geographic market segmentation", which were used "Geographic marketing" Basically as a key concept, I have implemented these same phrases out of practice and almost unnoticed by the Geographical Sciences. Geographic Information Systems and desktop mapping have found an entrance LA variety of application areas in marketing, the combination of data and the methodology of the marketing branch associated with the capabilities of displaying maps as well as analysis functions led to the creation of the field of geographic information systems.¹³

the importance of GIs in marketing as follows: "the intense competition and dynamics present in most markets mean that GIS are still important tools for market analysis."

The change from the seller's market to the buyer's market, the features of market saturation, competition and globalization of markets force companies and industries of all sizes to a spatially differentiated marketing and management strategy: "Think Globally - Act local"¹⁴ that most of the "current" applications of GIS by people in marketing functions of companies are to solve problems in the consumer market. Knowing where the current and potential markets are located is crucial for any bus, if you are trying to sell lawn tractors to people living in high-rise apartments, you will not be very successful¹⁵.

1.2- Definition of geographic marketing:

Geomarketing is the intersection of two words, geography and market. Since it is not a well-known term [yet], people can interpret this intersection in another way, such as a market where one can buy geographical data. To avoid ambiguity, the term geomarketing is fully explained in this paragraph.

In the mid-nineties, the concept of "place marketing" was developed as a reaction to significant changes in corporate strategies and government policies caused by the processes of globalization and regionalization. That was an initial moment for geomarketing because it began to be positioned and looked at in the context of local and regional development. Local governments begin to consider geomarketing [marketing of Regions and localities] as a tool

¹³Fischer, M.M. & Stauer-Steinnocher, Business GIS and Geomarketing: GIS for companies,2001

¹⁴ Frühling, J. M. & Steingrube : Geomarketing: Neue Begriffe ,1991, Frankfurt.

¹⁵ Grimshaw, (Verschuren, Marc M.J)., GEOMARKETING GIS & Marketing, New Combination of Knowledge, 1992

to promote local and regional economic development in conditions of increased geo-economic competition.

Another innovation in this sector is emerging from a new type of business - the production and distribution of geographic information technologies [GIS-technologies]. It can be considered a third dimension of geomarketing - the commercialization of geographical knowledge and technologies.

Krek says that geomarketing information is information that enables the user to make better and faster decisions on marketing and sales activities, the main sources of information are geographical, demographic and statistical data ¹⁶.

Tell me where you live, I will tell you who you are. This slogan may be a little bit simplest, but it resumes quite correctly the concept of Geomarketing¹⁷

1.3- Geographic marketing data:

Research has shown that more than 80% of all information held by organizations can be referenced geographically. The power of GIS comes from the ability to link attribute data with spatial, all companies collect, edit and sell market-related information due to increasing competition, and you get more detailed information about the market, it is important that the number of suppliers of information has increased. This led to an increase in the use of technology related to Geographic Information Systems. For many companies, data is an institutional resource of enormous value. The second practical example emphasizes the enormous value of data¹⁸

There are no geographic information systems without data / information. Geomarketing information is information that enables the user to make better and faster decisions about marketing and sales activities and plays an important role in geomarketing. They can be delivered to the user in a different format and format and through different media. Geomarketing information is formed by geomarketing data. Geomarketing data consists of internal company data and external company data, which are internal data [number of customers, sale rates, customer profiles, etc.] are collected and maintained by the company itself.

¹⁶ Krek, (Verschuren, Marc M.J.), GEOMARKETING GIS & Marketing, New Combination of Knowledge, 2000

¹⁷ Bernard, (Verschuren, Marc M.J.), GEOMARKETING GIS & Marketing, New Combination of Knowledge, 2003

¹⁸ Grimshaw, (Verschuren, Marc M.J.), GEOMARKETING GIS & Marketing, New Combination of Knowledge, 1994

External data, such as statistics, demographics, topographic data come in a variety of forms and formats as a set of figures, reports, maps collected by various enterprises. The information relevant to the use varies by sector and branch.

1.4- Spatial marketing between economics and geography:

It all starts with the development of the theory of the location of economic activities Thomas More as early as 1516 in his book Utopia, defended the need to divide the city into zones to accommodate each market, in his economic writings Turgut (1768) puts forward three principles of the theory of the location of the store:

- Centralized points of sale
- demographic threshold for creating a business, the presence of an adequate market
- Grouping of purchases

On a more systematic level, von THUNEN (VON THUNEN 1826), considered the "father of location theories"¹⁹, explains that "it is the ideal locations for agricultural activities that maximize the rent of land in each part of the space." And then he founded the Spatial Economic Analysis, which he adopted to design models of expansion or spatial development of retail chains, and from it we can see how progress has taken time, regarding the use of space in economic and management theories.

And in the United States, a grid of diamond-shaped concentric squares was observed, this is called a rhombic grid, Such a network of markets with regular hexagonal lines indicates, on the one hand, the existence of a single equilibrium configuration with a certain number of enterprises in the market, and on the other hand the dominance of this network with free entry into the market ²⁰, This author formalizes the theory of the central place using a microeconomic approach. It is also based on the actual price of the selected item from the factory price plus the transportation cost. The more the latter increases with the distance, the quantity demanded will decrease accordingly, which allows the construction of space demand cones by integrating the function that connects the required quantities on the one hand, and the price and distance in transportation costs on the other. Lösch then defines a profitable site as one whose sales quantity, as determined by the spatial demand cone, provides the appropriate rate of return. This concept corresponds well to the industrial commodity markets.

This design will be challenged because this hexagonal grid is not the only equilibrium configuration (see above the rhombic grid) and entry into the free market does not necessarily lead to hexagons of market segments, however it is possible to retain from this

¹⁹Ponsard, Location Based Marketing Geomarketing and Geolocation, 1988

²⁰ Lösch, Location Based Marketing Geomarketing and Geolocation, 1941

work the idea of centralization with the aim of reducing the distance for the largest number of people and thus facilitating access to goods and services. This concept corresponds well to the industrial commodity markets. This design will be challenged because this hexagonal lattice is not the only equilibrium configuration (see above the rhombic Lattice) and entry into the free market does not necessarily lead to hexagons of market segments. However, the idea of centralization can be retained from this work with the aim of reducing the distance for the largest number of people and thus facilitating access to goods and services, this concept corresponds well to the industrial commodity markets.²¹

1.5- Geomarketing, technologies and software:

The great emphasis on decision-making and strategy, is due to the speed of geomarketing technologies and available software, geomarketing technologies are based on Geographic Information Systems (GIS), in other words combining geography and computer science to develop computer mapping, these digital geomarketing technologies are used by organizations in a wide range of sectors and what was available from During the complex and often expensive software as it is now available on the internet in the form of increasingly sophisticated websites as well as free and sometimes open source software.

1.6- Geographic Information Systems, the technical foundations of geo-marketing:

GIS is used to collect, store, process spatial data in the form of a map, analyze it by known and available spatial analysis methods (Pornon 2015) and manage it, and that it can be reused for other applications (Sleight 2004), GIS is applicable to many areas including the following:

- Public bodies (official Institutes of Statistics, Geography, weather forecasting, armed forces, etc.) ;
- Public policies, in particular spatial planning, transport and communications infrastructure management ;
- Business, to enable companies and organizations in general to manage transport networks, logistics and, more specifically, marketing .

Geographic information systems are used to collect, manage, integrate and analyze spatial data for a²² specific area. The geographic information system is represented by several components:

- Geocoding system ;

²¹ Böventer, Location Based Marketing Geomarketing and Geolocation, 1962

²² Caron, Böventer, Location Based Marketing Geomarketing and Geolocation, 1962/2017

- spatial database that includes elements of the geographical environment for mapping the studied area (cities, rivers, mountains, etc.) ;
- database of the studied actors (consumers, companies, monuments, etc.) ;
- mapping system that allows maps to appear on the screen and print them .

Sometimes mapping programs are distinguished from Geographic Information Systems, which can present geographical information in a form different from the map in general, we are talking about visual business intelligence. Geographic information systems often integrate spatial information processing tools (geostatistics, geodata mining, etc.) .It was possible to warn about the risk of conflict when implementing GIS, since the type of organizational structure should be taken into account) .Where a more universal concept was proposed is the spatial reference information system (SRS) , since the installation of geospatial technologies is not so much neutral in organizations as it can form a competitive advantage

1.7- Study the store location:

Opening a new point of sale is a long-term decision with the exception of temporary stores and terminals .This decision-making process also depends on what kind of Organization of the company needs to be taken into account in order to understand the decision-making process regarding its location.

The creation of a new store should use geographical data as well as socio-demographic, economic or legal data and not ignore the current trend of customers towards multi-channel shopping, all retailers are required to study their market before deciding on the implementation of the point of sale, these practitioners can use the analytics presented here regardless of the size of the point of sale or Some of them can seem very sophisticated and therefore relatively expensive, there is something for everyone the decision-making process describes four main decisions that require four main types of studies:

- Open one (or more) point (s) of sale or not: study the opportunity ;
- Market selection: study of markets ;
- Selection of the market area: study of specific markets ;
- Site selection: study of the site ;
- Control over the pre-profitability of the project: feasibility study .

II- Spatial models and the use of geographic information systems

The study of these models can be part of location studies but on the one hand their scope goes beyond simple location studies, and on the other hand their concrete application directly affects specific aspects of geomarketing, because it's for some of them they are integrated into the software .Designing a model that allows a better understanding of the risks involved in the creation of POS has long been a goal of both geographers and marketers, geographers have introduced many such models, but marketers have developed models that are commonly used by practitioners.

It is worth noting that relatively modern American cities - at least those built after the Twenties of the XIX century when grid technology was first applied-are mostly built on a grid model that crosses streets and roads at right angles, which facilitates the definition of "blocks ."Under such conditions, it is easier to "geolocate" sites and thereby determine their location.

2.1- The concept of spatial appropriateness:

It is a method for measuring spatial relationships between phenomena in a way that ensures the interpretation of spatial relationships and making use of them, understanding the reasons for the existence and distribution of phenomena on the Earth's surface, and predicting the behavior of those phenomena in the future .It can also be defined as determining the pattern in which the place was organized and the characteristics of this pattern, which means that the analysis process gives a clear picture of the natural composition of the Earth's surface and its characteristics of interest to man and his various activities such as terrain, geomorphological and geological processes, as well as the characteristics of rock, soil, water, natural vegetation, and the resources available in it ,and these are all represented in Special Maps The land classification is a necessary input to assess the distribution of the supermarket and its spatial suitability, but its assessment is influenced by a set of factors that were mentioned in the hierarchical analysis earlier (population density, supermarket distribution, topographic slope, land used , Proximity to roads) .

2.2- Methodology of spatial analysis:

The word methodology is echoed in many different branches of science, including the science of urban planning .The methodology is defined as: "a set of foundations, applications and methods for data collection, analysis and presentation, used to achieve the goals of a project, whether short-term or long-term in a coherent, homogeneous, responsible and reproducible

manner, containing the methodology is based on a set of criteria for evaluating each stage of the work.”

The methodology of spatial analysis is defined as an analytical methodology to study the ability of a site to support a specific activity, and it also works to study the relationships between the geographical characteristics of the natural elements of a particular site to identify the features inherent in it, these relationships are based on the correlation of each appearance on the Earth's surface with Phenomena, they are strong or weak, direct or reverse, comprehensive or local, temporary or permanent, depending on the variation of its components and the characteristics of its elements, the change that it experiences is the result of the change in spatial and temporal phenomena.

This change affects other phenomena associated with it, which also change, and the phenomena in the place become constantly changing over time and the value of the place changes, and the planner must feel the change that the phenomenon has been affected by the power of field observation , or by converting the characteristics of the phenomenon into quantitative values that can be used statistically in measuring the correlation, or , Or using its spatial characteristics of location, shape, space, dimensions, boundaries, perimeter, extension , and surrounding phenomena, the phenomenon does not change individually but is the result of the change that other phenomena experience, and it also affects the phenomena in turn Spatial relationships are not isolated relationships, but rather are intertwined and complex relationships, associated with a large set of spatial measurements that explain the behavior of relationships, the level of their strength, the extent to which they are related to neighboring or distant phenomena, and the extent to which they are related to the spatial organization of existing events.

The benefit of using the spatial analysis methodology comes from the fact that it evaluates the suitability and susceptibility of a site for supermarket distribution, and it also has the ability to conclude forecasts, as it highlights the potential of the site and highlight its spatial phenomena in terms of its geographical location defined by specific spatial coordinates and the way these phenomena are distributed to the study area of the city of Djelfa.

2.3- Spatial suitability assessment:

The assessment of spatial suitability is essentially the process of assessing the available potential in the land for various types of land uses and for all available alternatives, as land use planning should be based on rationality through the assessment of available resources, and can be defined as a means of planning a land use strategy, through which the performance provided by the land is predicted through From every use of the land.

The aim of the assessment process is to determine the best use of the land in actual and latent terms, taking into account the interconnection with different areas in the city, and it also

provides spatial information (qualitative and quantitative) on the implications of each use, its sustainability and business requirements Etc.

Therefore, sustainable land assessment and land use planning can be built on a sustainable basis by integrating urban and economic suitability and environmental impact assessment of uses (population, topography, roads, land use and supermarket distribution).

2.4- The concept of the hierarchical analysis process:

The origin of the term linguistically is English and it is called **(analytical Hierarchy Process)** and AHP is used for its abbreviation, and it is called (Translation) in Arabic by the theory of hierarchical analysis, sometimes the theory of analytical hierarchy, and other times the process of analytical gradation, the most common of which is the theory of hierarchical analysis.

2.5- Definition of the hierarchical analysis analytical:

The process of hierarchical analysis was developed by Professor, they are considered very useful in the event that the decision maker is unable to build a utility function on the basis of which he chooses the best alternative ²³ .

The hierarchical analysis process provides an integrated framework for evaluating alternatives under multiple selection criteria that are often conflicting, it allows the decision maker to use both rational and simultaneously when addressing a Multi-Criteria Decision problem.

The hierarchical analysis process is a decision-making model, which helps the decision-maker to make decisions in a complex environment .It includes three processes that are embodied in identifying and organizing the goals, criteria, restrictions and alternatives covered by the decision in a hierarchical structure, evaluating the bilateral comparisons included at each level of the hierarchy, then synthesizing using the results of bilateral comparisons available at all levels, and finally coming up with the relative importance of each alternative ²⁴

Saaty Thomas defined the process of hierarchical analysis as a measure theory that implies the of dominant primes by binary comparisons of homogeneous elements according to a certain criterion or property ²⁵ .

²³ Alessio Ishizaka, Philippe Nemery, Multi-Criteria Decision Analysis: Methods and Software, 2013g.

²⁴ Saaty Thomas, what is the analytic hierarchy process, Mathematical Models for Decision Support, 1988.

²⁵ Saaty Thomas, highlights and critical points in the theory and application of the analytic hierarchy process, European journal of operational research, (1994),

The process of hierarchical analysis is the theory of relative measurement based on absolute metrics, and deals with tangible and intangible criteria based on the judgments of knowledgeable and specialists, as well as statistics and measurements that exist in order to make a decision .How to measure intangible objects is the 4th concern of the mathematical aspect of this method ²⁶ .

The term hierarchical analysis process consists of three words-Process, Analysis and hierarchy, each of which has a special meaning.

- **Process:** process requires the decision-maker to clarify the criteria, determine the relative importance of each criterion, and then indicate how the alternatives can contribute to each of the criteria .
- **Hierarchical:** intended to organize the problem parts of a goal, criteria, partial criteria and alternatives in a hierarchical form that allows to assimilate them well, and in order to finally reach the 5 different weights associated with each level²⁷
- **Analysis:** this method derives its strength and durability from logical and mathematical thinking, and the analysis is intended to use binary comparisons in order to help the decision maker express preferences related to criteria and obtain numerical values understandable by all.

2.6- AHP Studies:

2.6.1-Usman study ,at all :addressed the selection of the best landfill site in the city of Kano, Nigeria using geographic information systems and AHP Multi-Criteria Analysis, the study revealed five different sites that occupy the site an inappropriate area of 324 square kilometers or 65% and cover the site poorly. 30 square kilometers, i.e. 6%, and the more or less suitable site covers 5 square kilometers, i.e. 1%, the suitable site covers 30 square kilometers, i.e. 6%, and the most suitable waste disposal site covers 110 square kilometers, or 22% of the total area of 499 square kilometers²⁸ .

2.6.2-Butegan Study: study dealt with the assessment of the spatial suitability of the urban expansion of the city of Bourj boureyrij in Algeria through a spatial analytical methodology through what is provided by the GIS environment and the application of an appropriate spatial

²⁶ Saaty Thomas, the analytic hierarchy and analytic network processes for the measurement of intangible criteria and decision-making, 2005, USA

²⁷ Sima Ajami, Saeedeh Ketabi, Performance Evaluation of Medical Records Departments by (AHP), 2012, journal of medical system,

²⁸ Usman, A, et al, Site suitability analysis for waste disposal in Kano metropolis, 2015

model. According to the factors provided and the weights of factors affecting the expansion of the city according to their relative importance for each of them, through the AHP hierarchical analysis process, the results showed that the best suitable areas for urban expansion were in the North and Northeast, and in the West and southwest, where the area meets all needs ²⁹.

2.6.3-Fanastesa Study: dealt with the use of multiple spatial analysis in geographic information systems programs to determine the optimal location for a new park in the city of Aqaba in Jordan. The other way is to invent a new layer reflecting the totality of criteria, taking into account the weight of each criterion using the hierarchical analysis method. The study concluded that the study area was divided into five different categories of suitability: the range of relatively medium -, medium -, relatively high -, high-and very high-suitability sites³⁰.

2.7- Postulates and characteristics of the theory of hierarchical analysis:

- The postulates of the hierarchical analysis process: Thomas Satie believes that there are four postulates on which this method is based, namely :
- maker can make an even (binary) comparison the for one .
- no case can the decision-maker prefer one alternative to another by an infinite amount,
- maker can model the decision problem in a hierarchical form .
- All criteria, sub-criteria and alternatives related to a particular goal should be represented in a single hierarchical structure that unites them all.

2.8- Characteristics of the theory of hierarchical analysis:

The hierarchical decision analysis method has several advantages, including the following:³¹

- Combining the macro method and the partial method when addressing the problem, the macro method consists in building a pyramid that looks at the problem with all its elements as an integrated whole without omitting an

²⁹Butegan, Hanan), modeling urban expansion using Geographic Information Systems Case Study of the city of Burj Bou aririj,2018, unpublished master thesis.

³⁰ Al-fanata, Abdul Hamid Ayoub,using multiple spatial analysis in geographic information systems programs to determine the optimal location for a new park in Aqaba, ,2018, Journal of the Center for cartographic geographical research, Menoufia University,Egypt.

³¹ Khalid ben Saad al-jadhi, decision-making techniques: computer applications, 2005, Part II, Dar Al-asahab publishing and distribution, Riyadh,KSA

element of it, while the partial method consists in examining the parts by making bilateral comparisons between them .

- This method covers both quantitative and qualitative aspects, the qualitative aspects are represented in the definition of the problem, its hierarchical structure, setting standards and goals, while the quantitative aspects are represented in expressing judgments and priorities in the language of numbers .
- The scientific side is represented by the controls of making comparisons through checking the constancy, while the technical side is represented by innovation, creativity and the ability to model any Multi-Criteria Decision problem that meets the conditions of the hierarchical analysis process .
- high ability to quantify both concrete and abstract qualities, by making bilateral comparisons depending on the ability of the human mind to distinguish between those qualities regardless of whether they are concrete or abstract .
- ability of this method to interact well with both simple and complex problems, the first is the problems of individuals, while the second is the critical issues faced by large organizations .
- simplicity of the formation of the hierarchical analysis model, its superior flexibility, its auditability, and the diversity of its applications, as well as it does not require careful specialization to master it .

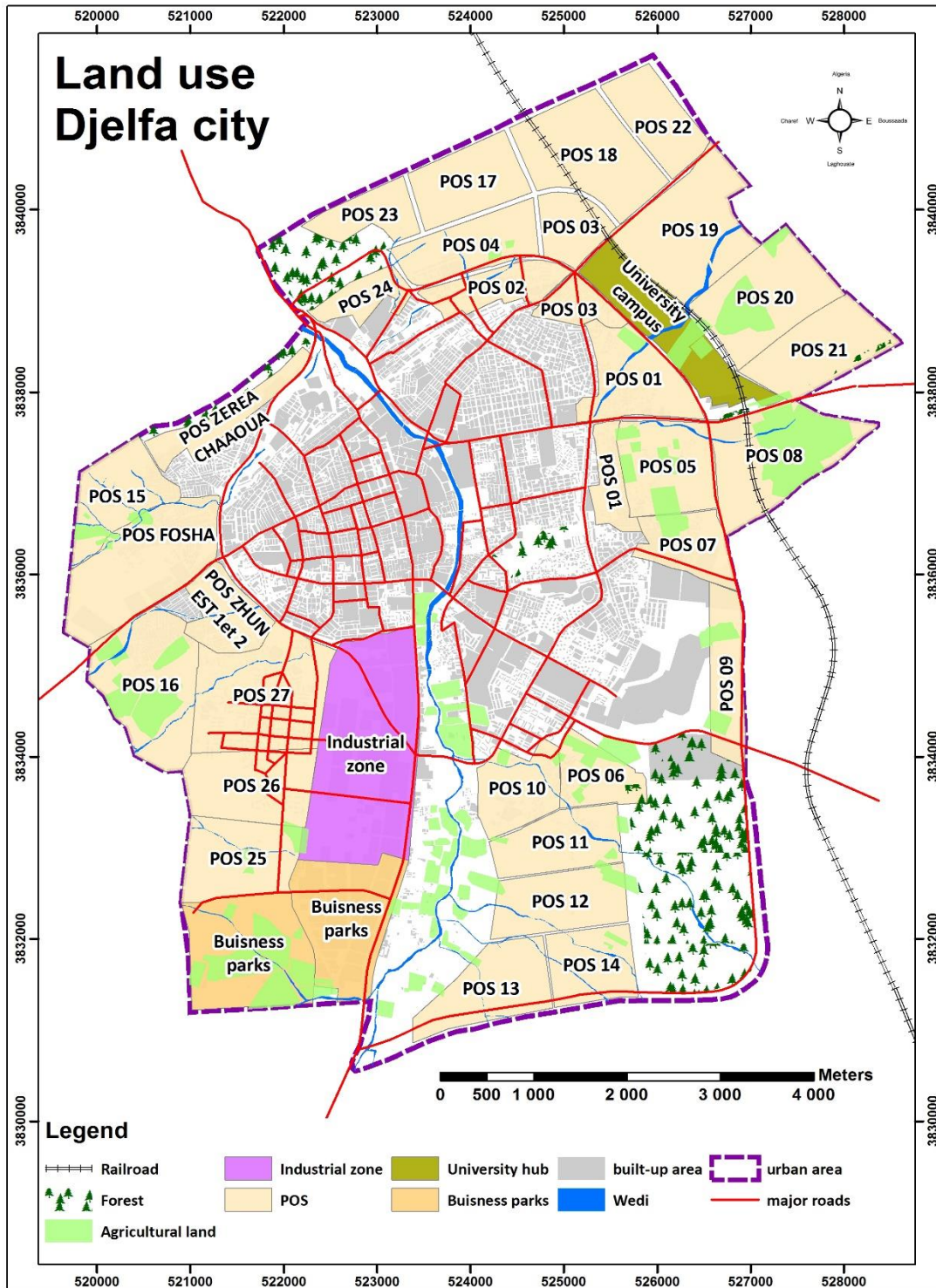
2.9- Basic of AHP hierarchical analysis:

It is an approach to) points of view used in decision-making, multiple and varying quantitative and qualitative criteria, which allows the decision-maker to express his personal priorities and objective judgments about various aspects of the problem, the solution of which requires a decision that achieves several goals may be different among them. In its simplest form, the method is based on analyzing the problem into its parts and forming a form that reflects the influence of the criteria required to be provided in the solution on each other, and then making bilateral comparisons between the elements of each group or level of the model. Binary comparison involves the priority) or dominance of one element over another by determining its influence on other elements according to a value system(watchmaker 1991/6). Personal experience is used to make judgments in comparisons between both qualitative and quantitative criteria, and actual information, if available, can be used to measure quantitative criteria. Judgments are combined with each other in case of participation of several individuals in decision-making, and their judgments can be given weights according to the importance of each participant.

3- Factors of AHP:

3.1- Land use :

Planners believe that the prevailing pattern of land use leaves its impact on shaping the general pattern of commercial centers in the urban area, the land use map cannot be dispensed with when planning to establish a commercial center in the city, and contributes to the best location of the new commercial center in linking it to residential areas and commercial areas with a distance of 20 M, and the location away from sewage stations with a distance of 3000 m, As well as staying away from oil and fuel stations at a distance of 100 m, gas sales and distribution shops at a distance of 25 m, in addition to its distance from existing commercial centers and markets at a distance of 4000 meter, in addition to proximity to services that contribute to increasing the effectiveness of the new location, close to the territory of A large space, especially with an area of at least 3000 square meters, which is clearly necessary to provide a location on the map of the spatial convenience of the location of the planned commercial center .Priority has been given to this factor .map number (1)



Source: URBATIA + student's work + Municipal Statistics Department (2018)

map no .01

3.2-Proximity to major roads :

It is necessary to note that the urban perimeter of the djelfa, defined by local authorities, is defined by:

- To the North is the Jaghbub railway .
- Village of the Oulad Obeidallah in the South
- Station in Bel-Abbas in the East
- The Ali Ben-Said neighborhood is to the West .

The urban network consisting of national roads, state roads and community routes is the subject of a functional analysis in the following.

3.2.1-Exchange channels:

This network, which ensures exchanges between large cities and regions, consists of:

- The road RN1, which crosses the city from North to South, allows interchanges between different parts of the city ;
- The RN46 connects the city center with the eastern and western areas of the city .
- The CW189 connects downtown with the south eastern part of the agglomeration .
- Amass road connects Djelfa with the city center and the north-eastern areas of the city .
-

3.2.2-Arterial tracts:

These are the main axes of the city that allow the flow of most of the internal traffic.

- Sidi Nile Street lets define the city center in these western parts .
- The avenue 8 connects the Western Ring Road from North to South by crossing the RN46 and the CW189 extension ;
- Haji AbdulRahman Street and its extension to street No. 8 ;
- intersection RN46 and CW189 is marked by a Bokhalva .
- The intersection between RN46 and the local bypass ;
- Al-Aghouat road and its extension to road No. 8 :
- The street serving the former state Capitol from the intersection with CW189
- Route 9 crosses the western areas of the city center ;

3.2.3-The road network in the city center:

The center of the city of Djelfa has a checkerboard layout, which means that its axes are perpendicular .Three types of methods can be distinguished:

3.2.4-Transit routes:

There are two interchange roads crossing the city center:

- Amir Abdelkader Street (RN1) (crosses the city center from North to South) to the East and connects the city center with the North and south of the city as well as the south-eastern area of the ocean ;
- Istiklal Avenue (RN46) crosses the city center from West to East and connects the center with the eastern and western districts of the peripheral Center .

3.2.5-Arterial roads:

There are four arterial routes:

- Hadi Al-Hefnawi Street (Nursery) is located on the south-eastern edge of the city center and provides a link with the eastern and south-eastern areas of the center's perimeter
- Zarnouh Mohamed Street (Al-Agouat Street) crosses the center of the city center from East to West and provides connection to the western areas of the surroundings of the center .
- Haji AbdulRahman Street (Sin Alba) crosses the city center from East to West at its southern border and connects the city center with the western neighborhoods of the perimeter .
- Sidi Nael approach is located on the western edge of the city center, crosses it from North to South and ensures the connection of the city center with the north-west and South-West Center ;

3.2.6-Service roads in the city center:

These roads connect neighborhoods within the city center, and are divided into:

- street parallel to Amir Abdulkader's approach from East to west (crossing from North to South.
- Palestine Street.
- El-Shohadaa Street
- Omran Inas Street.
- 20 August 1956 street.
- Street parallel to Haji Abdul Rahman Street from North to South (crossing from East to West) :
- Si El-Hawass Street (the northern border of the city center) ;
- May 1st street.
- Touahria Hamza street ;
- November 1st street.
- Elkhilafa street.

- Ibrahim Abdellah street.
- Ben Isa Dahman street.
- Hassan Abdul Kader street .

There are only four axes (Sidi Nil Street, El-Amir Abdulkader street, others (RN46) and Hadi hefrawi street) that allow the intersection of the city center with other areas.

We also note that the road support that makes up the city center is characterized by narrow streets, especially its southern side.

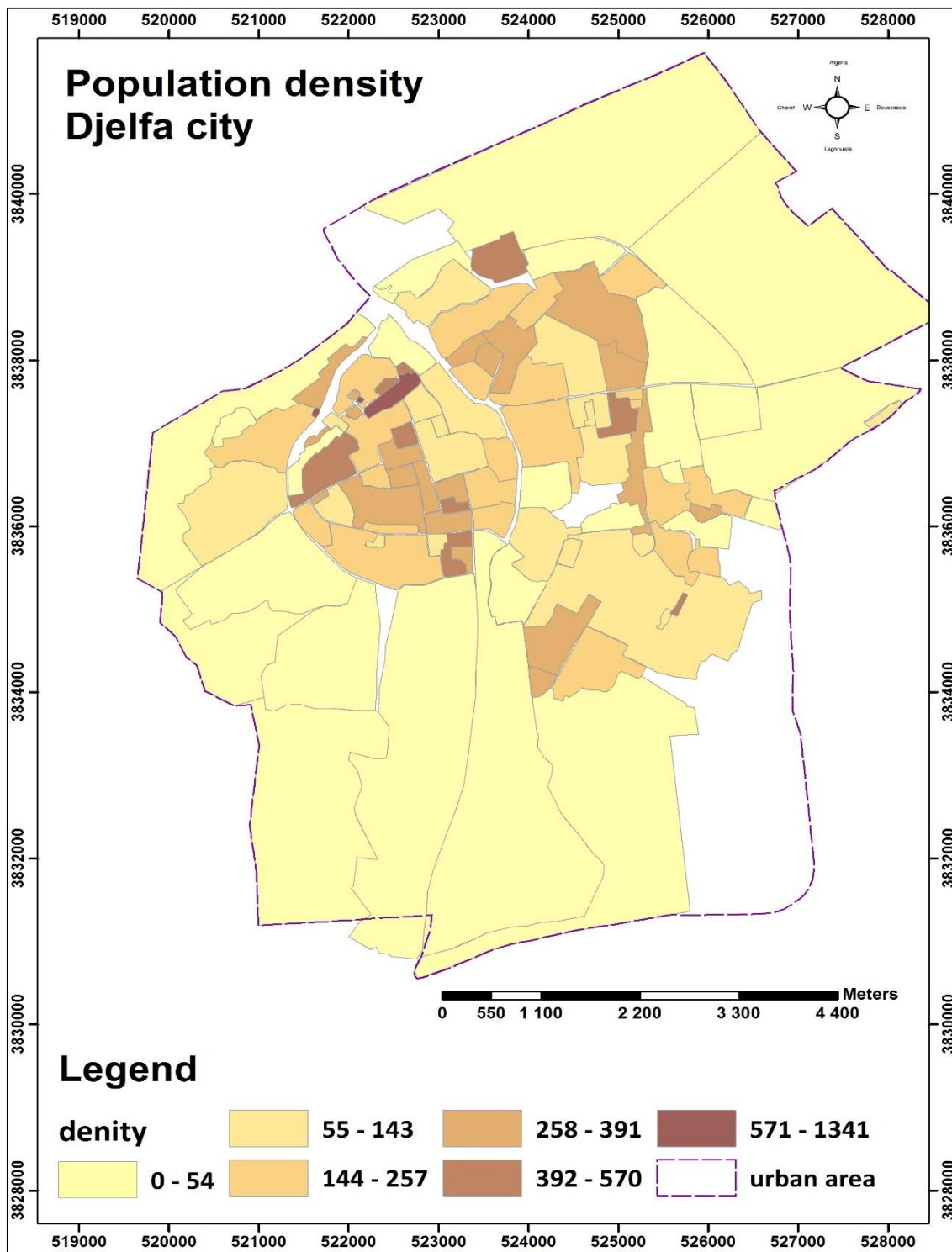
3-Population density :

The population factor is the heart of the success of any business in the city of Djelfa .We must carefully study the distribution of the population and its population density to understand where we can find the largest number of potential customers .In addition, we must ensure easy access to the mall by local residents, which requires the provision of convenient transportation and good infrastructure .By carefully analyzing these factors, we can determine the appropriate location that will ensure the success of the commercial project in city djelfa, which is considered one of the largest Algerian states with a population because their distribution is subject to various natural factors such as climate, surface and terrain, and the degree of their influence varies from time to time as well as from place to place

The population of the state has known significant development, especially after the Sixties (between 1966 and 2008 the population doubled by 4.5), and this strong development is much more high fertility expressed by the birth rate, than the attractiveness of the state represented by geographical location and the resulting service offer .In addition, the population, which was about 241,849 people in the General Directorate of population in 1966, increased to 332,500 people in the General Directorate of population in 1977, a total development of 37.48% representing the average annual growth rate of the population. By 2.9%. In 1987, the total population was 494,494, a total increase of about 48.72%, representing an average of 4 ,%0.and increased to 797,706 inhabitants in 1998 with a total increase of 61.32% .Or an average rate of 4.4%. In RGPH 2008 ,the population of the state of Djelfa was about 1,090,578, which is a total increase of 36.71% compared to RGPH 1998, which represents an average rate of about 3.2%.

The population of the state of Djelfa as of 31/12/2022 is about 1,823,852 people .The population of the state capital municipality is about 634,043 inhabitants representing 34.76% of the total population .The four municipalities of Djelfa, Ain Ousara, Messaad and Hasi bahbah have a population of 1,055,703, representing 57.88% of the total population of the state .The average density of the state is 57 inhabitants / km², and of the 1,823,852 inhabitants in the state,1,408,531 reside in major cities (ACL) or 77.23%, 82,535 in secondary

agglomerations (AS) or 4.53% and 332,786 in the dispersed zone (ZE) at 18.25%. map number (2).



Source: URBATIA + student's work + Municipal Statistics Department (2018)

map no.02

4-Supermarket distribution :

The increasing importance of Customer Relationship Marketing in supermarkets also makes micro-marketing important .It takes into account the characteristics of a heterogeneous market .The concept of micro-marketing includes a differentiation strategy of assortment, pricing and the appearance of the sales floor at the store level adjusted to suit the characteristics of the local market.³²

Distribution guidance and sales planning are an essential part of the management of chain stores and supermarkets .It's about effectively directing marketing efforts, taking advantage of the media and advertising .To analyze and identify market possibilities, service areas should be studied and competitors monitored .You should also estimate the number of potential customers in the service area and evaluate their purchasing power .The target groups should be identified and the offers and products should be customized according to the needs of the market, since the supermarket belongs to the commercial side and from it the commercial side in the state of Djelfa practiced 38 031.economic actors registered in the Commercial Register, including 35,416 natural persons and 2,615 moral persons, and the ratios recorded at the level of the commercial population by main activities highlight the dominance of basic retail trade by 40.56%, followed by the service sector by 31.53%, and industrial production by 17.28% .The import / export sectors account for 10%, 0.08% and 0.37%, respectively.

In the process of our research on this factor, we classified supermarkets based on the fact that their inventory should be at least 500 meters in size, almost to the stock of medicines specified by the Algerian authorities in their file, and on the other hand, since supermarkets need a large coverage of storage, display and arrangement of their complete products, parking spaces, truck access and goods and products. map number (3)

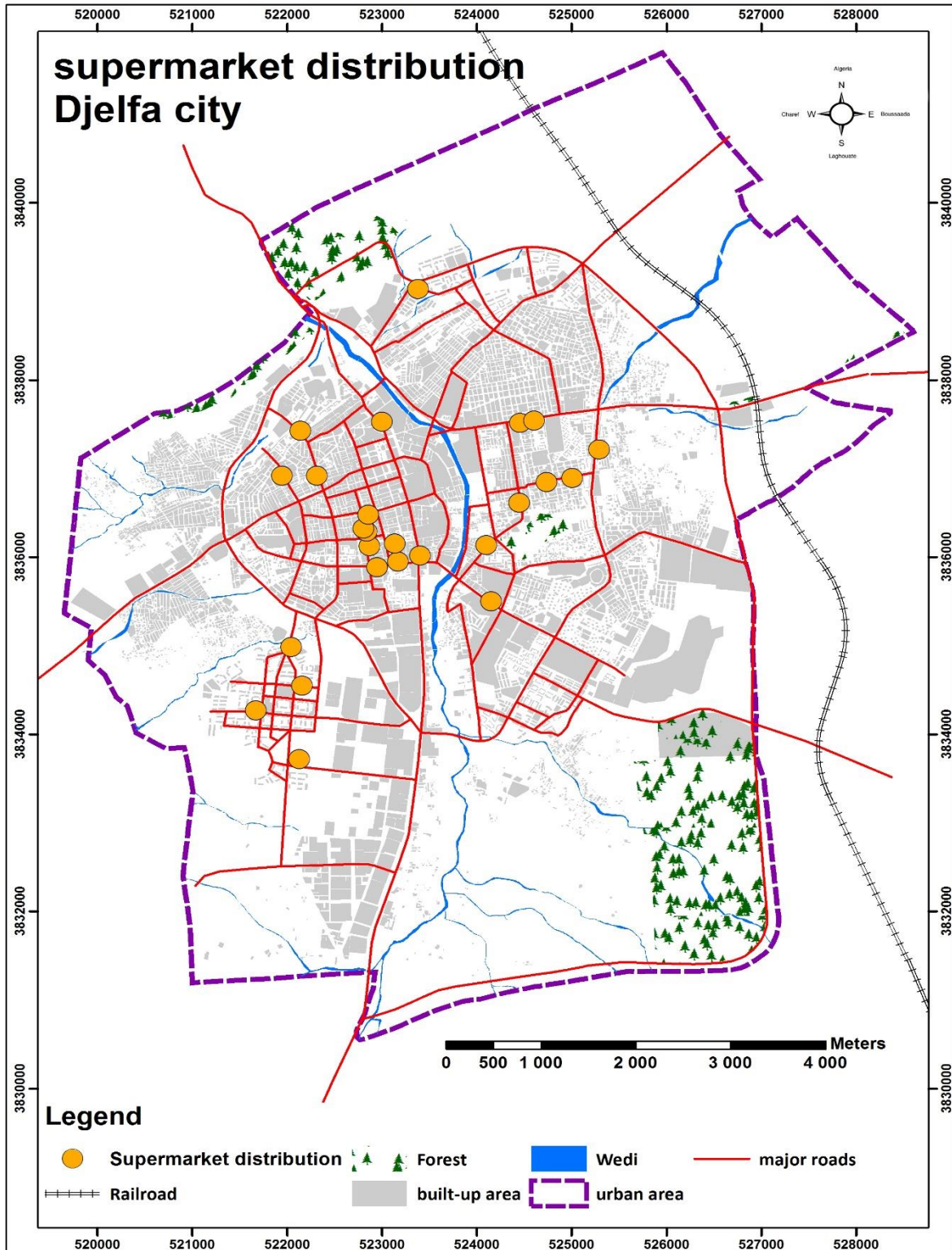
³² Ziliani 2000 , Geomarketing GIS & Marketing, New combination of Knowledge book, p28

Common	Number of registered merchants (Cumulative as of 31/12/2022)														
	Handicraft		Wholesale Trade		Retail trade		Import		Export	Industrial production		Services		TOTAL	
	P.P	P.M	P.P	P.M	P.P	P.M	P.P	P.M	P.M	P.P	P.M	P.P	P.M	P.P	P.M
<i>DJELFA</i>	1	3	1 531	363	5 812	154	1	13	83	2 585	535	4 859	426	14 789	1 577

Source Directorate of budget planning and follow-up (DPSB)

Common	Wholesale Market	Covered markets	Number of local markets(b)	Daily markets (a+b)	Malls	Store	Weekly markets	Markets cattle
<i>DJELFA</i>		6	5	11	5	15	1	1

Source Directorate of budget planning and follow-up (DPSB)

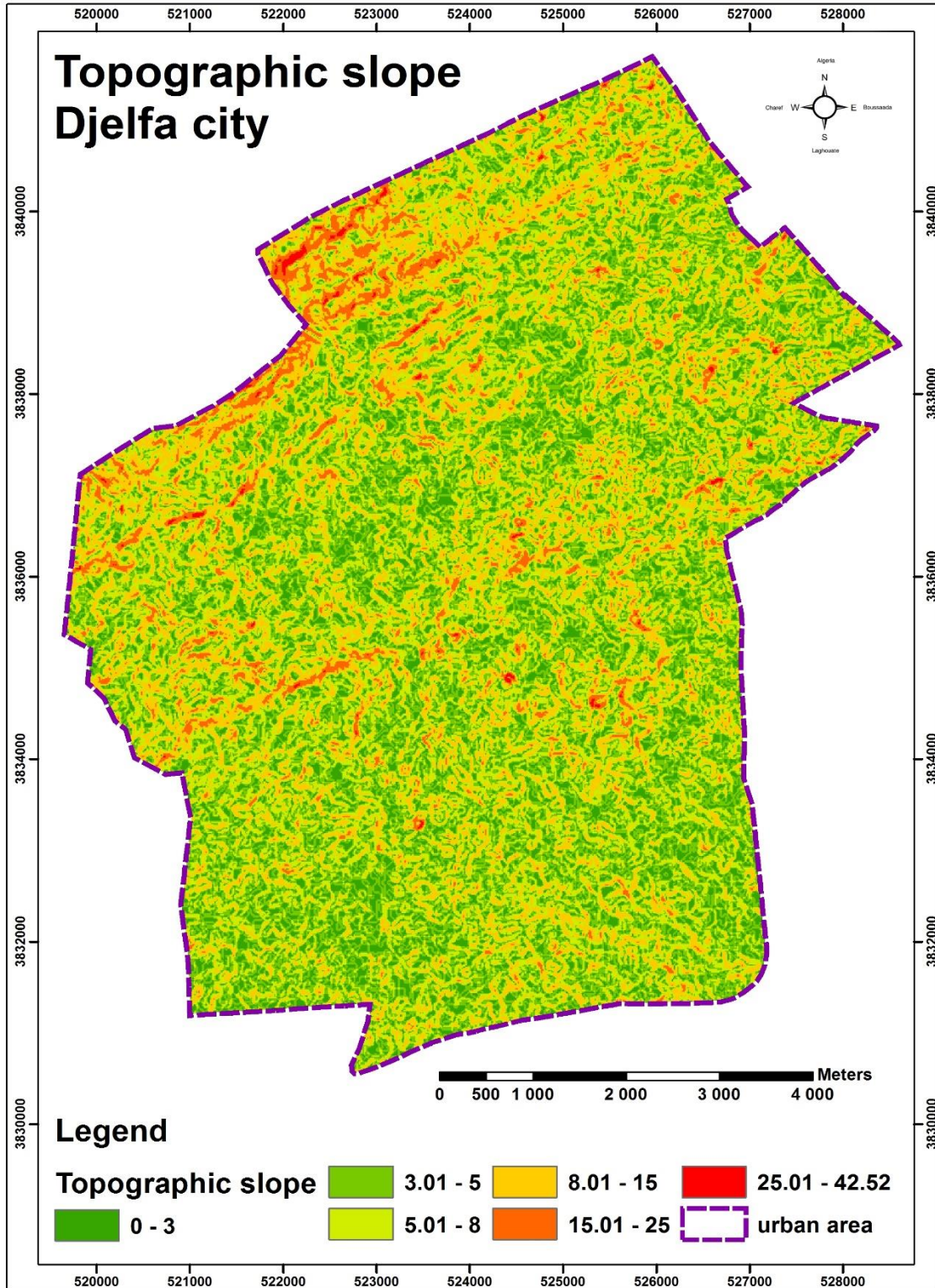


Source: URBATIA + student's work + Municipal Statistics Department (2018)

map no.03

5-Topographic slope :

The city of % of the total area of Algeria, this area and this location gave the region a natural diversity, as we find, for example, multiple terrain types along its vast area, there is a mountain range in the center of the state, stretching from the east of the state to the Far West the composition of the The general geology of the Atlantic area and the northern margin of the desert surface, the factor of topographic slope is one of the decisive factors in determining the ideal location for the establishment of a commercial center in the city of Djelfa .This factor indicates the geographical series of the Earth, its height and slope in the area in question .This factor is of great importance in determining the success of any business, as it directly affects access to the center, orientation of customers and goods .The choice of the site should be made based on a detailed study of the topographic slope, since it is necessary to avoid areas with a steep slope that is difficult for customers and workers to easily reach, and can increase infrastructure costs .Conversely, areas with a low slope can be exploited to effectively create multi-purpose facilities, such as parking lots or green areas .In addition, the impact of the slope on the water drainage in the area should be studied, as sites that may cause drainage problems or flooding should be avoided .Location map number (4)



map no.04

Conclusion:

In the heart of Djelfa, the confluence of Geomarketing, ARC GIS, and the Analytic Hierarchy Process (AHP) has unlocked a world of possibilities, transforming the landscape of marketing strategy. As we conclude our exploration of this dynamic trio, we find ourselves at the crossroads of data-driven decision-making and geographical precision, poised to shape the future of marketing in Djelfa.

The Analytic Hierarchy Process (AHP) has lent structure and rigor to our decision-making process, enabling us to weigh and prioritize factors critical to Geomarketing suitability. In Djelfa, a city marked by cultural diversity, socio-economic disparities, and evolving consumer preferences, AHP has empowered businesses to make informed, evidence-based choices. It has emerged as the compass that guides us through the labyrinth of options, ensuring that marketing strategies align with the city's ever-changing dynamics.

As we reflect on our journey, we recognize that the marriage of Geomarketing, ARC GIS, and AHP represents a paradigm shift in marketing strategy. It is a shift that acknowledges the importance of location, data, and systematic evaluation in shaping successful marketing campaigns. Djelfa, with its vibrant urban landscape and market potential, serves as a testament to the efficacy of this approach.

In closing, our exploration of Geomarketing and its suitability using ARC GIS and AHP factors in Djelfa has illuminated a path toward precision, relevance, and market success. It is a path where data transforms into insights, maps into strategies, and choices into competitive advantages. Djelfa's dynamic market landscape, enriched by its unique cultural tapestry, stands as a testament to the enduring relevance of Geomarketing in the digital age.

As we step away from these pages, we carry with us the knowledge that, in Djelfa and beyond, the synergy of Geomarketing, ARC GIS, and AHP empowers businesses to not only understand their markets but also shape them. The journey continues, and the possibilities are boundless for those who dare to embrace the transformative potential of these tools.



III. Chapter Three:

Hierarchical Analysis

Method & the spatial

suitability Application

I-Criteria used to calculate the degree of spatial suitability of the mall construction:

The process of determining the appropriate criteria for creating a new service on the ground is subject to several considerations when conducting spatial compatibility of any service. Its innovation is the establishment of a commercial center in the city, and it must be noted that the standards guide was based on one of the researches conducted on hospitals in America, as well as one of the researches to establish a TJ Center in the city of Jeddah, Saudi Arabia. The chapter that is not included in the manual is selected according to what the researcher considers appropriate for the study. An exact criterion has been adopted in choosing the best location for a shopping mall in Al Ain city in the United Arab Emirates.

The most important of these criteria are as follows:

- should be flat .
- location should be close to densely populated areas .
- should be close to commercial streets .
- should be close to the land uses .
- should be away from commercial centers and markets .
- The main thing that the location should be away from oil and fuel stations .
- location should be away from gas storages .
- should be away from sewage plants .

Table No. 09 planning indicators for the establishment of commercial centers in the city of djelfa

Measurements	Standards	factors
Flat land a slope no*%		Topographic regression
a medium or high density	Population	Population density
Distance of 50 m	Proximity to roads	Proximity to roads
The area of the supermarket should cover 500 square meters so for 500m	Supermarket distribution	Supermarket distribution
It is 100 m Lugo oil	Terminal D	Core
Distance from gas sales and distribution shops at a distance of 25 m	Shops	Used land
Distance from the health care plant by distance 3000m	Health care	

Source: prepared by a former researcher, based on the data of the Ministry of rural and municipal affairs of the city of Jeddah, 2005, Kingdom of Saudi Arabia,

1.1-The stage of implementation of spatial appropriateness within the GIS environment:

Having determined the most important criteria that must be taken into account in choosing the most suitable places for the future business center of the city, a set of steps should be followed to classify and process the data as follows:

1.1.1-data processing stage;

This stage includes the preparation of classes related to the subject of study as follows:

- Processing some layers by extracting the digital elevation layer from the satellite view of the city of Julfa, as well as extracting the population density of the population layer, setting up the used land layer, the network layer near the roads, the topographic slope layer and supermarket distribution .
- Determine the extension of the new layers so that they match the extension of the study area, and have the same coordinates .

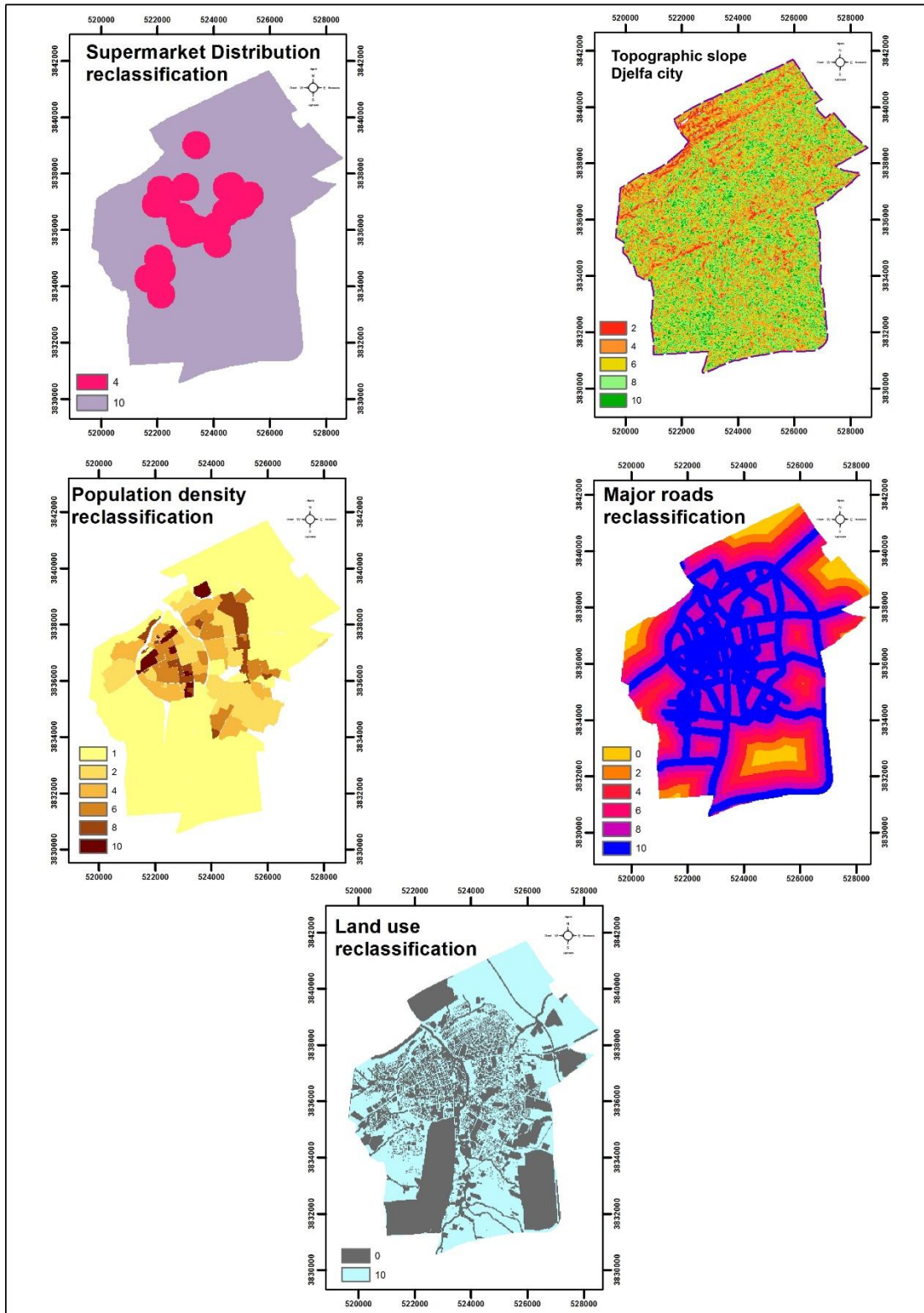
1.1.2-The process data derivation stage :

This stage involves deriving data from some layers by extracting the slope of the surface from the digital elevation layer of the city of djelfa.

- Convert the Polygon layer for population density and the used land layer to Polygon to raster data grid data so that all layers become grid .
- Converting layers with linear Vector data data, which include various calibration maps, the Euclidean distance Euclidean distance tool, available within the spatial analysis tools, was applied to the proximity ,and the supermarket distribution layer .

1.1.3-data classification :

This stage includes the conversion of standards maps into cellular maps, the following analyzes are based on maps of the cellular Raster Map type, converting layers with cellular Raster data formats Data ,which includes maps of various standards to cellular maps by classifying spatial data, so that the extent of the impact is divided into four ranges equidistant from the influencing factor by applying the reclassify reclassify tool available within the spatial analysis tools for both the Population Density Layer, the land layer used and the topographic slope layer, and the classification is done by proximity or distance The reclassification process is repeated for the rest of the existing and output layers at the data derivation stage and includes the road proximity layer and the supermarket distribution layer .This is evident from the maps..(7)



Source: URBATIA + student's work + Municipal Statistics Department (2018)

maps no(5) results reclassification of classes

1.1.4-The process collecting data weights :

At this stage, the weights are given according to the importance of the variable, and if the variables have the same importance in influencing the construction of the model, they can be unified so that each variable takes the same ratio, and the sum of the weights of all variables is from %100, and the weights can be unified using the hierarchical analytical (AHP) Hierarchy Process method, which is one of the methods and tools used in multi-decision evaluation Calibrator, a mathematical theory of measurement, developed by the scientist Thomas Satie and by which the importance of each criterion relative to the other is determined, where a weighted value is placed for each criterion against all other criteria relative to the goal at the highest level and expresses the values that are used for the scale of weights It represents an integrated framework that combines objective and non-objective criteria, based on pairwise comparisons on the basis of a relative scale, where the hierarchical analysis process begins by hierarchically placing the elements of the problem posed, and then making a double comparison based on the selection criteria with each other; And then weigh it relative to the goal, and through bilateral comparisons between the criteria within the same hierarchical level, we obtain weights for the criteria, which are used in the order of priorities, which ensures that opinions do not contradict, and this percentage should not exceed 10%, that is, the percentage of constancy, the closer to zero, the judgments are characterized by constancy, and if the percentage ,10% the judgments have some kind of discrepancy, and therefore it should be reviewed, and the researcher relied on one of the websites that allows the calculation of hierarchical analysis electronically AHP Priority Calculator . This is evident from mapn No. (5), where the outputs of the hierarchical analysis process to determineweights Through this tool, each of the reclassified layers was given a weight depending on the importance of this layer in choosing the site to erect a commercial center in, taking into account the natural and human conditions specific to the study area, and that the consistency ratio of the weighted criteria to prevent bias and inconsistency between the standards Consistency consideration (CRIt reached 3.5%, which means that the standards are characterized by stability and good consistency among them .This indicates that the weight distribution between the influencing factors is acceptable.

Table No.10 scale relative importance process hierarchical analysis

Interpretation by verbal analogy	Weight indicator of how important the standard is
Not suitable	1
Very low	3
Average	5
High	7
Very high	9
Average values used between weights when numerically comparing	2-4-6-8

Source : student work

1.1.5- Table No 11 :importance of standards

a table showing the importance of each criterion relative to another from 1 to 9

1	Population Desnity	Vacant LandPopulation	<input type="radio"/> 1	<input checked="" type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7	<input type="radio"/> 8	<input type="radio"/> 9
2	Population Desnity	Distribution of supermarket	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7	<input checked="" type="radio"/> 8	<input type="radio"/> 9
3	Population Desnity	Proximity of the roads	<input type="radio"/> 1	<input type="radio"/> 2	<input checked="" type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7	<input type="radio"/> 8	<input type="radio"/> 9
4	Population Desnity	Topographic Slope	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7	<input checked="" type="radio"/> 8	<input type="radio"/> 9
5	Population Desnity	Land Cover	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input checked="" type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7	<input type="radio"/> 8	<input type="radio"/> 9
6	Vacant Land	Distribution of supermarket	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7	<input checked="" type="radio"/> 8	<input type="radio"/> 9
7	Vacant Land	Proximity of the roads	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input checked="" type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7	<input type="radio"/> 8	<input type="radio"/> 9
8	Vacant Land	Topographic Slope	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7	<input checked="" type="radio"/> 8	<input type="radio"/> 9
9	Vacant Land	Land Cover	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input checked="" type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7	<input type="radio"/> 8	<input type="radio"/> 9
10	Proximity of the roads	Distribution of supermarket	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input checked="" type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7	<input type="radio"/> 8	<input type="radio"/> 9
11	Distribution of supermarket	Topographic Slope	<input checked="" type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7	<input type="radio"/> 8	<input type="radio"/> 9
12	Land Cover	Distribution of supermarket	<input type="radio"/> 1	<input checked="" type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7	<input type="radio"/> 8	<input type="radio"/> 9
13	Topographic Slope	Topographic Slope	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input checked="" type="radio"/> 6	<input type="radio"/> 7	<input type="radio"/> 8	<input type="radio"/> 9
14	Land Cover	Land Cover	<input type="radio"/> 1	<input checked="" type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7	<input type="radio"/> 8	<input type="radio"/> 9
15	Land Cover	Topographic Slope	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input checked="" type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7	<input type="radio"/> 8	<input type="radio"/> 9

CR = 3.5% OK

Decision Matrix :

The resulting weights are based on the principal eigenvector of the decision matrix:

	1	2	3	4	5	6
1	1	2.00	8.00	3.00	8.00	5.00
2	0.50	1	8.00	4.00	8.00	5.00
3	0.12	0.12	1	0.25	1.00	0.50
4	0.33	0.25	4.00	1	6.00	2.00
5	0.12	0.12	1.00	0.17	1	0.25
6	0.20	0.20	0.20	0.50	4.00	1

Priorities :

These are the resulting weights for the criteria based on your pairwise comparisons:

Cat	Priority	Rank	(+)	(-)	
1	Population Density	38.7%	1	13.2%	13.2%
2	Vacant Land	32.6%	2	11.9%	11.9%
3	Distribution of supermarket	3.8%	5	0.5%	0.5%
4	Proximity of the roads	13.7%	3	3.6%	3.6%
5	Topographic Slope	3.2%	6	1.0%	1.0%
6	Land Cover	8.0%	4	2.3%	2.3%

The source is prepared by the researcher based on the website <https://bpmsg.com>

Number of comparisons = 15

Principal eigen value = 6.218

Consistency Ratio CR = 3.5%

Eigenvector solution: 5 iterations, delta = 3.2E-8

tables No. 12 results of weights for the criteria under study**1.1.6-Preparation of the form :**

After the reclassification of the maps on a unified scale, the classified cellular maps were integrated for each criterion multiplied by its weighted weight at this stage, the Overlay Weighted tool available within the spatial analysis tools is used, and it is considered a tool for weighing the criteria, provided that the total weights are equal to 100%, and then represents the final result to produce a map In the city of djelfa.

At this stage, The Con requirement tool was used through Condition to separate the areas that met criterion No. 5 in order to select the sites that achieved the best suitable location for the establishment of the mall, because they carry the greatest value for the areas with the ideal

fit, and then use the Majority Filter tool to classify cells or delete the less important cells, and this tool allows either Selects the four cells adjacent to the current cell, and this option is the default, or join the eight cells adjacent to the current cell, which is the second option, and the layer conversion was done using the Raster to Polygon tool to calculate the spaces for the most appropriate locations so that it helps to choose the location The best one, which achieved the required area standard for the new mall, then used the Make Feature Layer tool to convert polygons to a layer, and used the Select Layer Location tool to filter the locations suitable for erecting the mall in the city that meet the condition of proximity to commercial streets, and then used the Features to Point tool to convert locations from In the form of points for ideal locations.

From the observation of Table No. (3) and map No. (6), several layers have appeared representing the suitability of these areas to establish a commercial center in the city, and these areas vary in their suitability, and we have five areas that are graded by their suitability from the least to the most suitable areas, and these sites from the most suitable were used as a new layer to show the The fifth of the degrees of spatial appropriateness .It shows that about 3% of the total area falls under the categories of areas with unsuitable suitability, which represented the first degree of spatial suitability, as it turned out that there was no need to establish a commercial center to be located in the border areas on the outskirts of the city in the eastern, western and southwestern areas of the city by moving away from the commercial streets of the city, and 31% The so-called low degree is the degree represented in the southern, eastern and northern areas, and a few of them in the Western, while 39% of the total area falls under the categories of areas with medium suitability, which was represented in the third degree of spatial suitability, where The largest category of area occupied is located in the modern neighborhoods in the Eastern, Southern and western areas of the city, which are predominantly low in population, but 22% of the total area falls under the categories of areas with high suitability, which represented the fourth degree of spatial suitability and covered most of the neighborhoods of the city ranges with a high population, and About the neighborhoods of the Central District of the city, some of which are located in the south, west and a few in the east of the city, but 5% of the total area falls under the categories of areas with ideal and very suitable suitability, which represented the fifth degree of spatial suitability and represents the lowest category For convenient space, most of which are located in the city center, close to high population density .From the observation of map No. (6) the appearance of the areas that have achieved most of the standard criteria is the selection of 2 commercial centers in the city of Julfa.

Table No. 13 degrees of spatial suitability for the construction of a commercial center in the city of Julfa

Percentage ratio	The areahectares	Degrees of spatial appropriateness
% 3	134.739636	1
% 31	1689.922131	3
% 39	2133.499518	5
% 22	1191.423655	7
%5	256.289431	9
100	5405.87437	Total

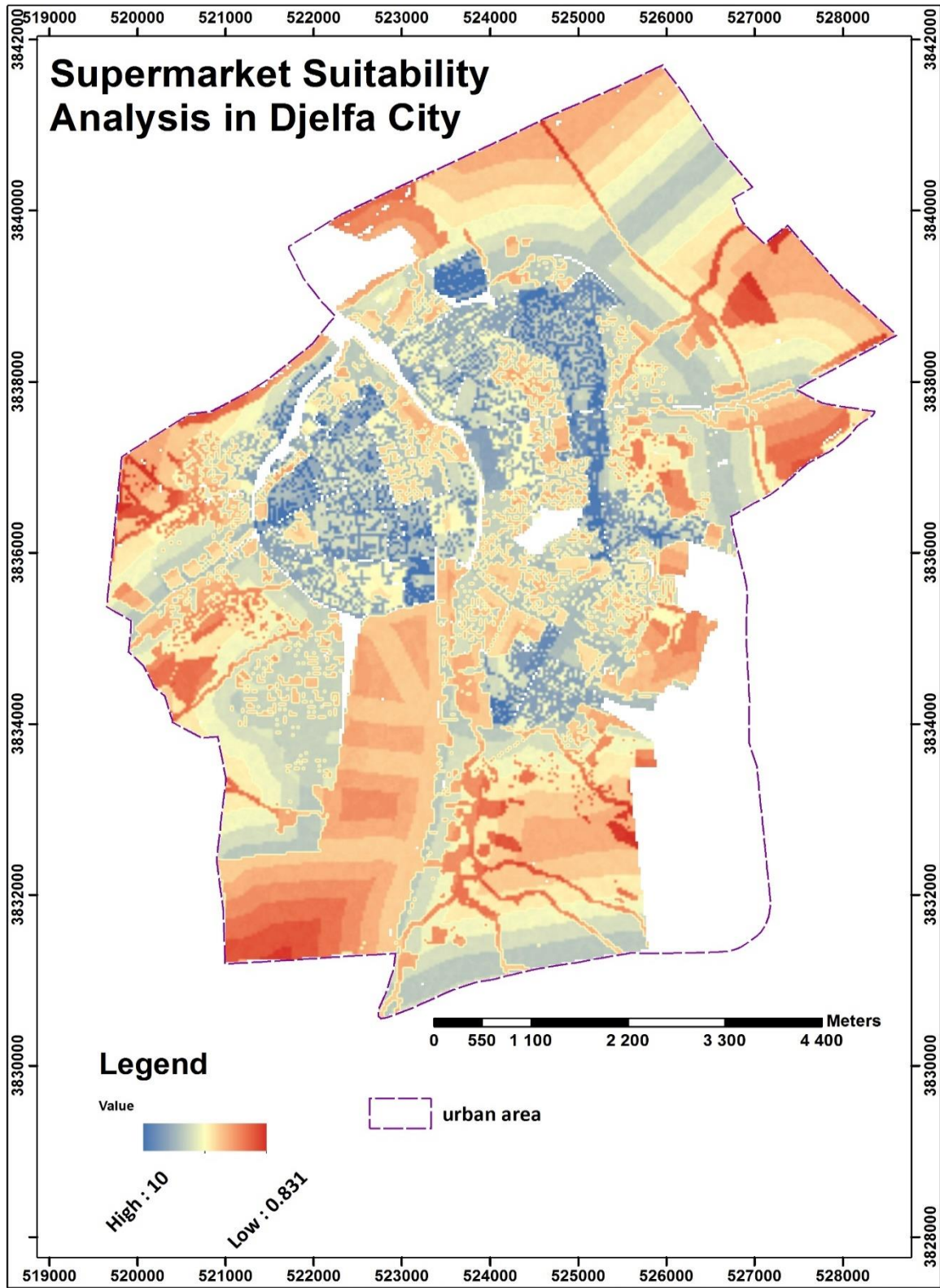
Source : student work

In view of Table No. (4), it became clear the proposed and suitable sites that achieved the criteria of the ideal location for setting up a commercial center in the city of djelfa, where the data and data of the study area were used within the GIS program environment and relying on spatial analysis tools, a map was obtained showing the proposed sites according to the degree According to the previously approved requirements, it has achieved a very high score in the suitability of the site for the establishment of the commercial center in the city, and therefore the final result obtained for the 2 suitable sites with an area of at least 391 A hectare close to commercial streets with a distance of 500 m , As for the sites with a very high grade, 3% of the total sites are unsuitable for establishing a commercial center in the city, and the percentage of sites with a very high grade suitable for establishing a commercial center in the city has reached 5% of the total sites are very suitable for establishing a commercial center in the city.

Table No.14 the degree of spatial suitability of the sites that received the fourth degree

Percentage ratio	Total locations	The degree of spatial appropriateness
3	5	Sites
5	76	Convenient locations
8	81	Total

Source : student work



map no. (06) results of spatial matching by the weighted matching process

shows the geographical distribution of the ideal and most suitable locations for the establishment of a commercial center at the level of the city of djelfa. It turned out that the most suitable sites are located in the southern region, and included 5% of the total sites suitable to a very high degree for erecting the mall, and 22% of the total sites highly suitable for erecting the mall. It is followed by the central district with 39% of the total suitable sites in the city, as it includes 4.74% of the total sites suitable for a very high degree to establish the commercial center, and 22.04% of the total area includes a high suitable site to establish a commercial center. It is followed by the eastern region for city of the total sites are highly suitable for the establishment of the commercial center. We find in the northern area of the city that there are very few suitable sites to establish a commercial center in the city of djelfa. To explain this in detail at the level of the districts of the city of djulfa as follows:

Convenient locations in the south and south-west region were represented in both: Raous-Oyoun district and the industrial zone, which included locations with a high degree of convenience, by 22.04% of the total locations with a high degree of spatial convenience .It is located on local and main secondary streets, followed by the urban pole of barbih, which included sites with a high degree of convenience and accounted for 22.04% of the total sites .A high degree of relevance in the city.10.34 .

Suitable sites in the middle band of the city were represented in each of the following: Si Al-Hawas district, barbih, Ben djerma and ganani, which included sites with a very high degree of suitability, with 5% of the total sites with a very high suitability in the city , .Located on a secondary and main commercial axis .The relevant and relevant sites accounted , followed by the Ein al-Shih neighborhood and the city center, which included sites with a very high suitability score of 5% .One of the high-level locations in the city on a major commercial axis, The suitable sites in the eastern region were represented by: Masoudi, Wiaam, and the 05 July neighborhood's, where they included very suitable sites at 5% and 22% of the Total very convenient sites in the city, and were located on a local commercial street.

1.1.7- the stage of construction of the structural model :

The construction of the structural model Model Builder to analyze the suitability of the land for the construction of the applied commercial center of the city of djelfa, an application used to create and edit management models, through which all the previous tools can be implemented in a sequential form so that the output of each tool is the input of another tool .After determining the criteria, their categories, significance and weights , the cartographic model was built in the ARC GIS software environment through the structural model based on simplifying complex problems, data overlap and their spatial and descriptive relationships, so this model was formulated to simplify the basic problem and formulate a way to solve it through graphical planning of the stages of work and this is based on the stages He explains the steps of the analysis process in detail, and this is shown in Figure 01

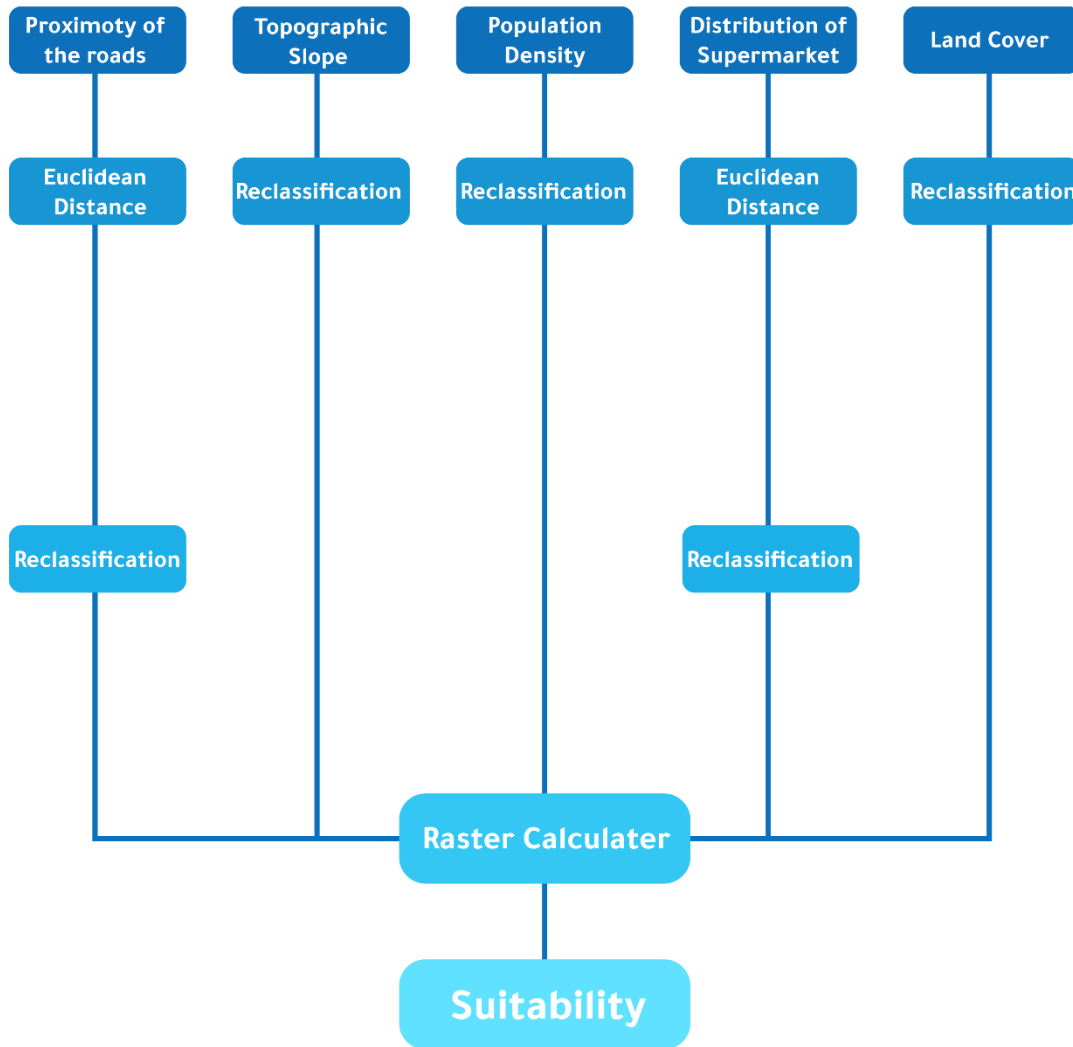


Figure no. (01) structural model for spatial fit analysis

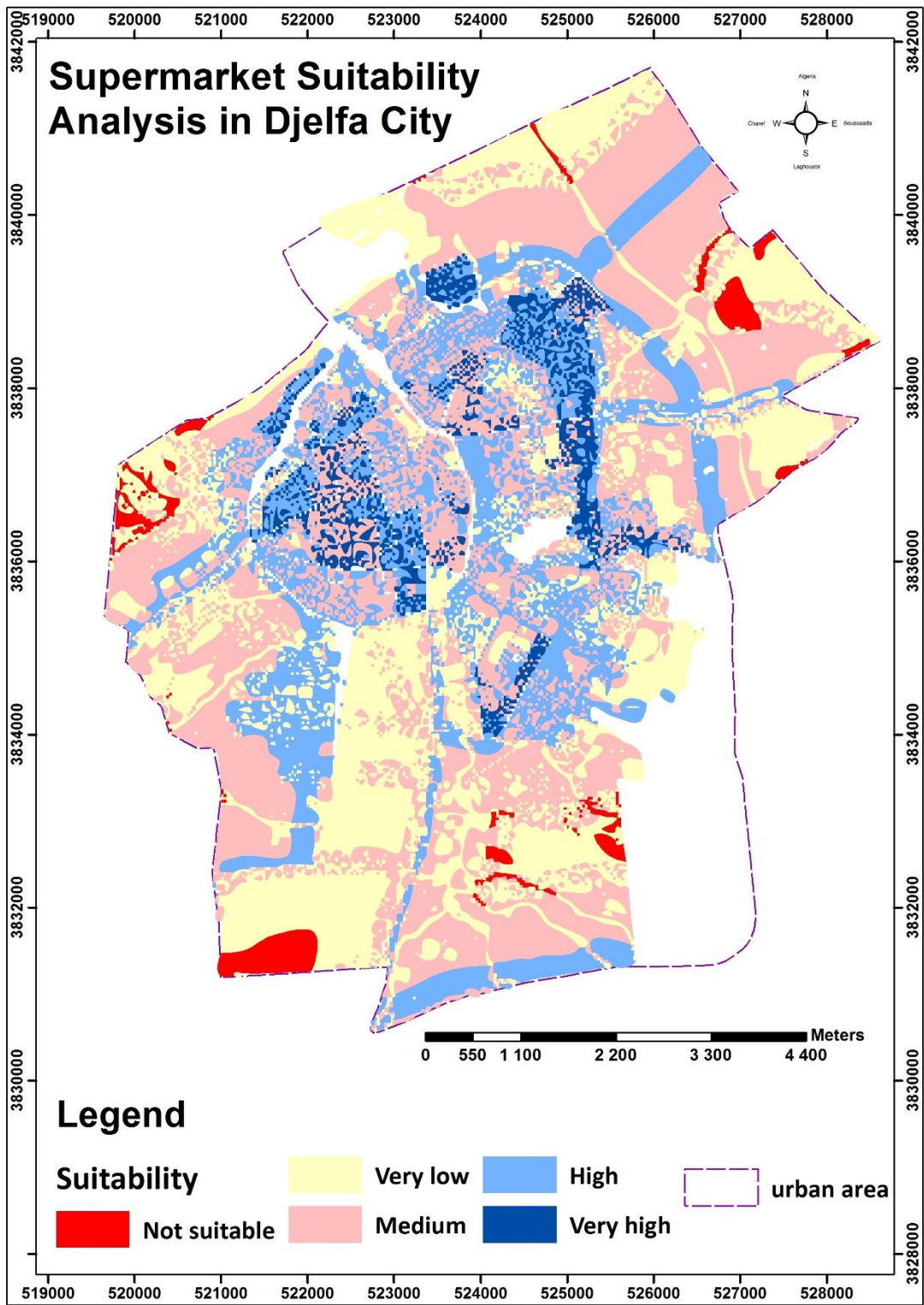
1.2-**Study results:**

There is no need to set up a commercial center in the places located on the outskirts of the city of djelfa in the Eastern, Southern and western regions due to the small population and distance from commercial, urban and Main streets.

It was found that 23.10% of the total area falls under the categories of very high convenience areas and represents the lowest category of convenience area in the city of djelfa, which is located in the center of the city of djelfa, including most of the city's neighborhoods and its commercial center.

The suitability model proposed 5 convenient sites for creating a business center according to scientific criteria that serve the direction of city growth and urbanization .It accounts for 28.57% of the total valid sites for creating a business center in the city 94 .sites with an average degree of suitability for the establishment of a commercial center, representing 39.47% of the total sites suitable for the establishment of a commercial center in the city of djelfa.

The study revealed that the most suitable areas for establishing a commercial center in the city of Julfa are located in the southern region with 28.57% of the total suitable sites in the city, due to the presence of a main and secondary road and the presence of POS lands ,and most of the upcoming urban and commercial projects will take place there, according to government agencies, so it represents the most suitable category, map no (7)



map no (07)



General Conclusion

General conclusion :

In the complex fabric of Urban Development, the strategic distribution of basic facilities such as supermarkets is a vital thread that weaves the fabric of life in the city. The comprehensive analysis presented in this study unequivocally calls for the spatial appropriateness of locating a supermarket in the southern and southwestern districts of the city of Julfa. This recommendation is based on a combination of factors, including the expected increase in population and urban density, prudent land allocation, proactive government-led development endeavors, and Intelligent Placement of supermarkets to meet the needs of thriving communities along the country's pivotal transport arteries. Route No. 46 and national No. 01.

One of the most important factors supporting the suitability of the southern and southwestern regions for supermarkets is the expected rise in population density. The data indicate that these regions are preparing for significant population growth. Such an imminent demographic transition portends an increased demand for basic services, where supermarkets come to the fore. By establishing supermarkets in these booming areas, we are not only meeting the current needs of residents, but also aligning ourselves with the future demographic trends that are unfolding, ensuring that these emerging communities have easy access to a variety of products and services.

The strategic commercial distribution of supermarkets enhances the wisdom of their placement in the southern and south-western regions. The concentration of business activities in these sectors not only promotes economic balance throughout the city, but also mitigates the risk of burdening certain areas. This balanced commercial landscape contributes to the creation of a vibrant and diverse market and ensures that the residents of Julfa, regardless of their location of residence, reap the benefits of accessible supermarkets.

Moreover, the abundant availability of land in the southern and south-western regions is emerging as a decisive factor in the call for the establishment of supermarkets in these regions. The availability of spacious territory not only facilitates the initial setup of supermarkets but also accommodates their expansion and adaptation in the future, ensuring their sustainable relevance in meeting the evolving needs of the city's population. This spatial flexibility solidifies the long-term viability and adaptability of these vital business enterprises.

It is worth noting that the government's proactive commitment to future development projects in the south and South-West sectors confirms the suitability of these areas for

comprehensive analysis presented in this study unequivocally calls for the spatial appropriateness of locating a supermarket in the southern and southwestern districts of the city of Julfa. This recommendation is based on a combination of factors, including the expected increase in population and urban density, prudent land allocation, proactive government-led development endeavors, and Intelligent Placement of supermarkets to meet the needs of thriving communities along the country's pivotal transport arteries. Route No. 46 and national No. 01.

One of the most important factors supporting the suitability of the southern and southwestern regions for supermarkets is the expected rise in population density. The data indicate that these regions are preparing for significant population growth. Such an imminent demographic transition portends an increased demand for basic services, where supermarkets come to the fore. By establishing supermarkets in these booming areas, we are not only meeting the current needs of residents, but also aligning ourselves with the future demographic trends that are unfolding, ensuring that these emerging communities have easy access to a variety of products and services.

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Moreover, the abundant availability of land in the southern and south-western regions is emerging as a decisive factor in the call for the establishment of supermarkets in these regions. The availability of spacious territory not only facilitates the initial setup of supermarkets but also accommodates their expansion and adaptation in the future, ensuring their sustainable relevance in meeting the evolving needs of the city's population. This spatial flexibility solidifies the long-term viability and adaptability of these vital business enterprises.

It is worth noting that the government's proactive commitment to future development projects in the south and South-West sectors confirms the suitability of these areas for supermarkets. These Government-led initiatives, aimed at strengthening infrastructure, transport networks and residential areas, are in line with the overall vision of sustainable growth of the city. Supermarkets, as an integral part of urban life, combine with this vision

by providing residents with accessible basics and stimulating economic development in the region.

Finally, the smart placement of supermarkets along National Route 46 and National Route 01 takes advantage of the accessibility of these vital transport arteries, serving not only local residents, but also transit residents, travelers and visitors passing through djelfa. These main roads connect djelfa with other areas, making the southern and south-western directions of the city ideal locations for supermarkets that serve not only as centers of neighborhoods, but also convenient waypoints for those who are on the move.

In short, the spatial suitability of placing a supermarket in djelfa is indisputably based on the confluence of factors such as population growth, commercial distribution, land availability, government-sponsored development initiatives, and strategic location along vital transport corridors. This strategic approach to the placement of supermarkets embodies forward-thinking urban planning that embraces the evolving needs of a dynamic and prosperous city. By adopting this distribution strategy, the state of Julfa lays the foundation for sustainable growth, economic vitality and a high quality of life for all its residents, thus contributing to the progress and prosperity of this thriving urban center.

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