Competitive-Analysis in Micro enterprises Using Logistic Regression (Case of Eastern Algeria)

تحليل التنافسية الخاص بالمؤسسات المصغرة اعتمادا على الانحدار اللوجستي (دراسة عينة خاص بمؤسسات في الشرق الجزائري)

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Abstract:

the objective of this paper is to asses, determine and correct the investment practices in the micro enterprises, and to offer an adequate competitive/strategic analysis that assist in the business formation process, and in macro-strategy to organize the small business in efficient way that allow flexible adjustments in case of environmental or market change based on data collection process and benchmarking approach and a suggested efficiency-screening process.. The results og the research will greatly improve the probability of success.

Keywords : micro enterprises, logistic Regression, competitiveness, micro-marketing
JEL classification code : XN1, XN2

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1. Introduction:

In the last decade, it has been a quite misinterpretation of investment practices and the enterprises creation mechanisms from a managerial aspect in the Algerian strategy. A macro-investment strategy is a four stages process that began with data-collect/ analysis and end to the application and the monitoring of the plan with flexible adjustments according to the actual progress. Our objective in this study is to clarify the use of such a strategy especially for small enterprises start-ups, by proposing a relative competitive analysis, that includes pertinent tools and practices based on available economic data and information to make the decision making process more accurate and the probability/ risk of failure lower.

The problem that we attempt to address is **how to combine between a competitive analysis and a macro-investment strategy relative to Micro enterprises, for the benefit of the three related economic agents (new-investor, bank, government).**

We approached this matter based on the following Hypothesises; that the current strategy lacks competitive analysis. The competitive strategy for the microenterprises in Algeria is limited to small marketing and strategic manoeuvres. And lastly, that the logistic regression can categorize, rank and improve the competitive performance key indicators based on classification then scoring method.

We have used for that purpose a strictly mathematical and statistical approach alongside with comparison and analysis of international reports, first we have used 1300 responders for our questionnaire with carefully selected business individuals, to acquire a balance between our three study field (restaurants, clothing stores and convenience stores), after that we have analysed the data using logistic regression (LR) and we have utilized the expectation maximization

algorithm and the multiple iteration process for the completion of the missing values in our data.

2. Background on the Evolution of Algerian Investment Climate:

The Algerian investment climate is characterized by high micro enterprises condensation, for many years the the small and the micro enterprises has been ignored by the government strategic and economic policy, the industry was and still by far the most important concern of the policy makers in Algeria, for that reason and other reasons that we will present in this section, the micro enterprises were rarely evolved in the national market let alone the international one, even the artisanal shops has never granted the green light to export some of the most traditional and the original products and crafts. In that economic environment the small shop never evolved to much more organized and bigger enterprises (Sapienza, Autio, Gerard, & Zahra, 2006).

1.2 Overview of Algerian Investment Climate:

The Algerian investment climate is widely described by many world agencies and foreign business men as lucrative and challenging at the same time, most of the macro economic factors shows a stable prosperity with some difficulties lately due to the world oil prices which is considered by many economies as an economic crises and also affected by the unstable regional political climate due to the Arabic Spring.

Regarding the national economic growth; it has been primarily driven by oil and natural gas with other product derived from the previous two, the oil and gas contributing with 96% of exports and accounting for 40-45% of GDP and 60% of budget revenues. to attempt to lower the country's sizable import bill through a policy of diversification that involves more investment both local and foreign one (Porter M. , 2004), it is an initiation to boost the private sector participation in the economic process. This change in economic prices

forced the GoA to announce a new public spending initiative called "the 2015-2019 USD 262 billion investment plan", it is initially a plan that target non-hydrocarbon sector investments, attracting greater foreign direct investment, and lessening the high unemployment rate of Algeria's younger generation (Pratiyogita, 2016)

a. What's Competitiveness?

World Economic Forum (WEF) located in Switzerland, has laid the solid ground about the measurement of competitiveness (Chikan , 2008). However, the measurement is at the macro level: nation. A slight adjustment is attempted by Porter to include business competitiveness index into the national index developed by WEF (WEF, 2017). Nevertheless, Competitiveness is a capability and its potential has to be realized in a firm's everyday operations (Council, 1998). As Porter says, "unless there is appropriate improvement at the microeconomic level, macroeconomic, political, legal and social reforms will not bear full fruit" (Porter M. E., 1988). In other words, macroeconomic conditions influence microeconomic (business) environment and vice versa. Further, there are many examples (Porter M. , 1996) even though they exist in the same macro environment. Thus, competitiveness cannot be fully understood if the competitiveness of enterprises is not grasped. Competitiveness of firms has been studied in the interdisciplinary fields of strategy, operations and economic (Ambastha & Momaya, 2004). While some studies focus on individual firm and its strategies for global operations, some others observe the role of management in competition, (Oral, 1993), (Offstein, Harrell-Cook, & Tootoonchi, 2007). However, measuring competitiveness of firms and benchmarking with other companies are negligible in the literature (Oral, 1993).

2.2 World Reports on Algerian Business Climate:

In order to explore the business climate in Algeria we have to analyses the international reports as they give an objective opinion about the national climate from the point of view of the international business community and foreign enterprises.

a. Algerian Business Climate According to 2017 Doing Business Report:

The methodology used to evaluate each country in the report consider the most critical aspects in investment process from the starting requirement; either financial or technical needs like electricity and others, to the final stage were the established business can process in the local market, the next table will illustrate the raking and the score of Algerian in each aspect chosen by the report makers and According the previous table, Algerian is ranked 156th out of 190 countries, this ranking is good or bad, the general answer is that ranking is reflecting a low economic and investment climate performance, however, the question cannot be easy answered as we have to take many other factors into consideration. Some of the procedures were forced to improve and update to meet the local requirement, the local investors have made a pressure on the Algerian government to improve certain practices and reduce the time to treat the investor files by the government investment related agencies. The negative aspects according to that table are; 180 days to get electricity with 5 procedures, also it is costly and the transparency is not significantly high (5 out of 8), construction permits takes 130 day to deliver and it has to pass by 17 procedure, starting a business takes 20 days, and it has to pass by 12 procedures, we are far behind in registering property (162th /190), 118th in electricity, and the most important aspect is starting business were the Algerian case is ranked 142th out of 190 with a score of 77.54.

Figure. 1: Algerian Rank and Scores in the 2017 Doing Business Report

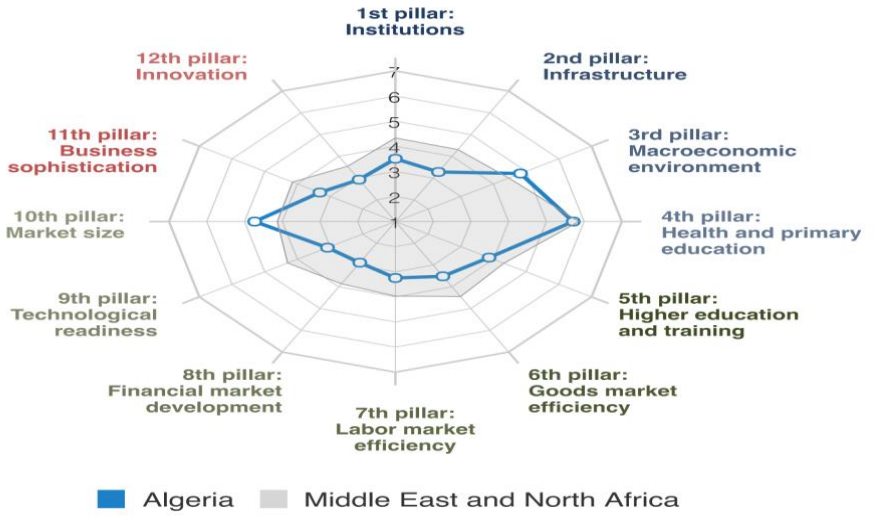
	ALGERIA	
	Ease of doing business rank (1–190)	**156**
✔	**Starting a business** (rank)	142
	DTF score for starting a business (0–100)	77.54
	Procedures (number)	12
	Time (days)	20
	Cost (% of income per capita)	11.1
	Minimum capital (% of income per capita)	0.0
✔	**Dealing with construction permits** (rank)	77
	DTF score for dealing with construction permits (0–100)	71.02
	Procedures (number)	17
	Time (days)	130
	Cost (% of warehouse value)	0.9
	Building quality control index (0–15)	10.0
✔	**Getting electricity** (rank)	118
	DTF score for getting electricity (0–100)	60.58
	Procedures (number)	5
	Time (days)	180
	Cost (% of income per capita)	1,330.4
	Reliability of supply and transparency of tariffs index (0–8)	5
	Registering property (rank)	162
	DTF score for registering property (0–100)	43.83
	Procedures (number)	10
	Time (days)	55
	Cost (% of property value)	7.1
	Quality of land administration index (0–30)	7.0

Source: World Bank Group, "doing business 2017 report", 14th edition, 2016, P.189

b. Algerian Business Climate According The World Competitiveness Report 2017:

Figure. 2: Algerian Overall Performance (WCReport 2017)

Edition	2012-13	2013-14	2014-15	2015-16	2016-17
Rank	110 / 144	100 / 148	79 / 144	87 / 140	87 / 138
Score	3.7	3.8	4.1	4.0	4.0



Source: Klaus Schwab, « The Global Competitiveness Report 2016–2017 », World Economic Forum, 2017, P.97

According to the previous figure, the economic competitiveness of Algeria has been improving since 2012 from 110th to 87th , due to many reforms, in both economic and public sectors, the Algerian performance is not far behind the middle east and north African nations, with few exceptions such as; technological readiness, financial market development, labour market efficiency, and goods market efficiency, however in the market size pillar the report underline that Algerian economy outperformances the neighbouring nations and the middle east ones with a score of 5 comparing to score of 4 in middle east performance. The institutions and the infrastructures are also one

of the negative points that made the Algerian economy far behind some nations like morocco or Qatar. We have to note that improvement in the ranking does not necessary mean an actual improvement as some countries have been underperforming which made them fall behind. And by analysing the two reports,

3. Competitiveness Microanalysis in Algerian Micro-Enterprises:

In this section we will discuss the results of our field research analyzing all the data gathered during the period of research, and we will explain the results in their natural business context by grouping all the data related to service business in one section and the product distribution business in another section and finally the convenience stores in the last section.

1.3 Study Sample and Methodology:

We have chosen approximately 1300 micro enterprises mainly active in three business field; restaurants, cloth trade stores, and the continence stores (we have to note that a trade stores fits the definition of micro business even if it's active in trade business only or as a point of distribution and selling). Our geographic area of research consists of three Algerian cities (Constantine, Khenchela and Oum el bouaghi city), the time frame of our research was between January 2017 and June 2018, and we have used official government reports along with simple accounting reports provided by both the local direction of commerce and the stores included in the research, also we have used a questionnaire to collect the primary data of our study the choice of variables was an adaptation of a previous study conducted in Thailand in 2016 (Nuttaya & veera, 2016).

2.3 Results and Findings:

In this section we will discuss the results of our field research analyzing all the data gathered during the period of research, and we will explain the results in their natural business context by grouping all the data related to service business in one section and the product distribution business in another section and finally the convenience stores in the last section. In this study the results that conclude the research will be commented on accordantly to add more clarification to the surrounding condition that has affected slightly the results.

a. Competitiveness Analysis in Services:

First, we have to test littles MCAR test, which tests the hypothesis that the missing data are completely random and does not affect the end result, and as we have noted before, some of the responders have missed or have not respond on some questions which leave us with unfilled boxes that needs to be considered before running the other tests.

Before we start our analysis in this section I have to define the abbreviation of variables used in the following tests and analyses;

V1 **Number of customers per day**
V2 **Business Age**
V3 **Number of Passing Cars per day**
V4 **Number of residents in Catchment area**
V5 **Number of People Passing by per day**
V6 **Number of Competitors in catchment area**
V7 **Number of Complementary businesses**
V8 **Price Evaluation**
V9 **Hospitality Evaluation**
V10 **design, lighting, and Hygiene evaluation**
V11 **Goods Quality Evaluation**

Table 1: EM Estimated Statistics (Services Table)

Clients	Age	taxi	Habitants	passants	concur	complet	prix	accueil	decor	qualite
239,83	44,40	6452,72	3277,53	9167,94	4,40	5,00	6,4035	7,1523	6,2663	7,1256

a. Little's MCAR test: Chi-Square = 31,073, DF = 27, Sig. = ,268

Source: My Work based on Spss Results

From the Table above Sig= 0,268 is not statistically significant value, which means we fail to reject the null hypothesis H0 so the data are in

fact are probably missing in random way, completely at random. So we can continue the procedure to replace the missing values.

a.1. Expectation–maximization Algorithm:

We have used the EM algorithm to replace the missing values in our data and get more statistical significance and representation from the analysis, and the results were as shown below:

Table 2: « Descriptive Analysis before the EM algorithm »

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Number of customers per day	40	93,0%	3	7,0%	43	100,0%
Business Age	40	93,0%	3	7,0%	43	100,0%
Number of Passing Cars per day	40	93,0%	3	7,0%	43	100,0%
Number of residents in Catchement area	40	93,0%	3	7,0%	43	100,0%
Number of People Passing by per day	40	93,0%	3	7,0%	43	100,0%
Number of Competitors in catchement area	40	93,0%	3	7,0%	43	100,0%
Number of Complementary businesses	40	93,0%	3	7,0%	43	100,0%
Price Evaluation	40	93,0%	3	7,0%	43	100,0%
hospitalityEvaluation	40	93,0%	3	7,0%	43	100,0%
design, lighting, and Hygiene evaluation	40	93,0%	3	7,0%	43	100,0%
Goods Quality Evaluation	40	93,0%	3	7,0%	43	100,0%

Source: My Work based on Spss Results

Table 3: « Descriptive Analysis after the EM algorithm »

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Number of customers per day	43	100,0%	0	,0%	43	100,0%
Business Age	43	100,0%	0	,0%	43	100,0%
Number of Passing Cars per day	43	100,0%	0	,0%	43	100,0%
Number of residents in Catchement area	43	100,0%	0	,0%	43	100,0%
Number of People Passing by per day	43	100,0%	0	,0%	43	100,0%
Number of Competitors in catchement area	43	100,0%	0	,0%	43	100,0%
Number of Complementary businesses	43	100,0%	0	,0%	43	100,0%
Price Evaluation	43	100,0%	0	,0%	43	100,0%
hospitalityEvaluation	43	100,0%	0	,0%	43	100,0%
design, lighting, and Hygiene evaluation	43	100,0%	0	,0%	43	100,0%
Goods Quality Evaluation	43	100,0%	0	,0%	43	100,0%

Source: Spss Results

We notice from the table that the number of valid cases has risen up from 93% to 100% after applying the EM algorithm.

a.2. Normality test (Schapiro-Wilks & Kolmogorov-Smirnov)

Table 4: « Normality test of service data category »

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Number of customers per day	,231	43	,000	,757	43	,000
Business Age	,160	43	,007	,867	43	,000
Number of Passing Cars per day	,183	43	,001	,839	43	,000
Number of residents in Catchement area	,234	43	,000	,668	43	,000
Number of People Passing by per day	,213	43	,000	,816	43	,000
Number of Competitors in catchement area	,233	43	,000	,822	43	,000
Number of Complementary businesses	,217	43	,000	,715	43	,000
Price Evaluation	,105	43	,200*	,965	43	,212
hospitalityEvaluation	,084	43	,200*	,963	43	,179
design, lighting, and Hygiene evaluation	,082	43	,200*	,972	43	,380
Goods Quality Evaluation	,094	43	,200*	,963	43	,171

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Source: My Work based on Spss Results

From the table above using Shapiro-Wilk test, we can notice that all the variables have significance value inferior than 0,05 and even inferior than 0,01 Sig<0,01except design, lighting, and Hygiene evaluation, Price Evaluation, hospitality Evaluation, Goods Quality Evaluation. Those four last variables have a significance level superior than 0,05 which means that those variables are normally distributed and the others do not follow the normal distribution.

a.3. LR: Logistic Regression:

We will conduct the logistic regression just to be sure that our probabilities of membership affectation were accurate. the logistic regression is practically the same as the discriminant analysis with the exception that this analysis is less lenient in terms of assumption, so it can be perfectly done in our example were the test of normality and homogeneity of variances do not have positive results.

The high competitiveness category has been left out, because in logistic regression we are going to compare the other groups relative to high competitiveness group. From the table, the predicted logit for each category is:

Predicted logit for low competitiveness = 48,689 -0,122V2 -0,001V3 -0,001V4 + 0,000V5 -3,399V6 +3,009V7 -2,672V8 +4,228V9 -0,954V10 -5,429V11

Predicted logit for medium competitiveness = 38,263 -0, 129V2 -0,001V3 -0,001V4 + 0,000V5 -3,525V6 +3,056V7 -1,847V8 +4,453V9 -0,245V10 -5,460V11

Note: we have explained the interpretation of V1 V2 V3…. In the table Table VI.19: Table Explains the Abbreviation of Variables used in Discriminant Function

To transform that predicted logit score we need Euler's Number (E-number =2.71828) in the following equation:

Predicted probability for low competitiveness = (2.71828 Predicted logit for low competitiveness for a given case X)(1+2.71828**Predicted logit for low competitiveness for a given case X)**

Predicted probability for medium competitiveness = (2.71828 Predicted logit for medium competitiveness for a given case X)(1+2.71828**Predicted logit for medium competitiveness for a given case X)**

Note: ** means exponent in math

And as we know the total sum of probabilities equal to "1" and in our case we have three groups' membership probabilities so the predicted probability of the last group (high competitiveness group) will be as follow

Predicted probability for high competitiveness = 1 – (Predicted probability for medium competitiveness+ Predicted probability for lofw competitiveness)

To interpret the result we have to compare the Predicted probability for the three groups in each case and see which probability is the greater one, and based on that we affect that case to the pertinent group for example:

For a case X1 we calculate the probabilities for the three groups based on the given equations as we shown above and compare between them;

if Predicted probability for high competitiveness is greater than the Predicted probability for low competitiveness and also greater than the Predicted probability for medium competitiveness, we can conclude that this case (X1 belong to the group of high competitiveness business).

b. Competitiveness Analysis Retail and Consumer Goods:

This is the second type of business that we set as an objective for science field search; our goal is to uncover the microbusiness competitive performance factors and drivers especially in developing economies such as Algeria.

b.1. Little's Missing Completely at Random Test (MCAR):

This test is necessary before performing EM algorithm (Expectation–maximization Algorithm) we need to demonstrate that the missing data are missing at random, so the algorithm replace method won't affect the results of future analysis and assumptions.

Table 6: « Univariate Statistics »

	N	Mean	Std. Deviation	Missing		No. of Extremes[a]	
				Count	Percent	Low	High
NCustomers	35	70,86	78,334	1	2,8	0	1
AgeOfBusiness	27	71,63	55,131	9	25,0	0	1
Ncars	36	962,64	1034,655	0	,0	0	1
AreaResidents	36	3332,92	2910,727	0	,0	0	1
PeoplePassingby	35	2219,86	1830,101	1	2,8	0	1
NofCompetitors	34	19,26	34,988	2	5,6	0	1
NofCompliB	35	20,71	39,724	1	2,8	0	3
PriceEvaluation	33	4,8615	1,77029	3	8,3	0	0
HospitalityEvaluation	33	6,4691	1,89934	3	8,3	0	0
PlaceEvaluation	33	6,1394	2,14606	3	8,3	0	0
GoodsQualityEVal	33	6,7409	2,01516	3	8,3	0	0

a. Number of cases outside the range (Q1 - 1.5*IQR, Q3 + 1.5*IQR)

Source: My Work based on Spss Results

This is a general statistic table that shows that many variables have a high percentage of missing values. Normally any percentage less than 2,5% is an acceptable percentage, however we can notice in the table above that many variables have more than that measure, for instance price, hospitality, place and goods quality evaluation have 8,3% missing value whereas age of business have 25% missing values.

Table 7: «EM Means [a,b] »

NCustomers	AgeOfBusiness	Ncars	AreaResidents	PeoplePassingby	NofCompetitors	NofCompliB	PriceEvaluation	HospitalityEvaluation	PlaceEvaluation	GoodsQualityEVal
71,63	74,73	962,64	3332,92	2211,00	20,27	22,74	5,1060	6,2092	6,4084	6,6669

a. Little's MCAR test: Chi-Square = 62,557, DF = 37, **Sig. = ,005**
b. The EM algorithm failed to converge in 25 iterations.

Source: My Work based on Spss Results

From the Table above Sig= 0, 005 (less than 0,01) is statistically a significant value, which means we reject the null hypothesis H0 so the data are not in fact missing at random way,. So we cannot continue the procedure to replace the missing values using the EM algorithm.

Instead we have used The multiple imputation method which is a technique used to deal with missing data, it is used when we have data that maybe missing due to non-response or due to drop out of subjects and if we want to maintain sample size which in our case, it is small sample 46 and the missing data are larger than 5%, so we cannot afford to use the trimming technique in which we basically remove subjects and data that are missing and this will significantly reduce the sample size, and the data are missing in systematic way which may introduce some bias, it is in our best interest in order to develop a good hypothesis decision that we replace the data in some way, and the more common and accepted way in the fail to validate the MCAR test, like our case where the data are not missing completely at random. The multiple imputation technique basically runs multiple simulations on the missing data relative to the data that is available in attempt to replace the missing data with data that is most likely to be similar to the available data.

b.2. Normality test (Schapiro-Wilks & Kolmogorov-Smirnov):

Table 8: «Normality test of Goods Retail data category »

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Number of customers per day	,272	23	,000	,778	23	,000
Business Age	,161	23	,127	,901	23	,026
N of Passing Cars per day	,236	23	,002	,800	23	,000
N of residents in Catchement area	,167	23	,097	,885	23	,013
N of People Passing by per day	,186	23	,039	,927	23	,092
N of Competitors in catchement area	,338	23	,000	,396	23	,000
N of Complementary businesses	,236	23	,002	,619	23	,000
Price Evaluation	,139	23	,200*	,973	23	,756
hospitalityEvaluation	,095	23	,200*	,943	23	,209
design, lighting, and Hygiene evaluation	,156	23	,151	,899	23	,025
Goods Quality Evaluation	,131	23	,200*	,943	23	,208

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Source: My Work based on Spss Results

From the table above using Shapiro-Wilk test, we can notice that all the variables have significance value inferior than 0,05 Sig<0,05 except Price Evaluation, hospitality Evaluation, Goods Quality Evaluation, Number of People Passing by per day. Those variables have a significance level superior than 0,05 which means that those variables are normally distributed and the others do not follow the normal distribution.

b.3. LR: Logistic Regression:

The high competitiveness category has been left out, because in logistic regression we are going to compare the other groups relative to high competitiveness group. From the table, the predicted logit for each category is:

Predicted logit for low competitiveness = 14,801-0,089V2 +0,000V3 -0,001V4 -0,001V5 -0,258V6 +0,323V7 +0,847V8 +0,517V9 -3,472V10 +1,766V11

Predicted logit for medium competitiveness = 2,223-0,049V2 +0,002V3 +0,000V4 - 0,002V5 -0,109V6 +0,316V7 +1,324V8 +0,890V9 -3,845V10 +2,225V11

Note: we have explained the interpretation of V1 V2 V3…. To transform that predicted logit score we need Euler's Number (E-number =2.71828) in the following equation:

Predicted probability for low competitiveness = (2.71828 Predicted logit for low competitiveness for a given case X)(1+2.71828**Predicted logit for low competitiveness for a given case X)**

Predicted probability for medium competitiveness = (2.71828 Predicted logit for medium competitiveness for a given case X)(1+2.71828**Predicted logit for medium competitiveness for a given case X)**

Note: ** means exponent in math

In addition to that, as we know the total sum of probabilities equal to "1" and in our case we have three groups' membership probabilities so the predicted probability of the last group (high competitiveness group) will be ass follow

Predicted probability for high competitiveness = 1 – (Predicted probability for medium competitiveness+ Predicted probability for low competitiveness)

To interpret the result we have to compare the Predicted probability for the three groups in each case and see which probability is the greater one, and based on that we affect that case to the pertinent group for example:

For a case X1 we calculate the probabilities for the three groups based on the given equations as we shown above and compare between them; If Predicted probability for high competitiveness is greater than the Predicted probability for low competitiveness and also greater than the Predicted probability for medium competitiveness, we can conclude that this case (X1 belong to the group of high competitiveness business)

c. Competitiveness Analysis in Convenience Stores:

Due to the missing data with no exception to other data files, we have to perform a pertinent method to complete them, starting with the usual test MCAR Little's Missing Completely at Random.

c.1. Little's Missing Completely at Random Test (MCAR):

Table 9: « EM Estimated Statistics (EM Means Convenience Data)»

Clients	Age	taxi	Habitants	passants	concur	complet	prix	accueil	decor	qualite
151,05	103,43	1253,67	5357,17	1803,29	5,48	3,79	4,9413	6,7097	6,1718	6,6507

a. Little's MCAR test: Chi-Square = 10,900, DF = 17, Sig. = ,862

Source: Spss Results

From the Table above Sig= 0,862 is not statistically significant value, which means we fail to reject the null hypothesis H0 so the data are in fact are probably missing in random way, completely at random. So we can continue the procedure to replace the missing values. After that we have used the EM algorithm to replace the missing values in our data and get more statistical significance and representation from the analysis.

c.2. Normality test (Schapiro-Wilks & Kolmogorov-Smirnov):

Table 10: « Normality test of service data category »

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Number of customers per day	,335	42	,000	,537	42	,000
Business Age	,154	42	,014	,956	42	,103
Number of Passing Cars per day	,280	42	,000	,564	42	,000
Number of residents in Catchement area	,180	42	,002	,870	42	,000
Number of People Passing by per day	,262	42	,000	,747	42	,000
Number of Competitors in catchement area	,191	42	,001	,899	42	,001
Number of Complementary businesses	,173	42	,003	,937	42	,022
Price Evaluation	,101	42	,200*	,976	42	,505
hospitalityEvaluation	,135	42	,053	,968	42	,280
design, lighting, and Hygiene evaluation	,106	42	,200*	,949	42	,061
Goods Quality Evaluation	,073	42	,200*	,973	42	,404

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Source: My Work based on Spss Results

From the table above using Shapiro-Wilk test, we can notice that all the variables have significance value inferior than 0, 05 and even inferior than 0,01 Sig<0,01 "Business Age", "Price Evaluation", "hospitality Evaluation", "Goods Quality Evaluation" Those four variables have a significance level superior than 0,05 which means that those variables are normally distributed and the others do not follow the normal distribution.

c.3. LR: Logistic Regression:

the logistic regression is practically the same as the discriminant analysis with the exception that this analysis is less lenient in terms of assumption, so it can be perfectly done in our example were the test of normality and homogeneity of variances do not have positive results.

The high competitiveness category has been left out, because in logistic regression we are going to compare the other groups relative to high competitiveness group. From the table, the predicted logit for each category is:

Predicted logit for low competitiveness = 1,270 +0,000V2 -0,001V3-0,000V4-0,001V5 -0,455V6 +0,252V7 -0,059V8 +0,088V9-0,364V10 -0,413V11

Predicted logit for medium competitiveness = 0,773 -0,20V2 -0,000V3+0,000V4+ 0,000V5 -0,062V6 +0,092V7 -0,740V8 +0,110V9 -0,200V10-0,936V11

Note: we have explained the interpretation of V1 V2 V3…. In the table Table VI.19: Table Explains the Abbreviation of Variables used in Discriminant Function

To transform that predicted logit score we need Euler's Number (E-number =2.71828) in the following equation:

Predicted probability for low competitiveness = (2.71828 Predicted logit for low competitiveness for a given case X)(1+2.71828**Predicted logit for low competitiveness for a given case X)**

Predicted probability for medium competitiveness = (2.71828 Predicted logit for medium competitiveness for a given case X)(1+2.71828**Predicted logit for medium competitiveness for a given case X)**

Note: ** means exponent in math

And as we know the total sum of probabilities equal to "1" and in our case we have three groups' membership probabilities so the predicted probability of the last group (high competitiveness group) will be ass follow

Predicted probability for high competitiveness = 1 – (Predicted probability for medium competitiveness+ Predicted probability for low competitiveness)

To interpret the result we have to compare the Predicted probability for the three groups in each case and see which probability

is the greater one, and based on that we affect that case to the pertinent group for example:

For a case X1 we calculate the probabilities for the three groups based on the given equations as we shown above and compare between them; if Predicted probability for high competitiveness is greater than the Predicted probability for low competitiveness and also greater than the Predicted probability for medium competitiveness, we can conclude that this case (X1 belong to the group of high competitiveness business)

4. Conclusion :

Based on the previous analysis, we can conclude that an investment strategy on macro-level should consider internal, environmental and competitive factors in order to deliver an economic value and achieve the initial short/long term objectives.

On a microeconomic level, we concluded that the bank and the investor should cooperate to build an efficient long-term business. A simple benchmarking process would serve in the enterprise creation procedure, and estimate more accurately the relative needed information, in addition to that this approach will help in both technical and managerial aspect. For the bank or the approval committee we provided an analysis tool bases on multi managerial and marketing aspects to help determine the efficiency of an investment with a significant probability of accuracy.

As a result to our statistical analysis we have categorized the findings in three categories; the first Results concerning the Consumer Goods microbusiness; the highest positive correlation is between number of customers per day and place evaluation (design lightning and hygiene) which indicates that as much as the place is good in cloth retail micro business as much will attract customers, we can confidently say that the place evaluation is the most influential factor on attracting customers per day for the cloth trade micro business. The second category was the results for Convenience Microbusiness; From the LR

analysis function number one. we concluded that the Price Evaluation score is the most important factor in discriminating between groups. And from function number two indicates that Goods Quality Evaluation scores is the most influential one. The third results were meant for services microbusiness the LR function number one we concluded that the hospitality score and the goods quality (such as food for restaurant) are the most important factors in discriminating between groups. However function number two indicates that design, lighting, and Hygiene evaluation scores are the most influential ones, and from the general the Common Statistical Results for All Microbusiness Types Some of the results were found in all three types regardless of the collected data indicates that according to the Shapiro-wilk analysis, almost all the data were not normally distributed except for some factors such as price evaluation scores, goods evaluation and some evaluation factors, which will affect the parametric statistical tests.

The most important result of our research is the competitive performance ranking and improving algorithm created based on Logistic Regression as a principal analysis or a discriminant analysis as a contingency one. With more confirmation and trial tests, it will be most useful in future analysis to rank, improve, and organize microbusinesses in Algeria or in small geographic area (neighbourhood, city, or region) with respect to the type of businesses. If new type of business was the subject of the research, it is imperative to create a new algorithm in conformity with the new microbusiness characteristics.

The algorithm can also be used to create a competitive map to designate the new business to the appropriate area according to the type of business and the profitability of location based on many factors. This designation and competitive map will assure maximum competitive efficiency from all microbusinesses, which may in turn stimulate the

evolution process so microbusiness can develop into a large enterprise with the right and the proper circumstances.

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